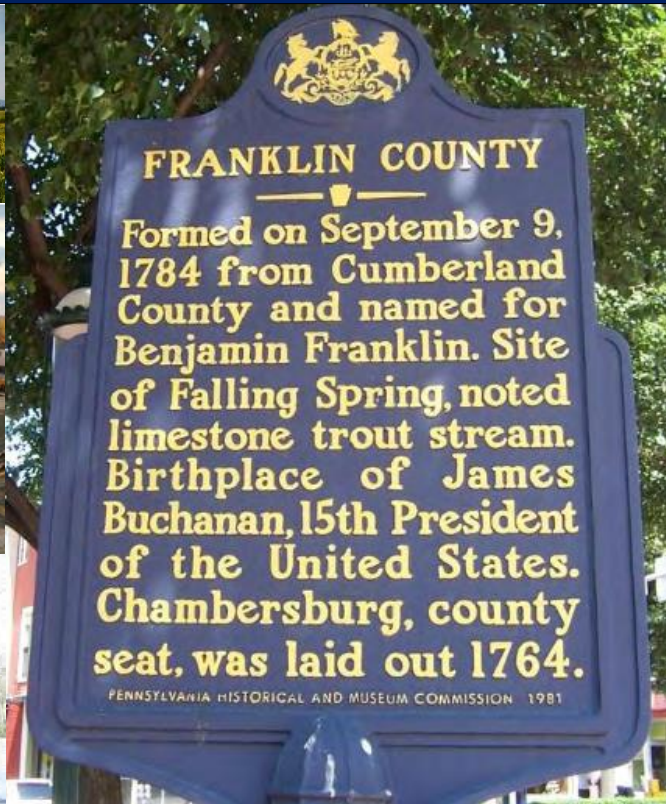


Franklin County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update 2023



Executive Summary

Franklin County Hazard Mitigation Plan 2023

The Hazard Mitigation Plan (HMP) is a foundational document that helps define the threat environment for all emergency preparedness and planning efforts in the county. The primary goal of this plan is to protect the lives and property of the citizens of Franklin County by proposing actions to be undertaken ahead of disasters to reduce their impacts. It also enables the municipalities in our county to compete for federal disaster mitigation funding to offset these initiatives. The Federal Emergency Management Agency (FEMA) requires that counties formally update their HMP every 5 years. This edition is the third update to the Franklin County HMP.

The Disaster Mitigation Act of 2000 (DMA2000) was enacted as an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The DMA2000 placed greater emphasis on the identification and assessment of risks from natural disasters. It also implemented a means by which federal funding could be provided to mitigate those risks while ensuring critical infrastructure of communities could continue to function after a natural disaster. Specifically, as long as a community has adopted a Hazard Mitigation Plan (HMP), they would be eligible for the following 3 federal mitigation funding initiatives:

Hazard Mitigation Grant Program (HMGP) - The purpose of HMGP is to help communities implement hazard mitigation measures following a Presidential Major Disaster Declaration in the areas of the state, tribe, or territory requested by the Governor or Tribal Executive. The key purpose of this grant program is to enact mitigation measures that reduce the risk of loss of life and property from future disasters.

Pre-Disaster Mitigation (PDM) Program - The PDM Program, authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. This program awards planning and project grants and provides opportunities for raising public awareness about reducing future losses before disaster strikes. In 2020, this was changed to the **Building Resilient Infrastructure and Communities (BRIC) Program**.

Flood Mitigation Assistance (FMA) - The FMA program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA provides funding to States, Territories, federally-recognized tribes and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP.

The ultimate goal of mitigation planning is to break the cycle of disaster damage, reconstruction, and repeated damage. To achieve this end, the Franklin County HMP update was developed using the FEMA Local Mitigation Planning Policy Guide (April 2023) and the Pennsylvania Emergency Management Agency's (PEMA) Pennsylvania Hazard Mitigation Plan Standard Operating Guide (2020). A version of the Franklin County HMP was approved in May of 2019, and this 5-year update is required under the provisions of the DMA2000.

The Franklin County Department of Emergency Services (FCDES) was selected as the lead agent for the county in preparing this HMP update. Our first objective was to gather a team of county leaders to form the Hazard Mitigation Planning Steering Group (HMPSG). It is this committee that established the framework and scope of the HMP update. This group realized the

Executive Summary

Franklin County Hazard Mitigation Plan 2023

shortfalls of the previous Franklin County HMP and challenged the team to produce a more robust and comprehensive plan that further incorporated the inputs and opinions of the municipalities as well as the general public. To provide momentum to this planning effort, the HMPSG developed the initial stakeholders list (internal and external) for this update to include members of the general public. This list of stakeholders became the Franklin County Hazard Mitigation Planning Team (HMPT) and was continually amended through this process and will continue to be updated throughout the 5-year cycle of this version of the plan.

With the team in place, we were able to garner the participation of all Franklin County municipalities in the identification and assessment of the hazard environment of our community. We started by analyzing the *Pennsylvania Hazard Mitigation Plan Standard Operating Guide* for a list of identified hazard threats. This state plan had profiled and assessed 33 separate hazards, whereas our existing 2018 HMP plan only had profiled 24 hazards. The HMPT decided to use the state hazard list as a starting point in identifying the hazard threats in Franklin County. The HMPT came to the conclusion that 27 of the 33 hazards identified in the state HMP were applicable to our area. The 6 hazards that were excluded were *Coal Mining, Coastal Erosion, Conventional Oil/Gas Wells, Levee Failure, Gas/Liquid Pipelines, and Unconventional Wells*. The following chart reflects the identification and priority of the hazards to Franklin County as prioritized by the 22 municipalities.

2023 Rank	Hazard	2021	Delta	
1	Winter Storm	1	--	
2	Pandemic and Infectious Disease	10	↑ 8	
3	Utility Interruption	4	↑ 1	
4	Hurricane, Tropical Storm, Nor'easter	2	↓ 2	
5	Extreme Temperatures	6	↑ 1	
6	Tornado/Windstorm	3	↓ 3	
7	Transportation Accident	7	--	
8	Hailstorm	11	↑ 3	
9	Drought	5	↓ 4	
10	Environmental Hazards (HAZMAT Release)	12	↑ 2	
11	Nuclear Incident	20	↑ 9	
12	Flood, Flash Flood, Ice Jam	13	↑ 1	
13	Cyber-Terrorism	--	--	
14	Earthquake	15	↑ 1	
15	Radon Exposure	21	↑ 6	
16	Invasive Species	14	↓ 2	
17	Dam Failure	9	↓ 8	
18	Building and Structure Collapse	--	--	
19	Opioid Addiction Response	--	--	
20	Lightning Strike	8	↓ 12	
21	Terrorism	16	↓ 5	
22	Subsidence, Sinkhole	17	↓ 5	
23	Urban Fire and Explosion	18	↓ 5	
24	Mass Food and Animal Feed Contamination	23	↓ 1	
25	Wildfire	19	↓ 6	
26	Civil Disturbance	22	↓ 4	
27	Landslide	24	↓ 3	
Risk Factor Scale				
Catastrophic	Major	Moderate	Minor	Insignificant

Executive Summary

Franklin County Hazard Mitigation Plan 2023

With the threat environment now defined, the HMPT went about the process of identifying the existing capabilities of the municipalities in the county to enact mitigation projects. This was done by having the municipalities identify their capabilities in the following areas via the *Municipal Capabilities Survey*:

- Planning and Regulatory: Ordinances, plans, and policies
- Administrative and Technical: Personnel and manpower
- Fiscal: Revenue generating functions
- Political Will: Political disposition to mitigation action implementation
- Self-Assessment: Feelings on preparedness for mitigation action process
- National Flood Insurance Program (NFIP) Compliance: Status of implementation of flood hazard mitigation program

The survey results indicate that the county has a moderate to high level of *Planning and Regulatory* capabilities in place. These take the form of ordinances and plans that are in place to address some of the causal factors of loss of life and property damage from both natural and man-made disasters. However, there are a few areas in planning and regulation that we have some work to do. Most notably, we rated low in municipalities with Continuity of Operations and Disaster Recovery plans in place. We begin to address these gaps with the development of additional *Mitigation Actions* in this new plan.

The county-wide roll-up of the capabilities survey indicated that we were moderate to high in *Administrative and Technical* support capabilities. This indicates that we have personnel identified to support the implementation of mitigation efforts. However, this does not indicate that these personnel are free and available to work mitigation actions. All personnel are fully engaged in day to day operations of the municipalities and mitigation action implementation will have to compete for prioritization in their workload.

Additionally, we scored high in the participation in the *National Flood Insurance Program (NFIP) Compliance*. We were able to determine that 95% of our municipalities have at least 1 NFIP policy in their jurisdictions and are thus maintaining the standards to be NFIP compliant. However, there are areas in our NFIP implementation that scored low to moderate. These areas dealt with the processes to help citizens request changes to the current Digital Flood Insurance Rate Maps (DFIRMS), providing assistance on insurance issues, and general education of the citizens on the NFIP program.

A major area that we ranged from low to moderate is the *Fiscal* capabilities in the county. We are still a small developing area in the state. We are continually growing, but the sizes of our municipalities are still small enough that the revenue generating efforts are not sufficient to support major mitigation action project implementation independent of federal funding.

The *Political Will* and *Self Assessment* areas of the survey simply gauged our predisposition to enacting the findings of this HMP. The *Political Will* in the county indicates that over 95% of the municipalities are at least moderately willing to entertain the actions required to improve their hazard mitigation posture. Our *Self Assessments* reveal that, as a county, we have moderate to high confidence in our existing abilities to handle the current threat environment. Combined,

Executive Summary

Franklin County Hazard Mitigation Plan 2023

these two factors indicate that we are willing to embrace new initiatives even though we are confident in our existing capabilities, which creates a good environment for hazard mitigation.

It should be noted that the variances between our municipalities in population, industry, land-use, and general disposition are vast and the *Threat* and *Municipal Capability* assessments made from this composite county-wide analysis do not necessarily reflect the ground truth for each municipality. However, these assessments did allow us to identify general trends and capability gaps that allowed the HMPT to develop a meaningful and effective *Mitigation Strategy*.

We started our *Mitigation Strategy* development with a review of our existing strategy in the 2018 HMP. The 2018 plan established 4 new goals and linked them to the goals in the FCDES Strategic Plan to give them more meaning and improve plan integration throughout the emergency preparedness spectrum. From these goals we were able to craft 17 Objectives that were also linked to the Objectives in the FCDES Strategic Plan. In addition, three new threats were added to the 2023 plan: Building and Structure Collapse, Cyber-Terrorism and Opioid Addiction Response. In reviewing the updated *HVA* and the *Capabilities Survey* information from our municipalities, we ended up having 137 *Mitigation Actions* for this HMP update. This represents three additional *Mitigation Actions* as compared to our previous HMP. Additionally, every hazard that was profiled has at least 1 *Mitigation Action*. Furthermore, every municipality in Franklin County has at least 1 *Mitigation Action* to work. This means our plan is comprehensive and we have good community buy-in to the process.

The key take away from this planning effort is a more robust and meaningful plan to help the county break the cycle of repetitive losses due to disasters. However, more importantly, the county and the HMPT were able to develop a repeatable process that continually redefines and updates our threat environment, proposes the actions required to adapt, and achieve community buy-in to protect the lives and property of our citizens.

Record of Changes

Franklin County Hazard Mitigation Plan 2023

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1. Introduction

1.1. Background

Across the United States, natural and man-made disasters have led to increasing levels of deaths, injuries, property damage, and interruption of business and government services. The time, money, and effort needed to recover from these disasters exhausts resources, diverting attention from important public programs and private agendas.

Since 1955 there have been 65 Presidential Disaster Declarations and 10 Presidential Emergency Declarations in Pennsylvania, 20 of which have included Franklin County. The emergency management community, citizens, elected officials and other stakeholders in Franklin County recognize the impact of disasters on our community and support proactive efforts needed to reduce the impact of natural and human-made hazards.

Hazard mitigation describes sustained actions taken to prevent or minimize long-term risks to life and property from hazards and create successive benefits over time. Pre-disaster mitigation actions are taken in advance of a hazard event and are essential to breaking the disaster cycle of damage, reconstruction, and repeated damage. With careful selection, successful mitigation actions are a cost-effective means of reducing risk of loss over the long-term.

Hazard mitigation planning has the potential to produce long-term and recurring benefits by breaking the cycle of loss. A core assumption of mitigation is that current dollars invested in mitigation practices will significantly reduce the demand for future dollars by lessening the amount needed for recovery, repair, and reconstruction. These mitigation practices will also enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the economy back on track sooner and with less interruption.

Accordingly, the Franklin County Hazard Mitigation Planning Team (HMPT) composed of government leaders from Franklin County, in cooperation with the elected officials of the county and its municipalities have prepared this Hazard Mitigation Plan (HMP) update. The HMP is the result of work by citizens of the county to develop a pre-disaster multi-hazard mitigation plan that will not only guide the county towards greater disaster resistance, but will also respect the character and needs of the community.

1.2. Purpose

This Hazard Mitigation Plan was developed for the purpose of:

- Identifying hazards present in Franklin County.
- Determining the areas impacted by identified hazards that affect the lives and property of Franklin County citizens.
- Assessing what has been and should be done to reduce or eliminate the impact of identified hazards on Franklin County citizens.
- Developing and implementing a hazard mitigation action plan to make Franklin County citizens safer in the future.

- Qualifying for pre-disaster and post-disaster grant funding.

1.3. Scope

The Franklin County 2023 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 our municipalities to be eligible for funding and technical assistance from state and federal hazard mitigation programs. It will be updated and maintained to address both natural and human-made hazards determined to be of significant risk to the county and/or its local municipalities. Updates will take place at a minimum every five years, but they will also take place following significant disaster events.

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.
- 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.
 - Pennsylvania Stormwater Management Act of October 4, 1978. P.L. 864, No. 167.

The following **federal** guides and reference documents were used to prepare this document:

- FEMA 386-6: *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*. May 2005.
- FEMA 386-8: *Multijurisdictional Mitigation Planning*. August 2006.
- FEMA: *Local Mitigation Planning Handbook*, May 2023.
- FEMA: *Local Mitigation Planning Policy Guide*, April 2022.
- FEMA: *Local Mitigation Plan Review Guide*. October 1, 2011.
- FEMA: *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. January 2013.
- FEMA: *Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials*. March 1, 2013.
- FEMA: *Plan Integration: Linking Local Planning Efforts*. July 2015.
- FEMA: *Flood Risk Report: Conococheague-Opequon Watershed, 02070004*, 2017.

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- United States Geologic Survey: *The Landslide Handbook – A Guide to Understanding Landslides*, 2008.
- United States Department of Agriculture: *2012 Census of Agriculture*, 2014.

The following state guides and reference documents were used prepare this document:

- PEMA: *Standard Operating Guide*. October 2020.
- PEMA: *Pennsylvania State Hazard Mitigation Plan*. October 31, 2013.
- PEMA: *Pennsylvania State Hazard Mitigation Plan*. 2018, updated October 2019.
- Pennsylvania Department of Agriculture, Bureau of Farmland Preservation: *2016 Annual Report, Act 149 of 1988*, 2017.
- Pennsylvania Department of Conservation and Natural Resources (DCNR): *Landslides in Pennsylvania, Educational Series 9*, 2001.

The following locally generated documents were used in the development of this document:

- Franklin County Department of Emergency Services: *Hazard Mitigation Plan*, 2018.
- Franklin County Department of Emergency Services: *Strategic Plan*, 2016.
- Franklin County Forward: *The Comprehensive Plan for Franklin County, PA*, 2012.
- Franklin County: *Greenway and Open Spaces*, 2007.
- Franklin County: *Municipal Solid Waste Plan Update*, 2013.
- Franklin County: *Long-Range Transportation Plan 2013-2032*, 2013.
- Franklin County Area Development Corporation: *2023 Franklin County Profile*, 2023.

2. Community Profile

2.1. Geography and Environment

Franklin County is in the south-central region of the Commonwealth in the southern Pennsylvania portion of the Cumberland Valley and covers a land area of 772 square miles. A section of the Mason-Dixon Line makes up the southern boundary of Franklin County while its most northerly point stretches jaggedly one-fourth of the way across the Commonwealth to an even latitude with Harrisburg (see **Figure 2.1.1** below). The county is considered the dividing line between floral growth of the north and south.

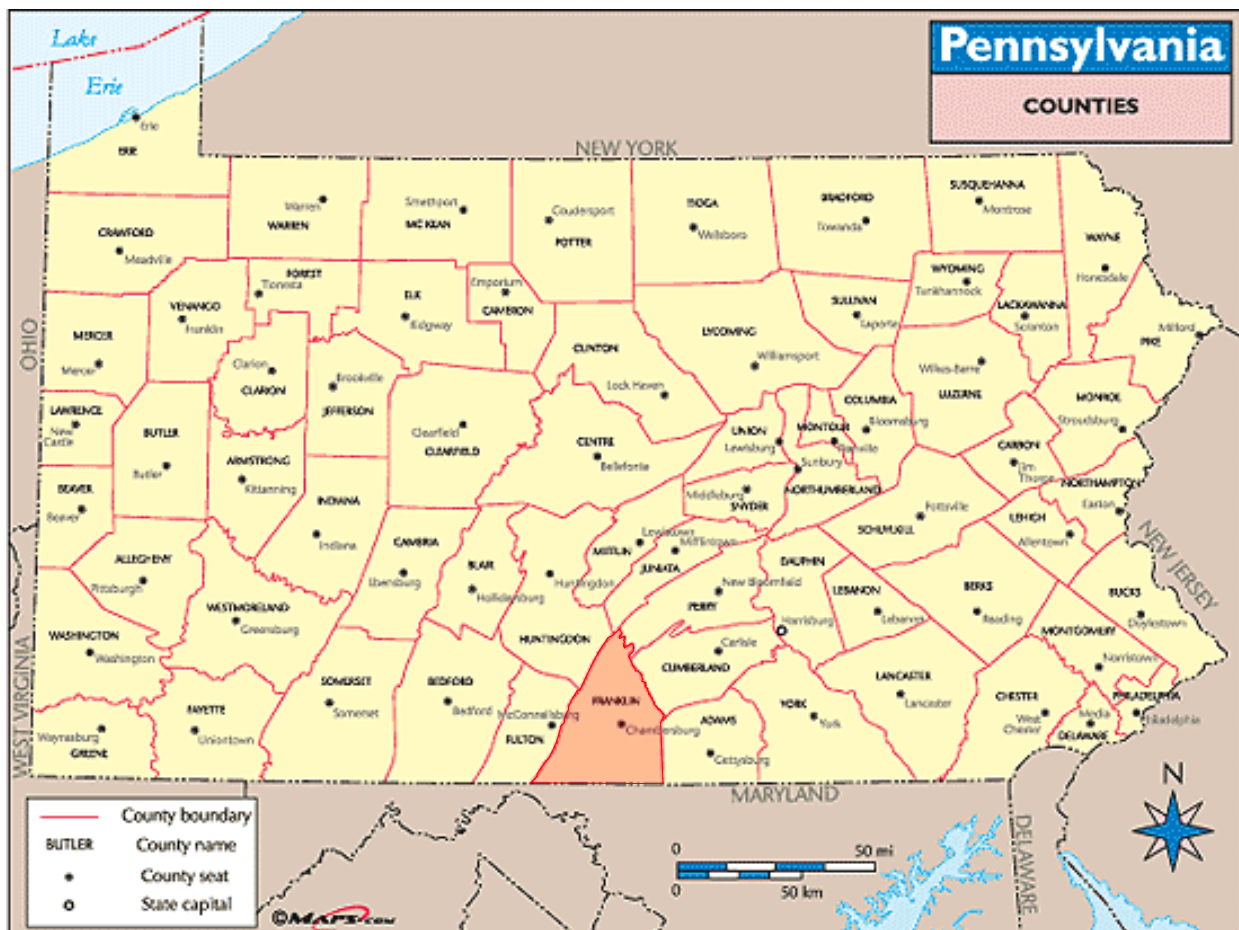


Figure 2.1.1: The Geography of Franklin County

Franklin County is bordered by Fulton, Huntingdon, Juniata, Perry, Cumberland, and Adams Counties in Pennsylvania. On our southern border, we are bounded by Washington and Frederick Counties in Maryland.

The county is supported by 4 watersheds: Conococheague-Opequon, Lower Juniata, Lower Susquehanna-Swataara, and the Monocacy. **Figure 2.1.2** below illustrates where these watersheds are located in the county.

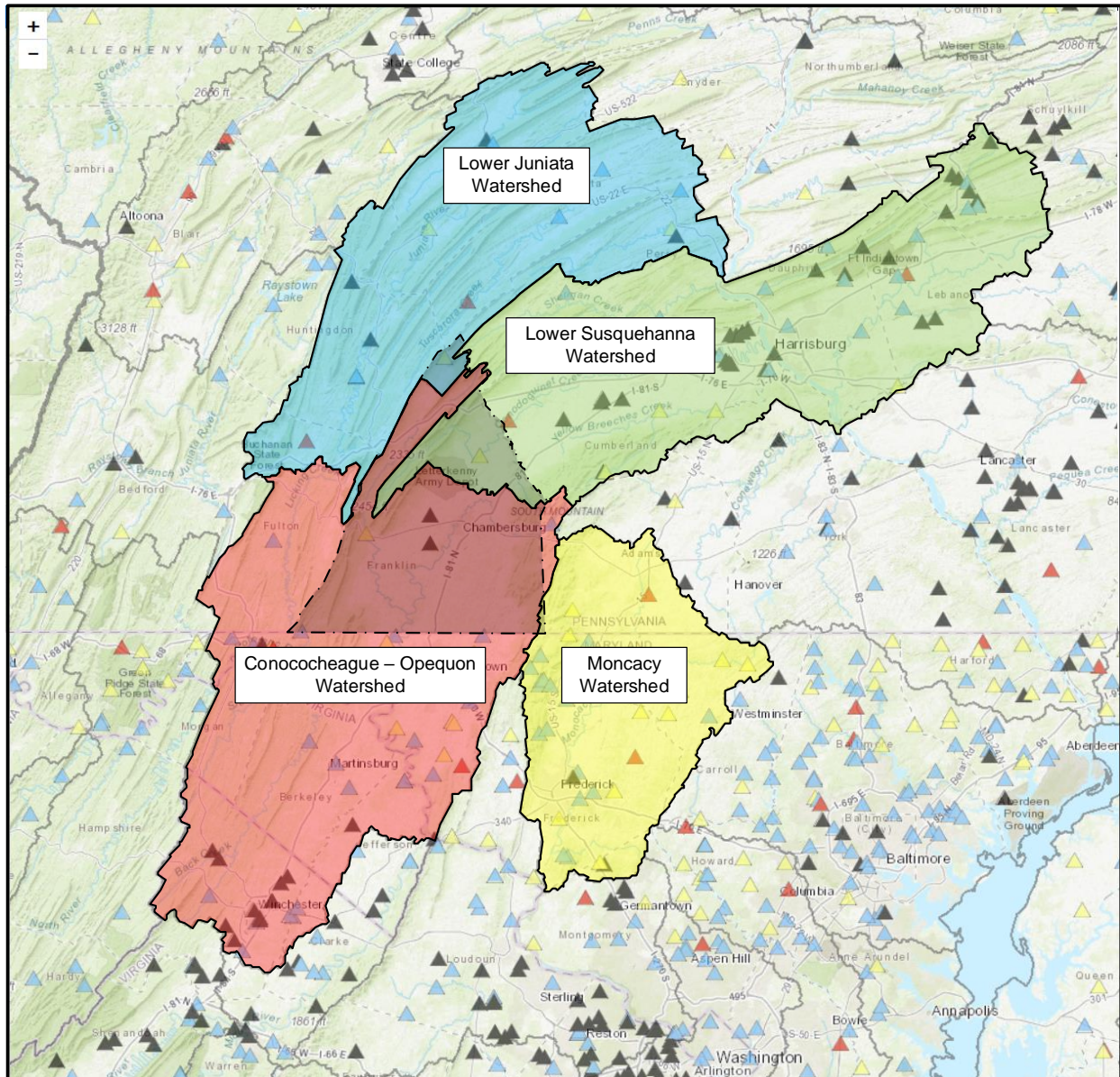


Figure 2.1.2: Franklin County Watersheds¹

These watersheds support two larger watershed basins in the region, the Potomac and Susquehanna Basins. The Conococheague Creek (both branches), Little Cove Creek, Licking Creek, Tuscarora Creek, Back Creek, Antietam Creek, and their tributaries all drain to the Potomac River Watershed Basin. The Conodoguinet Creek, and its tributaries, drain to the Susquehanna River Watershed Basin. Both of these basins eventually drain to the Chesapeake Bay, a critical natural resource in the mid-Atlantic region.

Higher quality streams tend to be located along the eastern and western border regions, in more mountainous, less developed areas. The impaired streams and warm water streams are in the

¹ USGS

central, valley portion of the county, in areas with the highest level of development (See **Figure 2.1.3**).

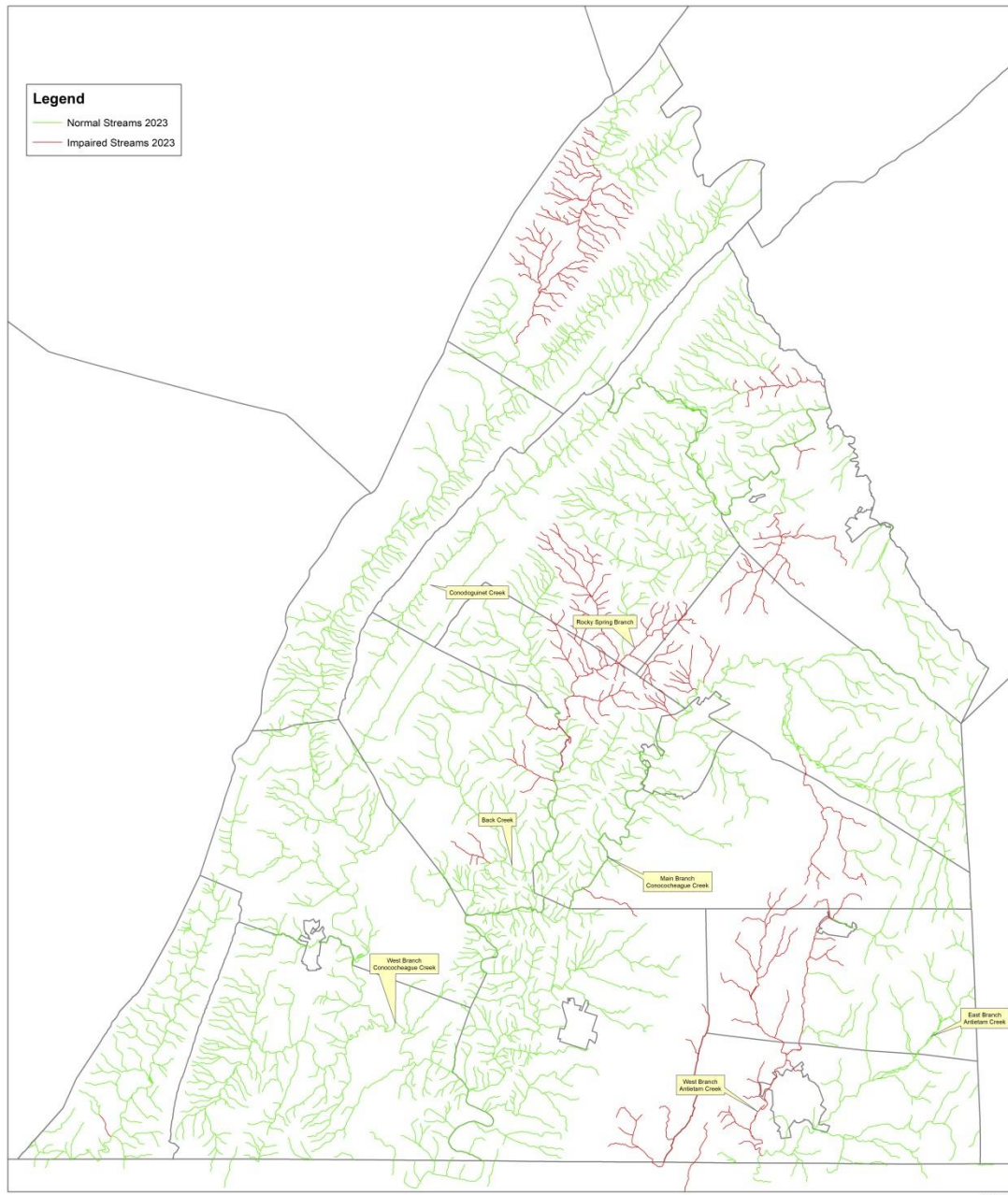


Figure 2.1.3: Franklin County Water Resources, including Impaired Streams (2023)²

There are a total of 1,696 miles of streams in Franklin County, with approximately 609 miles considered impaired. **Table 2.1.1** below lists the main causes of the stream impairment in the county. Siltation is the number one cause of stream impairment in the county, but there are several other factors that combine to negatively impact the natural environment.

² DEP, 2023

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Impairment	Definition
Siltation / Suspended Solids / Turbidity	Water becomes dirty as a result of fine mineral particles in the water
Nutrients / Organic Enrichment-Low Dissolved Oxygen	Excessive nitrogen and phosphorous in the stream/creek
Water-Flow Variability / Flow Alterations / Other Habitat Alterations	Changes in hydraulic regime caused by water releases and increased surface runoff from impervious surfaces
Cause Unknown	Impairment cause has not been determined
Oil and Grease	Oil and/or Grease has polluted the stream/creek

Table 2.1.1: Causes of Impaired Streams in Franklin County³

Table 2.1.2 below lists the causes and number of miles of streams impacted by that causal factor or combination of causal factors in the county.

Impairment Cause(s)	Miles of Streams in Franklin County
Siltation / Suspended Solids / Turbidity	372.35
Nutrients / Organic Enrichment-Low Dissolved Oxygen	155.04
Water-Flow Variability / Flow Alterations / Other Habitat Alterations	72.98
Cause Unknown	5.46
Oil and Grease	3.05
Total	608.88

Table 2.1.2: Impaired Stream Miles by Cause in Franklin County⁴

Interstate Highway 81 and the Pennsylvania Turnpike (Interstate 76) transit through Franklin County's boundaries (see **Figure 2.1.4**). Two rail lines also cross through Franklin County, along with several sidings and spur lines (see **Figure 2.1.5**). In addition, several pipelines, which provide key hydrocarbons for the eastern seaboard, transit Franklin County (see **Figure 2.1.6**).

³ DEP, 2022

⁴ DEP, 2022

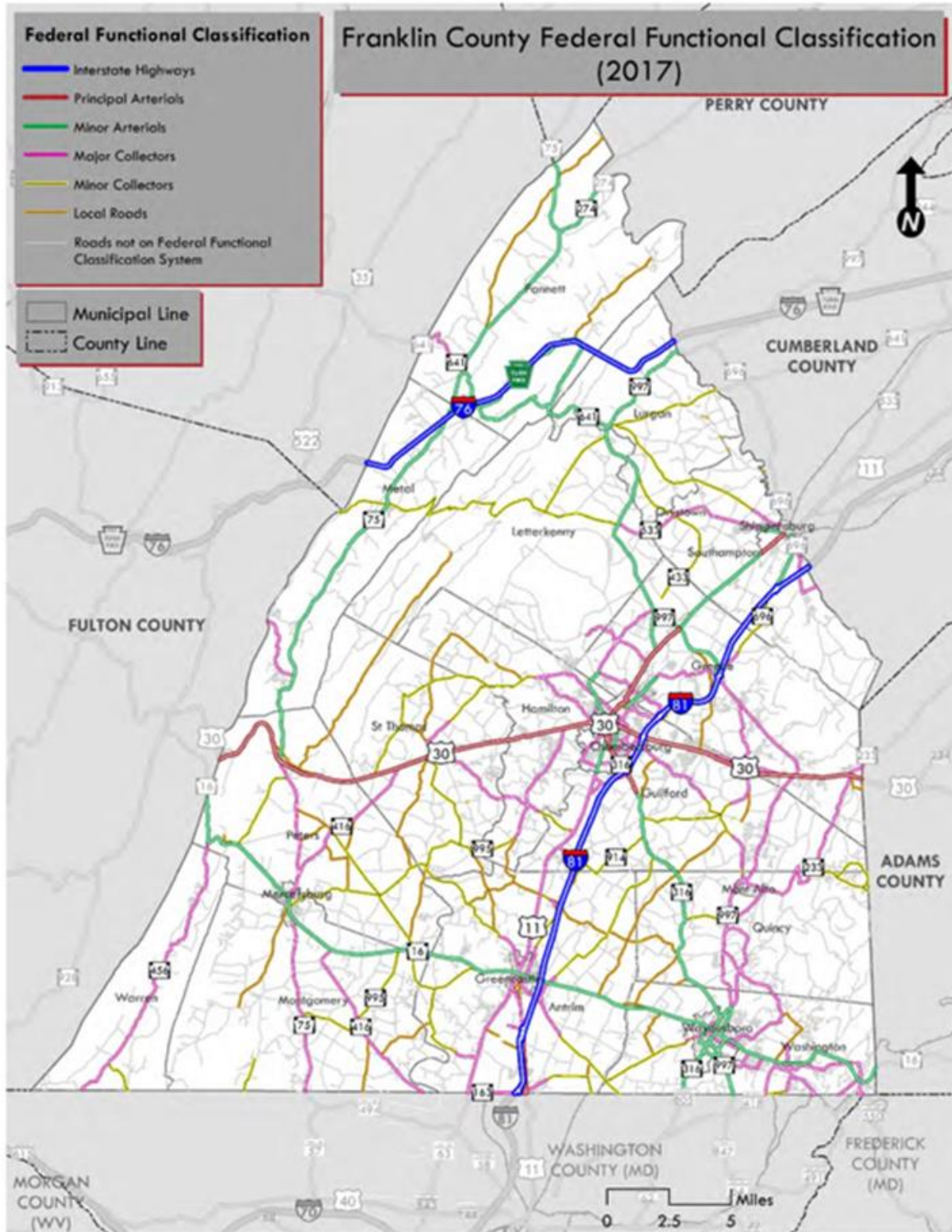


Figure 2.1.4: Highway Network in Franklin County

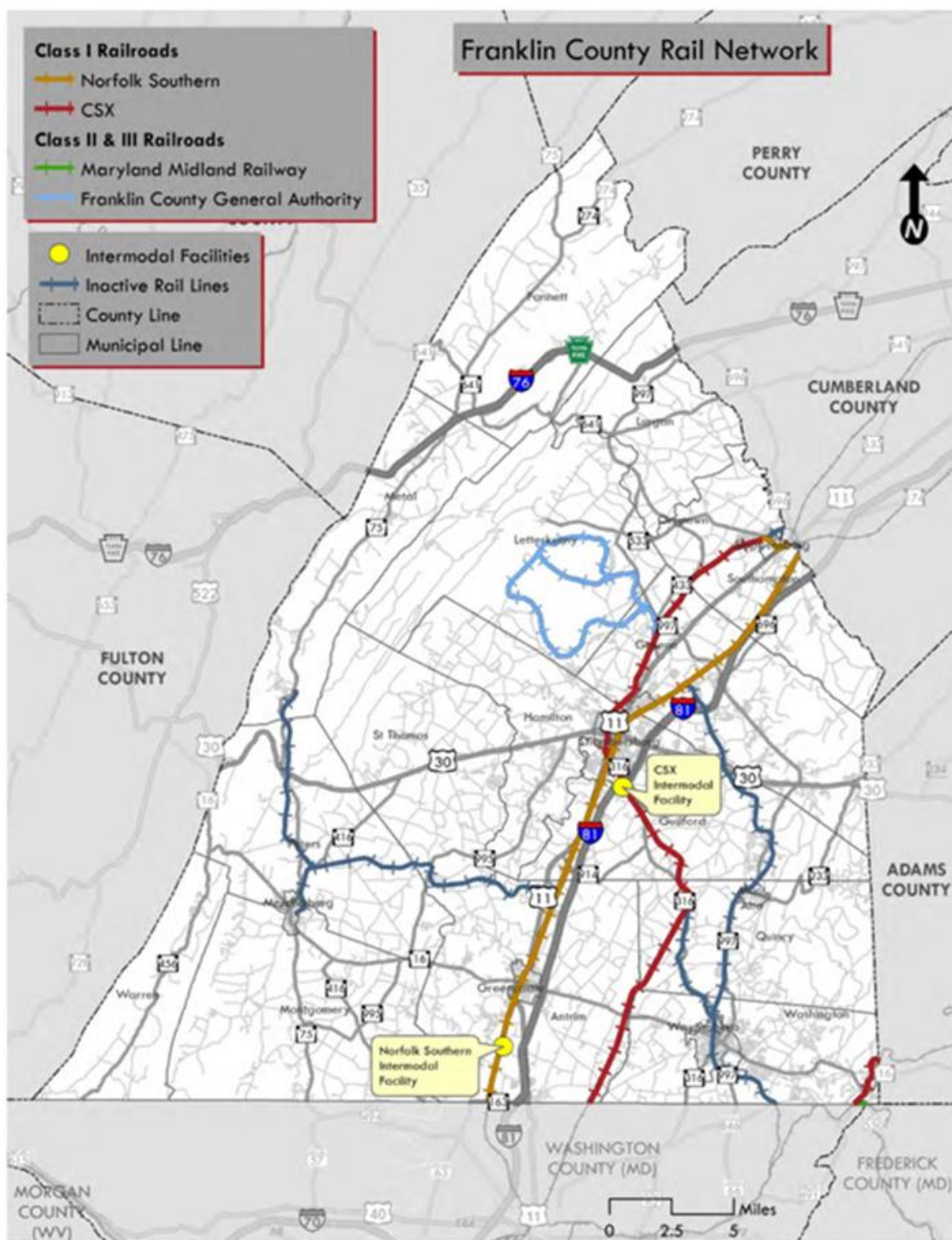


Figure 2.1.5: Railway Network in Franklin County

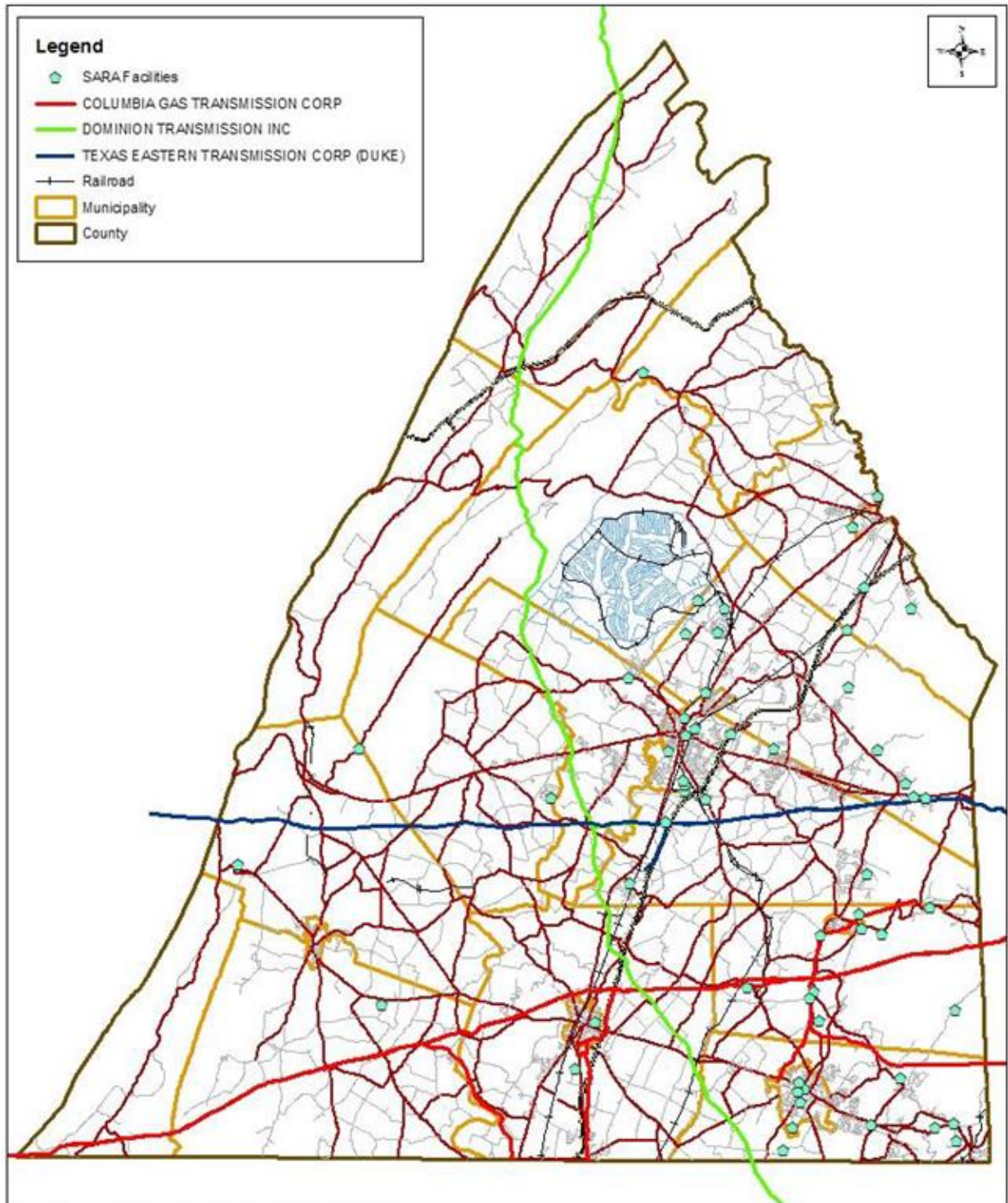


Figure 2.1.6: Pipeline Network in Franklin County

Franklin County supports a strong agriculture industrial base, with agricultural receipts ranking 4th in the Commonwealth. The county has worked with the Commonwealth since 1990 to ensure permanent protection of agricultural land through the purchase of easements. Franklin County is ranked 13 in the number of individual farms under easement and 9 in the total number

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of acres protected in Pennsylvania. As of 2022, 149 farms comprising 18,719 acres were protected; in addition, approximately 105,155 acres are within Agricultural Security Areas⁵ (see **Figure 2.1.7** below).

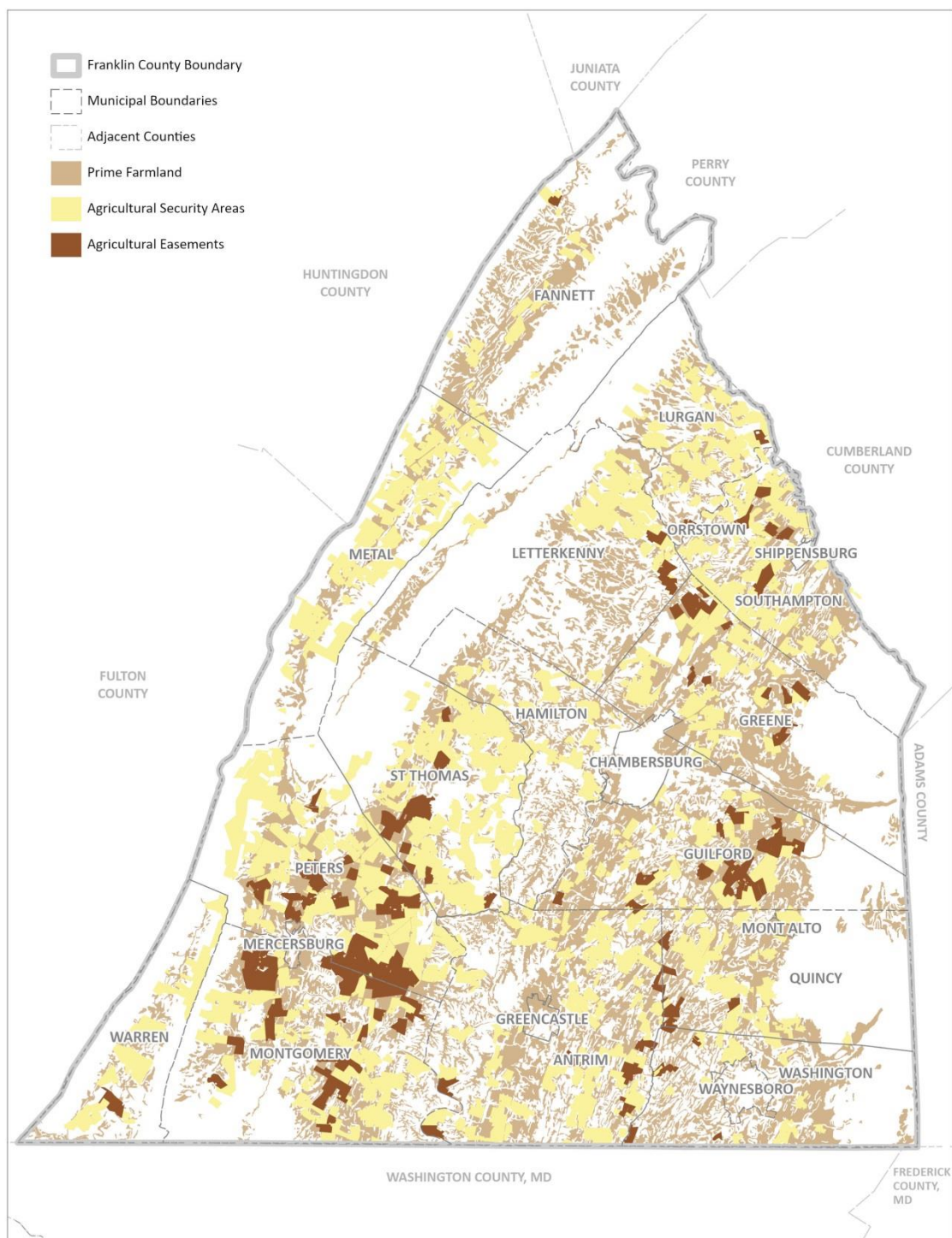


Figure 2.1.7: Franklin County Agricultural Resources⁶

⁵ Franklin County Planning Department, 2023

⁶ Franklin County GIS Department, 2023

Franklin County has many recreational assets, including the Appalachian Trail, Tuscarora Trail, Cumberland Valley and Chambersburg Rail-Trails, Iron Horse Trail, three State parks, the Tuscarora, Buchanan, and Michaux State Forests (see **Figure 2.1.8** below), numerous State Game Lands, as well as several renowned trout fishing streams and dozens of local community parks; which together provide a variety of opportunities for biking, hiking, hunting, fishing, boating, wildlife viewing, and other pastimes.

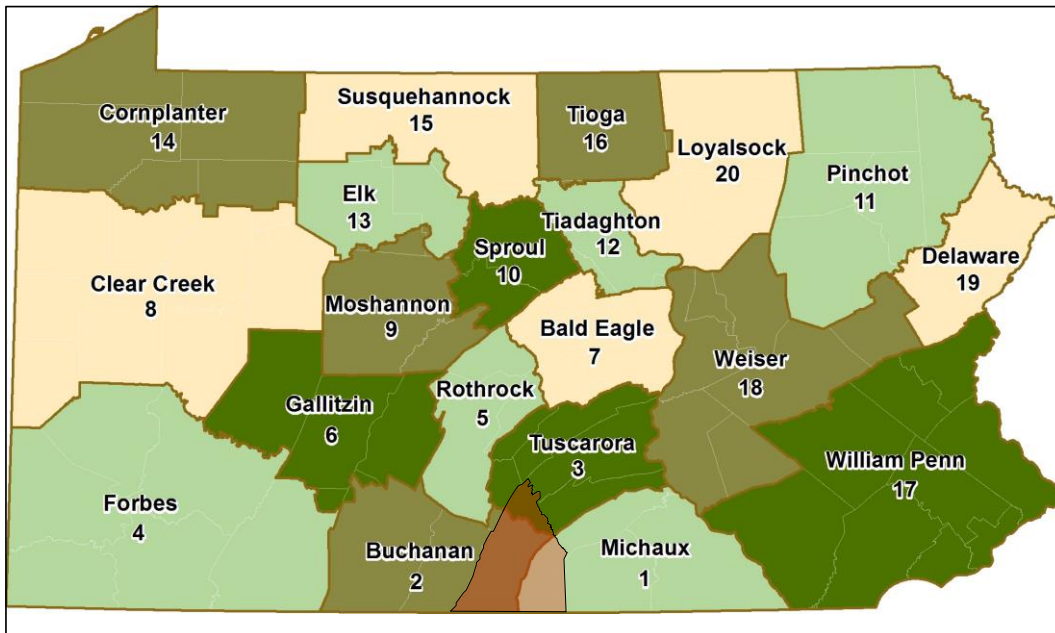


Figure 2.1.8: State Forests in Franklin County

Wilson College in Chambersburg, Penn State University-Mont Alto Campus, and Mercersburg Academy are the leading educational institutions, with Shippensburg University located along the northern border of Franklin County.

2.2. Community Facts

Originally part of Lancaster County (1729), then York County (1749), then Cumberland County (1750), Franklin County became an independent jurisdiction on September 9, 1784, relatively soon after the end of the American Revolutionary War. It is named in honor of Founding Father Benjamin Franklin.

The county has historically been an agricultural community with development concentrated in Chambersburg, Greencastle, Mercersburg, Shippensburg, and Waynesboro. The county has maintained its agricultural economy and landscape as well as many of its historic structures. There are 63 landmarks listed on the National Register of Historic Places for Franklin County including bridges, farms, homes and historic districts⁷.

⁷ United States Department of Interior, 2017

Chambersburg, the county seat, holds a distinction as the only northern town to be destroyed by the Confederate Army during the Civil War. On July 30, 1864, Brigadier General John McCausland and 2,800 Confederate cavalymen entered Chambersburg and demanded \$100,000 in gold or \$500,000 in greenbacks in retaliation for Union Army actions in the Shenandoah Valley earlier in the war. The residents of Chambersburg failed to raise the ransom, and McCausland ordered his men to burn the town. Very few structures were left standing after the raid, two of note were the Masonic Temple and the Old Jail.

2.3. Population and Demographics

Franklin County is made up of 7 boroughs and 15 townships. **Figure 2.3.1** below shows the layout of the county and location of the municipalities.

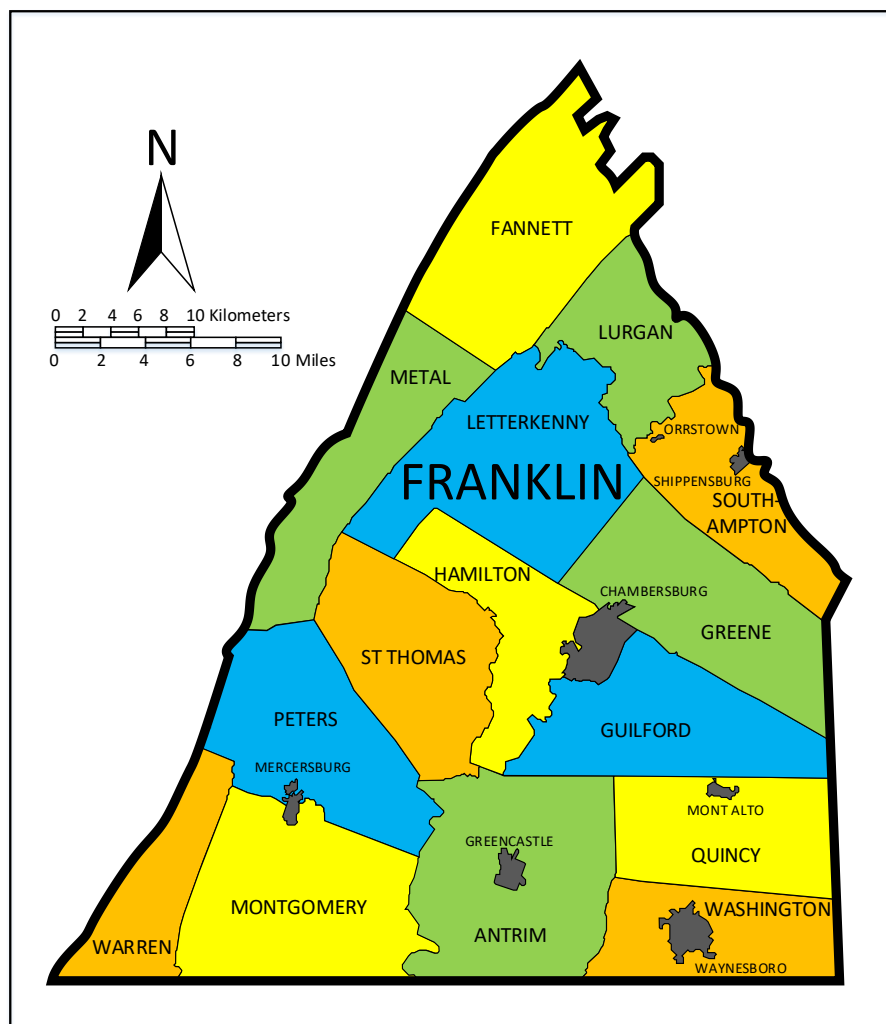


Figure 2.3.1: Franklin County Municipal Map

Figure 2.3.2 represents the population of each of these municipalities as tallied by the 2020 US Census.

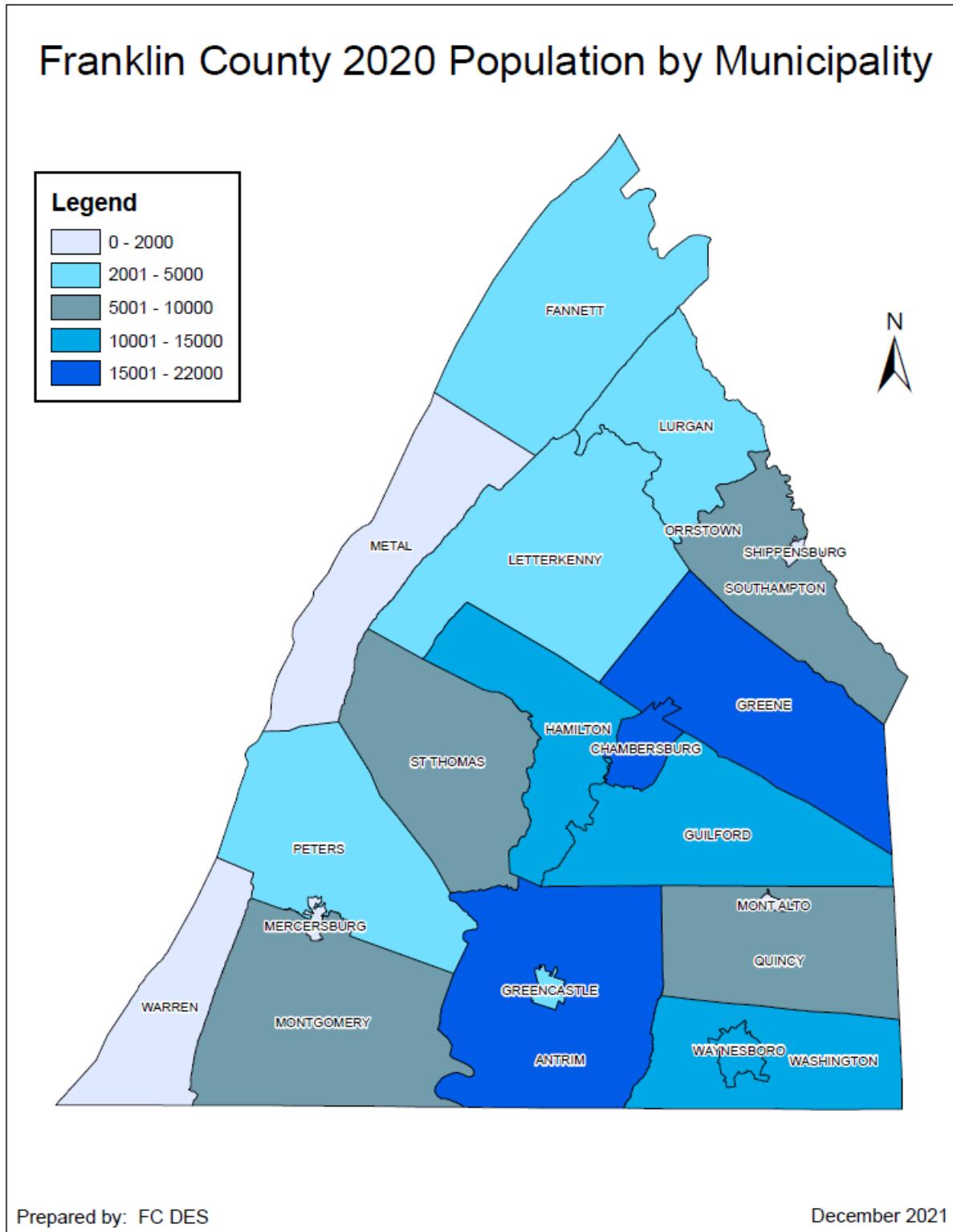


Figure 2.3.2: Franklin County Municipalities and 2020 Census Population

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Population within the county grew 20.64% from 2000 to 2020 (see **Table 2.3.1** below).

Municipality	Population 1970	Population 1980	Population 1990	Population 2000	Population 2010	Population 2017 est	Population 2019 est	Population 2020
Antrim Township	7,378	9,326	10,107	12,504	14,893	15,596	15,768	15,778
Chambersburg Borough	17,315	16,174	16,647	17,862	20,268	20,872	21,143	21,903
Fannett Township	1,640	2,016	2,309	2,309	2,548	2,608	2,601	2,483
Greencastle Borough	3,293	3,679	3,600	3,722	3,996	4,017	3,986	4,251
Greene Township	9,504	11,470	11,930	12,284	16,700	17,659	17,898	18,436
Guilford Township	9,291	10,567	11,893	13,100	14,531	14,825	14,866	14,627
Hamilton Township	4,921	6,504	7,745	8,949	10,788	11,135	11,125	11,374
Letterkenny Township	1,419	1,960	2,251	2,074	2,318	2,383	2,377	2,462
Lurgan Township	1,649	1,986	2,026	2,014	2,151	2,177	2,170	2,207
Mercersburg Borough	1,727	1,617	1,640	1,540	1,561	1,543	1,532	1,507
Metal Township	1,205	1,576	1,612	1,721	1,866	1,870	1,853	1,768
Mont Alto Borough	1,532	1,592	1,395	1,357	1,705	1,740	1,729	1,580
Montgomery Township	3,221	4,252	4,558	4,949	6,116	6,239	6,230	5,740
Orrstown Borough	262	247	220	231	262	262	260	214
Peters Township	3,838	4,060	4,090	4,251	4,430	4,438	4,414	4,462
Quincy Township	5,264	5,792	5,704	5,846	5,541	5,482	5,451	5,318
St. Thomas Township	3,931	5,711	5,861	5,775	5,935	6,010	6,005	5,917
Shippensburg Borough	1,364	885	1,003	1,119	1,076	1,106	1,100	1,163
Southampton Township	3,292	4,604	5,484	6,138	7,987	8,540	8,495	8,566
Warren Township	262	269	310	334	369	371	368	328
Washington Township	8,514	9,616	11,119	11,559	14,009	14,624	14,770	14,897
Waynesboro Borough	10,011	9,726	9,578	9,617	10,568	10,879	10,886	10,951
County Totals	100,833	113,629	121,082	129,255	149,618	154,376	155,027	155,932

Table 2.3.1: Summary of Population Statistics for Franklin County and Incorporated Communities

Growth is expected to be between 8% and 16% through 2025, with the population of the county expected to be between 161,000 and 173,000. This reflects an increase of between 12,000 and 23,000 citizens from 2010 Census figures with the share of population expected to be within traditional working ages remaining relatively constant (see **Table 2.3.2**).

Age	% of Population in 2000	% of Population in 2010	% of Population in 2020
<5	6.3%	7.4%	5.5%
5 to 19	20.3%	18.7%	18.0%
20 to 34	18.4%	17.7%	19.5%
35 to 54	29.0%	26.5%	24.6%
55 to 74	18.3%	21.3%	24.4%
>74	7.7%	8.4%	7.9%

Table 2.3.2: Franklin County Age Groups as a Percentage of Household Population (2000/2010/2020)⁸

⁸ US Census Bureau, 2023

Based on general county-wide build-out analysis, to fully develop the available land, the County would have approximately 300,000 households.

2.4. Land Use and Development

Franklin County's fertile farmland produces major agricultural crops, but dairy and poultry farming are productive and well-financed industries as well. Industrially, Franklin County ranks high, having a variety of manufacturing and distribution facilities which complement the agricultural enterprises and the result is a stable and sound economy.

Additionally, Franklin County is the host to a major military installation. The Letterkenny Army Depot is located primarily in Letterkenny Township, but extends into both Greene and Hamilton Townships. The Depot consists of nearly 18,000 acres and is the second largest employer in Franklin County, only surpassed by WellSpan Health.

The facilities at Letterkenny are used to conduct maintenance, modification, storage, and demilitarization operations on tactical missiles, ammunition, tactical wheeled vehicles, material handling equipment (7.5-ton cranes), mobile kitchen trailers, and mine resistant armored vehicles.

These missions fall under the oversight of the Department of Defense (DoD) and all operations, to include hazard mitigation, are governed by federal regulations and procedures. The county's relationship with the Letterkenny Army Depot is as a coordination partner for first responder services and resource acquisition only. Therefore, all aspects of incident management and hazard mitigation are handled through these federal channels, due to the sensitive nature of the programs and processes undertaken at the Depot.

Tables 2.4.1 and **2.4.2** below capture the major industries and top employers in Franklin County respectively. In addition, significant truck and intermodal transportation facilities, including intermodal sites for both CSX and Norfolk Southern Rail Roads, are part of the infrastructure supporting the economy of Franklin County.

Industry	# Employees
Logistics/Warehouse	5,381
Manufacturing	4,951
Healthcare (WellSpan)	3,650
Federal (Letterkenny Army Depot)	2,683
Schools (Chambersburg area)	1,170
County Government	697
Total	16,610

Table 2.4.1: Major Industries in Franklin County (2023)⁹

⁹ Franklin County Area Development Corporation, 2023

Company/Organization	# Employees
WellSpan Health	3,650
Letterkenny Army Depot	2,683
Target Distribution Center #589	1,375
Chambersburg Area School District	1,170
Manitowoc Crane Group/Grove Crane	1,100
Procter & Gamble Northeast Mixing Center	850
Volvo Construction Equipment	780
Martin's Famous Pastry Shoppe	725
Franklin County Government	697
Ventura Foods	676
Total	13,706

Table 2.4.2: Top Employers in Franklin County (2023)¹⁰

Because of its famous Blue Ridge Mountains, Franklin County lends itself easily to the entertainment of vacationers and persons seeking rest and relaxation. There is not a river in the county but many streams afford an ample supply of water for the fertile limestone soil.

As of the most recent Comprehensive Plan update, pasture and grasslands comprise approximately 30% of the land within Franklin County, with another 14% being cultivated by row crops, resulting in over 44% of the land being classified as prime agricultural soil. Nearly 45% of the land within the county is forested, with the remaining land being utilized for residential, commercial, and transportation uses (see **Figure 2.4.1** below).

An initiative that has been taken to try to limit the impacts of Land Use changes on our agrarian economy is the county's participation in agricultural easement and security area programs sponsored by the state. As highlighted in **Section 2.1**, Franklin County has 149 farms comprising 18,719 acres protected; this is in addition to approximately 105,155 acres that lie within Agricultural Security Areas. The number of acres (+1,837 acres) and farms (+19 farms) in easement areas represent a 10.9% growth since being reported in the 2018 HMP; growth since being first reported in the 2014 HMP is 17.6%. The changes since 2018 result in a net gain of 2,590 acres of protected agricultural area.

A factor that naturally limits adverse Land Use changes is the presence of State Forests in and around our county that are protected from development. The Michaux State Forest on our Eastern flank, the Tuscarora State Forest on the Northern edge, and Pennsylvania State Game Lands #124 on the Western flank help protect the natural beauty of Franklin County.

¹⁰ Franklin County Area Development Corporation, 2023

However, it is inevitable that, to support population growth in our county, the current Land Use paradigm has to change. An update to the Franklin County Comprehensive Plan is currently underway and the HMP will be updated to capture the changes in the Land Use demographics to further identify trends.

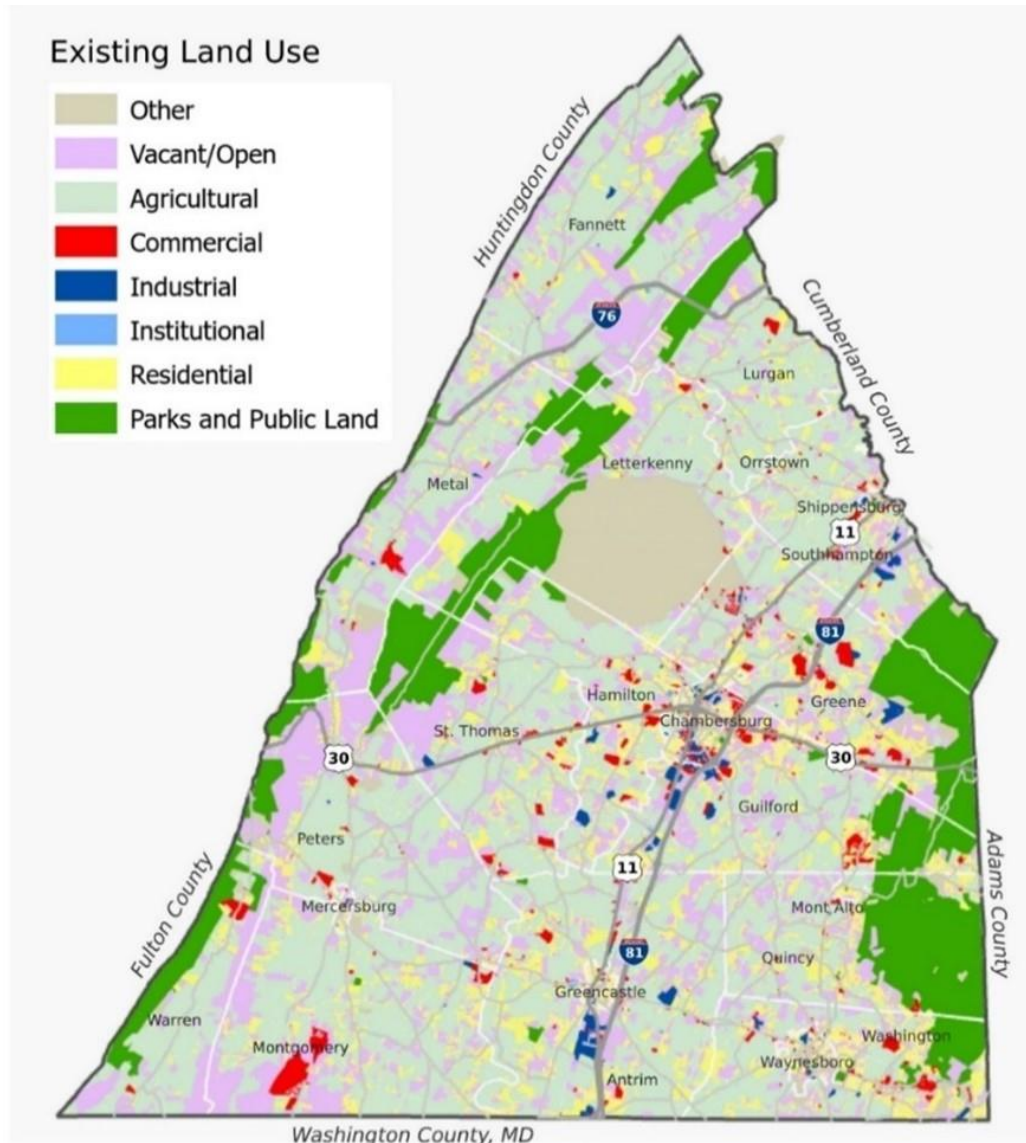


Figure 2.4.1: Franklin County Land Use (2023)¹¹

Franklin County has 72,711 land parcels in total, of which 52,137 are residential and 2,823 parcels are considered commercial properties. The remaining parcels are land that is not classified as residential or commercial and would include vacant land as well as the state forest and game lands that are within the county. See **Table 2.4.3** below for the breakout of residential and commercial parcels per municipality and their associated estimated values. These estimates only account for the value of the land and structures per parcel. It does not account for loss of contents, function loss, or displacement costs. Additionally, the costs associated with the

¹¹ Franklin County Planning Department, 2023

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facilities located on the Letterkenny Army Depot are not included in these numbers because the tax assessment database used to calculate the values does not include the federal properties of the Letterkenny Army Depot. However, they are included in the 1% flood loss numbers in **Section 4.3.7, Table 4.3.7.5.1** in the Letterkenny Township loss estimates.

Municipality	Total # of Residential Parcels	Assessed Value Of Residential Parcels (1961 \$)	Estimated Value of Residential Parcels (2022 \$)	Total # of Commercial Parcels	Assessed Value Of Commercial Parcels (1961 \$)	Estimated Value of Commercial Parcels (2022 \$)	Estimated Value of All Residential and Commercial Parcels (2022 \$)
Antrim Township	5314	\$135,255,850	\$1,424,244,101	168	\$51,387,920	\$541,114,798	\$1,965,358,898
Chambersburg Borough	6157	\$107,714,330	\$1,134,231,895	891	\$91,685,010	\$965,443,155	\$2,099,675,050
Fannett Township	1080	\$18,231,280	\$191,975,378	35	\$763,760	\$8,042,393	\$200,017,771
Greencastle Borough	1456	\$31,435,010	\$331,010,655	153	\$8,248,010	\$86,851,545	\$417,862,201
Greene Township	6617	\$151,841,700	\$1,598,893,101	277	\$33,494,820	\$352,700,455	\$1,951,593,556
Guilford Township	5658	\$140,983,360	\$1,484,554,781	303	\$56,661,870	\$596,649,491	\$2,081,204,272
Hamilton Township	3804	\$7,165,410	\$75,451,767	135	\$7,675,140	\$80,819,224	\$156,270,992
Letterkenny Township	1189	\$4,951,570	\$52,140,032	37	\$1,295,990	\$13,646,775	\$65,786,807
Lurgan Township	814	\$7,451,030	\$78,459,346	25	\$769,790	\$8,105,889	\$86,565,235
Mercersburg Borough	695	\$8,262,320	\$87,002,230	53	\$3,840,850	\$40,444,151	\$127,446,380
Metal Township	997	\$14,268,620	\$150,248,569	35	\$955,660	\$10,063,100	\$160,311,668
Mont Alto Borough	563	\$8,673,160	\$91,328,375	18	\$1,026,990	\$10,814,205	\$102,142,580
Montgomery Township	2337	\$54,387,700	\$572,702,481	32	\$3,817,010	\$40,193,115	\$612,895,596
Orrstown Borough	72	\$919,120	\$9,678,334	3	\$60,960	\$641,909	\$10,320,242
Peters Township	1794	\$34,359,930	\$361,810,063	72	\$2,612,320	\$27,507,730	\$389,317,793
Quincy Township	1850	\$4,704,595	\$49,539,385	50	\$6,154,350	\$64,805,306	\$114,344,691
Shippensburg Borough	467	\$9,295,030	\$97,876,666	34	\$2,130,160	\$22,430,585	\$120,307,251
Southampton Township	2634	\$59,078,720	\$622,098,922	87	\$26,866,190	\$282,900,981	\$904,999,902
St Thomas Township	1999	\$40,476,180	\$426,214,175	77	\$3,187,030	\$33,559,426	\$459,773,601
Warren Township	172	\$3,346,200	\$35,235,486	2	\$80,920	\$852,088	\$36,087,574
Washington Township	5431	\$129,333,700	\$1,361,883,861	248	\$18,682,390	\$196,725,567	\$1,558,609,428
Waynesboro Borough	1037	\$17,943,430	\$188,944,318	88	\$5,585,080	\$58,810,892	\$247,755,210
County Totals	52,137	\$990,078,245	\$10,425,523,920	2,823	\$326,982,220	\$3,443,122,777	\$13,868,646,696

Table 2.4.3: Franklin County Parcel Breakdown and Value (2022)

With the continued economic and population growth, we have seen an increase in commercial subdivision applications and building permits. **Table 2.4.4** shows this growth trend over the last 15 years. Due to changes in how and where building permit data was maintained in previous years, the data is obtained was not available for all of the years that were requested. Even though the data is not in defined increments, the data still clearly shows that new commercial building permits have seen and increase since a low of 10 back in 2010. It is important to keep in mind that the Great Recession occurred at the end of 2007 and continued until the summer of 2009; as a result, Franklin County's development numbers do show a noticeable drop that lasted at least through 2010. Commercial development has rebounded since that time and is not expected to decrease in the near future.

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Municipality	2007		2010		2016		2020		2022	
	Lots	Permits	Lots	Permits	Lots	Permits	Lots	Permits	Lots	Permits
Antrim Township	8	2	14	0	4	2	7	1	4	4
Chambersburg Borough	20	23	11	5	23	3	7	2	8	1
Fannett Township	1	1	0	0	3	1	1	1	0	0
Greencastle Borough	0	3	2	0	0	0	1	0	0	1
Greene Township	0	4	2	1	3	2	4	2	2	1
Guilford Township	4	9	3	1	0	0	2	0	5	1
Hamilton Township	8	0	0	0	0	0	2	1	1	4
Letterkenny Township	1	0	0	0	1	0	0	0	0	0
Lurgan Township	3	0	0	0	0	0	0	0	6	0
Mercersburg Borough	0	1	1	0	0	0	0	0	1	0
Metal Township	0	3	0	0	0	0	0	0	0	0
Mont Alto Borough	0	1	0	0	0	0	0	0	0	0
Montgomery Township	0	1	2	1	2	2	0	1	0	0
Orrstown Borough	0	0	0	0	0	0	0	0	0	1
Peters Township	2	1	3	1	0	2	1	0	2	0
Quincy Township	0	4	1	0	0	3	0	2	2	1
Shippensburg Borough	0	1	0	0	0	0	0	1	0	1
Southampton Township	1	0	0	0	1	0	0	0	0	0
St Thomas Township	4	1	0	1	6	5	3	3	0	2
Warren Township	0	0	0	0	0	0	0	3	1	1
Washington Township	2	3	3	0	3	0	3	1	1	0
Waynesboro Borough	4	4	2	0	2	6	9	0	0	0
County Totals	58	62	44	10	48	26	40	18	33	18

Table 2.4.4: Franklin County New Commercial Lots and Building Permits (2007-2022)

Critical facilities and infrastructure as defined by Franklin County include: government buildings, schools, nursing homes, childcare facilities, county jail, hospitals, medical/urgent care facilities, utility points/sub-stations, storage tanks, dams, water/waste water treatment facilities, radio towers, communications towers, airports/airstrips, fire/EMS/law enforcement facilities, and Superfund Amendments and Reauthorization Act (SARA) facilities. This definition was chosen to highlight the locations where mass evacuation may be needed and identify the emergency support infrastructure required to respond to impending disasters. This does not mean other locations in the county are not important, it is simply a fundamental prioritization required for initial response and recovery operations. **Table 2.4.5** shows the number of Critical Facilities located in each municipality in the county.

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Municipality	Tier II/SARA	Fire/EMS/Law	Government Bldg	Education	Childcare	Jail	Nursing/Group Home	Hospital	Medical/Urgent Care	Utility Pts	Storage Tanks	Dams	Water Treatment	Wastewater Treatment	County Radio Tower	Cell/Other Tower	Airport/Airstrip	Municipal Totals
Antrim Township	16	1	1	6	17	0	1	0	1	39	5	0	0	2	0	3	1	93
Chambersburg Borough	24	7	7	12	16	0	7	1	6	14	3	1	0	1	1	7	0	107
Fannett Township	4	1	2	6	1	0	1	0	0	6	1	2	0	0	0	6	1	31
Greencastle Borough	3	1	3	5	5	0	0	0	0	4	2	0	1	0	0	1	0	25
Greene Township	12	6	5	5	25	1	7	0	0	40	15	4	1	0	1	4	4	130
Guilford Township	22	4	7	11	14	0	9	0	0	28	4	1	0	0	0	8	0	108
Hamilton Township	3	0	2	3	12	0	3	0	0	21	3	0	0	0	0	4	0	51
Letterkenny Township	2	1	2	0	1	0	1	0	0	6	1	2	0	1	1	11	0	29
Lurgan Township	2	0	1	9	0	0	0	0	0	3	0	3	0	0	1	4	1	24
Mercersburg Borough	3	2	2	2	1	0	0	0	0	3	2	0	0	1	0	0	0	16
Metal Township	1	1	1	3	1	0	0	0	0	6	1	1	0	1	0	5	0	21
Mont Alto Borough	1	2	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	7
Montgomery Township	4	0	1	1	1	0	0	0	0	15	0	5	0	2	0	2	0	31
Orrstown Borough	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Peters Township	3	0	1	3	2	0	0	0	0	12	2	2	1	2	1	5	0	34
Quincy Township	3	3	4	8	2	0	3	0	0	13	9	2	1	2	0	3	0	53
Shippensburg Borough	1	1	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	6
Southampton Township	10	0	2	3	5	0	2	0	0	16	2	0	0	1	1	3	0	45
St Thomas Township	4	1	1	1	5	0	2	0	0	9	3	1	0	2	0	3	0	32
Warren Township	0	0	1	0	0	0	0	0	0	2	0	0	0	0	1	0	0	4
Washington Township	8	2	2	1	9	0	0	0	0	19	2	5	0	2	0	8	0	58
Waynesboro Borough	8	5	1	9	11	0	4	1	2	7	2	0	0	1	0	4	0	55
County Totals	134	38	48	92	129	1	40	2	9	265	57	29	4	18	7	81	7	961

Table 2.4.5: Franklin County Critical Facilities (2023)

2.5. Data Sources and Limitations

In order to assess the vulnerability of different jurisdictions to the hazards, data on past occurrences of damaging hazard events was gathered. For a number of historic natural-hazard events, the National Climatic Data Center (NCDC) database was utilized. NCDC is a division of the US Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA). Information on hazard events is compiled by NCDC from data gathered by the National Weather Service (NWS), another division of NOAA. NCDC then presents it on their website in various formats. The data used for this plan came from the US Storm Events database, which “documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce”¹².

While NCDC data is comprised of natural hazards information, additional information focused more on human-made hazards was obtained through the Franklin County Computer Aided

¹² NOAA, 2006

Dispatch (CAD) System database. When applicable, the CAD incident database spanning approximately the last 16 years (beginning on 4/27/2007), was used in the 2023 plan update.

Every attempt was made to provide consistency in reported data and in data sources. Data from the US Census Bureau 2020 Decennial Census was used throughout this plan. In addition, the age of housing units reported in **Sections 4.3.21.5 & 4.3.24.5**, comes from the 2016-2020 American Community Survey because the Decennial Census no longer collects this information. As new Census data becomes available, it will be incorporated into this HMP.

Additional information used to complete the risk assessment for this plan was taken from various government agency and non-government agency sources. Those sources are cited where appropriate throughout the plan with full references listed in **Appendix A – Bibliography**. It should be noted that numerous GIS datasets were obtained from the Pennsylvania Spatial Data Access (PASDA) website (<http://www.pasda.psu.edu/>). PASDA is the official public access geospatial information clearinghouse for the Commonwealth of Pennsylvania. PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of Administration, Office for Information Technology, Geospatial Technologies Office and the Penn State Institutes of Energy and the Environment of the Pennsylvania State University.

The Franklin County Graphical Information Systems (GIS) Department provided the GIS dataset that was used as an inventory of structures throughout the county in this plan. This dataset included a generalized structure type which has been incorporated into this plan where appropriate.

The flood hazard area data used in this plan is the Effective Countywide Digital Flood Insurance Rate Map (DFIRM), released January 18, 2012. This data provides flood frequency and elevation information used in the flood hazard risk assessment. Other GIS datasets including large and small streams, ponds, municipalities, roads, land use, and critical infrastructure were provided by the Franklin County GIS Department.

Due to the time and cost involved, the HMPT chose not to utilize HAZUS for the hazard analysis portion of the update. Instead, the Franklin County GIS Department used databases available to them to complete analysis on the various hazards throughout the plan as appropriate. The 100-year chance of flood was analyzed as follows:

The Franklin County GIS Department conducted an analysis of the structures impacted by the 1% annual chance flood hazard (100-year flood hazard). Utilizing the following geographic layers – 1% annual chance flood hazard areas (FEMA), parcels (Franklin), and building centroids (Franklin) – the Department identified those at risk structures impacted by the flood hazard. Using those at risk structures, we were able to determine the associated structures' valuation data maintained by the county Tax Assessment Office.

Using the following formula, (building market value * 10.53), the structures valuation was converted from 1961 (base year) market value to 2022 market value.

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The estimated loss for a 1% annual chance flood hazard was summarized by municipality and classified by structure land use¹³.

This HMP evaluates the vulnerability of the county's critical facilities. For the purposes of this plan, critical facilities are those entities that are essential to the health and welfare of the community, including facilities that would be needed to serve as shelters in an emergency. The criteria for selection of these facilities are outlined in **Section 2.4, Table 2.4.5** of this plan. There are a total of 961 critical facilities in the county. **Table 2.4.5** above summarizes the critical facilities in Franklin County by type and by municipality.

¹³ Franklin County GIS, 2023

3. Planning Process

3.1. Update Process and Participation Summary

The Hazard Mitigation Planning Team (HMPT) exists to develop and coordinate the hazard mitigation planning process. For the 2023 HMP update process, the Franklin County Department of Emergency Services (FCDES) took the responsibility of being the lead agency for the HMP. To begin the HMP update process, FCDES emailed meeting invitations to all municipal officials and Local Emergency Management Coordinators (EMCs) in each municipality as well as the County Commissioners, adjacent county EMC's, and other stakeholders from federal, state, and local agencies, non-profits, private industry, health care, and advocacy organizations. **Section 3.2** provides a discussion of the HMPT as well as a table of members and the organization or jurisdiction they represented.

Municipal officials and the other stakeholders continue to receive notifications regarding all HMP meetings. A brief description of each meeting that was held can be found in **Section 3.3**. In addition, meeting minutes, sign-in sheets, and briefings related to planning events are available in **Appendix B** of this document.

In order to obtain information from municipalities and stakeholders, forms and surveys were distributed and collected throughout the planning process. All municipalities were asked to send at least one representative to attend each meeting and to answer pertinent information requests via email or survey for the HMP update. **Table 3.1.1** lists each municipality along with their specific participation and contributions to the planning process. In total, all 22 of our 22 municipalities participated in the planning process, thus achieving 100% participation. Sign-in sheets for each meeting with the names and organizations of participants are available in **Appendix B** along with all completed forms and surveys available in **Appendix D**.

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MUNICIPALITY	HMP CONTACT PERSON	Requirements Met (Y/N)					
		A.	B.	C.	D.	E.	F.
		Planning Process	Hazard Identification & Risk Assessment	Mitigation Strategy	Plan Review, Evaluation & Implementation	Plan Adoption	State Requirements
Antrim Township	Rodney Eberly	Y	Y	Y	Y		
Chambersburg Borough	Charles (Chuck) Nipe	Y	Y	Y	Y		
Fannett Township	Kenneth North	Y	Y	Y	Y		
Greencastle Borough	Richard Wertman	Y	Y	Y	Y		
Greene Township	Shawn Corwell	Y	Y	Y	Y		
Guilford Township	Frank Hobbs	Y	Y	Y	Y		
Hamilton Township	Gary Himes	Y	Y	Y	Y		
Letterkenny Township	Matthew Kendall	Y	Y	Y	Y		
Lurgan Township	Dale Myers	Y	Y	Y	Y		
Mercersburg Borough	Dusty Stoner	Y	Y	Y	Y		
Metal Township	David A. Leab	Y	Y	Y	Y		
Mont Alto Borough	Jeremy Fogelsonger	Y	Y	Y	Y		
Montgomery Township	Gregory Weller	Y	Y	Y	Y		
Orrstown Borough	P. Ted Reed	Y	Y	Y	Y		
Peters Township	J Samuel Rotz IV	Y	Y	Y	Y		
Quincy Township	Joel Oyler	Y	Y	Y	Y		
Shippensburg Borough	David Lindenmuth	Y	Y	Y	Y		
Southampton Township	Roger Hall	Y	Y	Y	Y		
St Thomas Township	Don Eshelman Jr	Y	Y	Y	Y		
Warren Township	Jason Lander	Y	Y	Y	Y		
Washington Township	James Meek Jr	Y	Y	Y	Y		
Waynesboro Borough	Michael Bock	Y	Y	Y	Y		

Table 3.1.1: 2023 HMP Update Municipal Participation Summary

Table 3.1.2 below lists the critical dates of coordination for the 2018 HMP Update. It does contain the more structured meeting sessions that are further described in **Section 3.3**, but it also highlights some of the more informal sessions where HMP information was shared and solicited.

Franklin County Hazard Mitigation Plan – 2023

Date	Description of Event
8/16/2022	HMP Steering Committee Kick-off Meeting
12/15/2022	HMP Team Kick-off Meeting at FCPSTC (Risk Assessment)
12/20/2022	Last Hazard Assessment Survey Received
2/23/2023	HMP Team Capabilities Assessment Meeting
3/23/2023	HMP Team Workshop at FCDES (Mitigation Solutions)
3/24/2023	Mitigation Actions Received from Greene Township
4/11/2023	Mitigation Actions Received from Hamilton Township
4/17/2023	Mitigation Actions Received from Fannett Township
4/17/2023	Mitigation Actions Received from Lurgan Township
4/19/2023	Mitigation Actions Received from Letterkenny Township
4/19/2023	Mitigation Actions Received from Metal Township
4/19/2023	Mitigation Actions Received from Washington Township
4/20/2023	HMP Team Meeting at FCDES (Mitigation Solutions and Community Lifelines)
4/20/2023	Mitigation Actions Received from Chambersburg Borough
4/20/2023	Mitigation Actions Received from Montgomery Township
4/20/2023	Mitigation Actions Received from St Thomas Township
4/25/2023	Mitigation Actions Received from Peters Township
4/27/2023	Mitigation Actions Received from Warren Township
5/8/2023	Mitigation Actions Received from Guilford Township
5/9/2023	Mitigation Actions Received from Waynesboro Borough
5/23/2023	Mitigation Actions Received from Mercersburg Borough
5/23/2023	Mitigation Actions Received from Mont Alto Borough
5/23/2023	Mitigation Actions Received from Shippensburg Borough
5/25/2023	Mitigation Actions Received from Antrim Township
6/7/2023	Mitigation Actions Received from Greencastle Borough
6/7/2023	Mitigation Actions Received from Orrstown Borough
6/7/2023	Mitigation Actions Received from Quincy Township
6/26/2023	HMP Team & Public Meeting at FCDES (Draft Plan)

Table 3.1.2: Important Coordination Dates for 2023 Franklin County HMP Update

3.2. The Planning Team

The 2023 Franklin County HMP Update was led by a Hazard Mitigation Plan Steering Group (HMPSG). **Table 3.2.1** below lists the HMPSG membership.

Franklin County Hazard Mitigation Plan – 2023

Member	Organization	Position
David Keller	Franklin County Commissioners	Chair Commissioner
John Flannery	Franklin County Commissioners	Commissioner
Robert Ziobrowski	Franklin County Commissioners	Commissioner
Carrie Gray	Franklin County Commissioners	County Administrator
John Thierwechter	Franklin County Commissioners	Assistant County Administrator
Mary K Seville	Franklin County DES	Assistant Director
Steven Thomas	Franklin County Planning Department	Director
Teresa Beckner	Franklin County Fiscal Department	Director
Jodi Martin	Franklin County Tax Services	Director
Tiffany Bloyer	Franklin County Human Resources	Director
Alexis Pennings	Franklin County Risk Management	Risk Manager
Jerry Houpt	Franklin County DES	Hazardous Materials Specialist
Jacob Stoner	Franklin County DES	Operations & Training Officer
Rochelle Barvinchack	Franklin County DES	Planning Coordinator
Sarah Benshoff	Franklin County ITS	GIS Specialist
Joanne Sheets	Franklin County DES	Administrative Assistant
Kim Mills	Franklin County DES	Administrative Officer

Table 3.2.1: Hazard Mitigation Plan Steering Group (HMPSG) Membership

In order to represent the diverse stakeholders in the county, the HMPSG developed a diversified list of potential HMPT members. Invitations were extended not only to municipal and county officials but also to adjacent jurisdictions, non-profit organizations, major employers, and federal, state, and county agencies with an interest or focus on hazard mitigation and emergency management. The HMPSG worked throughout the process to plan and hold meetings, collect information, and conduct public outreach.

The stakeholders listed in **Table 3.2.2** served on the 2023 HMPT, demonstrating their commitment to actively participate in the planning process by attending meetings, completing assessments, surveys, and worksheets, and/or submitting comments. The HMPT consisted of county and local officials including municipal supervisors and council members, emergency management coordinators, major employers/institutions, and the general public.

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Member	Organization	Member	Organization	Member	Organization	Member	Organization
Barry Aldridge	Letterkenny Army Depot	Matthew Gordon	Waynesboro Area School District	Jason Miller	FC DES	Justin Sholes	Franklin County Career & Technology Center
John Alleman	Antrim Twp	Carrie Gray	County Administrator	Terry Miller	Franklin Co. CareerTech	William Shupe	Columbia Gas of PA
Chris Ardinger	Tuscarora Area Chamber of Commerce	Jonathan Guseman	NWS State College	Kim Mills	FC DES	Marsha Jean Smith	Red Cross
Vernon Ashway	Washington Township	Roger Hall	Southampton Twp EMC	Makenzie Moser	FC CART	Ray Smith	RACES President
Justin Atkins Atkins	NRCS Chambersburg	Dr. Lura Hanks	Greencastle Antrim School District	Jackie Mowen	Waynesboro Chamber of Commerce	Shayne Smith	First Energy
William August	Shippensburg Area School District	R. David Hays	Washington County, MD	Charles Myers	Letterkenny Twp	Will Smith	FC DES
Sheena Baker	FC Communications Coordinator	Latasha Hershey	Orrstown Borough Secretary	Kevin Myers	Greene Twp Asst. EMC	Tim Sollenberger	St. Thomas Twp
Brian Barton	Fulton County EMA/911	Gary Himes	Hamilton Twp EMC	Dale Myers III	Lurgan Twp EMC	James Sourbier	FC Police Chiefs Association
Stefanie Basalik	Montessori School	Frank Hobbs	Guilford Twp EMC	David Newell	Scotland Campus	Jason Stains	Waynesboro Borough
Jennifer Becknell	Antrim Township	Steve Hoffman	Cumberland Co. Planning	News Chronicle	Newspaper	Matthew Steinbugl	National Weather Service
Teresa Beckner	FC Fiscal Department	Eric Holtzman	Waynesboro Area School District	Chuck Nipe	Chambersburg Borough	Bryan Stevenson	FCDES
Rodney Benedick	Tuscarora School District	Jerry Houpt	FC DES	Gregory Noll	South Central Task Force	Jeffrey Stonehill	Chambersburg Borough
Sarah Benschhoff	FC GIS Department	Ann Hull	FC Historical Society	Ken North	Fannett Twp EMC	Dave Stoner	Franklin County Conservation District
Robert Bingaman	PennDOT	M. Hykes	PADOT	Georgia O'Donnell	Fannett Twp	Dusty Stoner	Mercersburg Borough EMC
Bitner, Douglas E.	FC EMS Council	Randy Kane	Greencastle-Antrim School District	Anthony Ogburn	RACES	Jacob Stoner	FC DES
Warren Bladen	Adams County EMC	Dave Keller	County Commissioner	Jeffrey Ott	Letterkenny Army Depot	Chad Stover	GASD
Tiffany Bloyer	FC Human Resources Department	Lori Kemper	Adams Electric Cooperative	Alexis Pennings	Franklin Co. Risk Management	Anna Swailes	Metal Township
Michael Bock	Waynesboro Borough EMC	Matt Kendall	Letterkenny Township EMC	Angie Petersheim	Shalom Christian Academy	Ernie Szabo	PEMA
Bob Boyd	Lurgan Twp	David Kline	First Energy Corporation	Ron Pezon	Chambersburg Electric Company	Rob Then	PEMA Central Area Director
Scott Brown	Shippensburg Chamber of Commerce	Tod Kline	Waynesboro Area School District	Kevin Plasterer	Shippensburg Borough	John Thierwechter	Assistant County Administrator
Katherine Buck	Wilson College	Kelly Knepper	Chambersburg Boro EMC	Robert Povlich	LEAD	Steven Thomas	FC Planning Director
Gary Carter	Chambersburg Area School District	Patricia Koczek	Mont Alto Borough	Melissa Price	Mercersburg Borough	Joe Thompson	Huntingdon County EMC
Steve Christian	Chambersburg Chamber of Commerce	Jason Lander	Warren Twp EMC	Public Opinion	Newspaper	Jill Turner	Wellspring
Don Clapper	Guilford Twp	Madalyn Lander	Warren Twp	Quincy Township	Quincy Twp	Greene Twp	Greene Twp
Shawn Corwell	Greene Twp	Laura Laucks	PEMA	Mari Radford	FEMA	Eric Varner	Letterkenny Twp EMC
Debby Cunningham	Greencastle-Antrim Chamber of Commerce	David Leab	Metal Twp EMC	Record Herald	Newspaper	Leslie Walter	Salvation Army
Kathy Durf	Southampton Twp	Todd Leiss	PA Turnpike	Paul T. Reed	Orrstown Borough EMC	Allen Weaver	Juniata County EMC
Rodney Eberly	Antrim Township	David Lindenmuth	Shippensburg Borough EMC	Mike Rife	Montgomery Twp	Sharon Weigle	USDA FSA
Kevin Eck	First Energy	Bill Little	FC LEPC	Jeffrey Rockwell	Hamilton Twp	Greg Weller	Montgomery Twp EMC
Don Eshleman	St. Thomas Twp EMC	Emilee Little	Greencastle Borough	Todd Ross	Valley Rural Electric	Rich Wertman	Greencastle Borough EMC
Farnier, Dan B	Wellspring	Bob Manahan	Greencastle Borough	Sam Rotz	Peters Twp EMC	Allen White	Red Cross
Donald Farr	Letterkenny Army Depot	Jodi Martin	FC Tax Services	Cori Seilhamer	FC MH/ID/EI	Dr. Kurt Widmann	Chambersburg Area School District
John Flannery	County Commissioner	Matt McCullough	FEMA	Mary K. Seville	FCDES	Dr. Tara Will	Fannett Metal School District
Richard Fultz	Perry County EMC	Quentin McDowell	Mercersburg Academy	Justin Shaulis	Cumberland County	Loretta Witkowski	Corpus Christi
Mark Garling	Mont Alto Borough EMC	Jim Meek	Washington Twp EMC	Joanne Sheets	FCDES	Mike Zeger	Quincy Twp
Amy Garvin	Cumberland Valley Christian School	Miller, Anne	Penn State Mont Alto	Shively, Robert	Cumberland County EMC	Bob Ziobrowski	County Commissioner
Jeffrey Geesaman	Washington Twp					Anthony M (Tony) Zollo (US)	LEAD EMC

Table 3.2.2: Franklin County 2023 Hazard Mitigation Planning Team (HMPT)

3.3. Meetings and Documentation

The following meetings were held to complete the HMP Update. All invitations and agendas for these meetings, where applicable, are included in **Appendix C**. All meeting documentation and sign-in sheets for these meetings are included in **Appendix B**.

August 16, 2023: Internal County Kickoff Meeting held at the Franklin County Department of Emergency Services to discuss scope, schedule, project goals, invitees, available resources, and planning standards. This was the foundation meeting of the HMPSG. The HMPSG approved the initial hazard identifications for the county, the survey content, and release of the Municipal Hazard Threat Assessment Surveys. Three additional threats were added for this update. Municipalities were encouraged to add any new threats they deemed applicable.

December 15, 2022: Community Kick-Off Meeting/Risk Assessment Public Meeting was held at the Franklin County Public Safety Training Center (FCPSTC) to introduce the project and local stakeholders and inform community representatives of the HMP update process and schedule. The Hazard Vulnerability Assessment (HVA) Methodology was briefed and discussed by the HMPT. This included the initial threat survey responses and assessment of threat priorities. The Community Lifelines were introduced and reviewed by the HMP Team.

February 23, 2023: HMP Capabilities Assessment Meeting was held at the Franklin County Department of Emergency Services (FCDES). We discussed a survey that needed to be sent out to municipalities to collect information on their planning and regulatory capabilities. The team agreed to make the new suspense coincide with the Capabilities Survey date of 17 March, 2023. The results of the Municipal Threat Assessments were reviewed by the HMP Team as well.

March 23, 2023: HMP Update Meeting was held at FCDES and staff provided information and status on the Hazard Mitigation Plan Update. Members were briefed on the status of the Municipal Capabilities Surveys and associated Mitigation Actions. Members were informed that the Mitigation Surveys will need to be reviewed and returned by 13 April 2023.

April 20, 2023: HMP Update Meeting was held to discuss the status of the Municipal Capabilities surveys and submission of Mitigation Actions. There has been some delay in response for both the Capabilities Surveys and the Mitigation Strategies, so the County EMC and Emergency Services Planning Coordinator agreed to make one final push to get his information collected. This meeting also included a more detailed review of the Community Lifeline integration in the HMP.

June 26, 2023: HMP Draft Plan Public Meeting was held at FCDES to present the draft plan to HMPT members and the public. The Planning Coordinator gave a quick status update on the plan as well as municipal participation. Capabilities Assessments and Mitigation Strategy updates were received from all 22 municipalities, resulting in 100% plan participation for the 2023 HMP. The draft plan is available for review on the Franklin County website. A review of the Mitigation Strategy section was done at the meeting for HMPT members and others in attendance. HMPT members are encouraged to review the plan and to take a look at the mitigation ranking to ensure that they are in agreement with the ranking values for their

particular projects. Public comments will be accepted until July 28, 2023. Once that is complete, the plan will be submitted to PEMA for review by July 31, 2023. Members were asked for their input on a future HMP meeting. The normal meeting would be scheduled to occur in August, but members opted to hold off on scheduling that meeting until after plan approval by PEMA and FEMA, which would likely occur in the fall.

3.4. Public & Stakeholders Participation

Each stakeholder was given multiple opportunities to participate in the HMP update process through invitations to meetings, reviews of risk assessment results, submission of mitigation actions, and an opportunity to comment on the draft HMP update. The three tools listed below were distributed with meeting invitations, at meetings, and on the Franklin County website, and FCDES Facebook & Twitter pages to solicit information, data, and comments from local municipalities, other key stakeholders, and the general public. These tools can be viewed in **Appendix E**. Responses to these worksheets and surveys are included in **Appendix D**.

- **Hazards Risk Survey:** Capitalizes on local knowledge to evaluate the change in the frequency of occurrence, magnitude of impact, and/or geographic extent of existing hazards, and allows communities to evaluate hazards not previously profiled using the 2013 Pennsylvania Standard List of Hazards.
- **Capability Assessment/NFIP Survey:** Collects information on local planning, regulatory, administrative, technical, fiscal, political, and resiliency capabilities that can be included in the countywide mitigation strategy. Also collects information on each municipality's level of participation in the NFIP. Due to the sensitive nature of some of the responses to this survey, these results are **Confidential** and not included in **Appendix D**. A full report of all municipal survey responses is kept at FCDES and can be reviewed upon request with a valid need to know. However, a roll-up analysis of this data is included in **Section 5** of this HMP update.
- **Mitigation Action Form:** Allows communities to propose mitigation actions for the HMP and include information about each action such as a lead agency/department, implementation schedule, priority, estimated costs, and potential funding source(s).

Community participation and comments were encouraged throughout the planning process. Information was emailed out to stakeholders through the entire planning process, including presentations, agendas, minutes, and worksheets from each meeting as well as promulgating meeting dates, times, and important announcements. The stakeholder group included municipalities and community groups that represent our underserved and socially vulnerable populations in the county; this also includes those identified as disadvantaged in the Climate and Environmental Justice Screening Tool. Those areas/populations include: Fannett and Metal Townships (Housing and Transportation needs), a portion of Chambersburg Borough (Workforce Development needs), and a portion of Waynesboro Borough (Waste & Wastewater needs). The public was also encouraged to participate in the process by means of postings on the FCDES Facebook and Twitter pages. Additionally, all draft document links were emailed to all stakeholders and were also posted on the Franklin County Webpage and notices were sent out

via social media for public review and comment. No public comments were received during the planning process or the public comment period. All community outreach and meeting notifications can be viewed in **Appendix C**.

3.5. Multi-Jurisdictional Planning

Table 3.1.1 above documents jurisdictional presence at the meetings described in **Section 3.3** and other involvement from each jurisdiction throughout the planning process. Each municipality was emailed or phoned to invite or encourage attendance to all meetings and, if email addresses were available, receive email reminders prior to each session. Individual meetings were held to give jurisdictions that previously had been unable to physically attend any other meeting an opportunity to participate. Surveys and forms were emailed to jurisdictions and follow-up reminders via phone or email were sent. A copy of all invitations and Public Outreach documentation for the HMP Update can be seen in **Appendix C**. All worksheets and surveys can be viewed in **Appendix E**, with associated municipal responses in **Appendix D**. **Appendix B** contains the meeting documentation and sign-in sheets.

In the end, all 22 of our municipalities participated in the update of this plan, thus achieving 100% participation. In this planning effort, the HMPSG made sure we reached out to all stakeholders to get their buy-in and support in all aspects of this plan. In addition, we were able to provide a completed Hazard Vulnerability Assessment (HVA) for each municipality to use in updating their Emergency Operations Plans (EOPs). This in turn increases the integration and utilization of this plan in emergency planning across the county. All partners' interests were heard, assessed, and integrated into this update. All HMPT members should be very proud of their efforts in making this plan come to life.

4. Risk Assessment

4.1. Update Process Summary

The risk assessment provides a factual basis for activities proposed by the county in our mitigation strategy. Hazards that may affect Franklin County are identified and defined in terms of their location and extent, magnitude of impacts, previous events, and probability of future events.

The 2018 Franklin County HMP profiled 15 natural hazards in the County: Drought, Earthquake, Extreme Temperatures, Flood/Flash Flood/Ice Jam, Hailstorm, Hurricane/Tropical Storm/Nor'easter, Invasive Species, Landslide, Lightning, Pandemic/Infectious Disease, Radon, Subsidence/Sinkholes, Tornado/Windstorm, Wildfire, and Winter Storm. Nine (9) human made hazards were also identified: Civil Disturbance, Dam Failure, Environmental Hazards (Hazardous Materials Releases), Mass Food and Animal Feed Contamination, Nuclear, Terrorism, Transportation Accident, Urban Fire and Explosion, and Utility Interruption (Infrastructure Failure). In our Aug 16, 2022 kick-off meeting with the Hazard Mitigation Plan Steering Group (HMPSG), we decided to review all 33 hazards identified in the Pennsylvania 2020 Standard State HMP for applicability to Franklin County and assess them individually instead the larger groups as previously done. A recommendation was made and approved in that meeting to address 27 of the 33 identified hazards for Franklin County, resulting in the addition of 3 hazards during this plan update – Building Collapse, Cyber Terrorism & Opioid Addiction Response. The hazards deemed non-applicable were Coal Mining, Coastal Erosion, Conventional Oil/Gas Well, Gas/Liquid Pipeline, Levee Failure, and Unconventional Wells.

Following hazard identification and profiling, a vulnerability assessment was conducted for each hazard to identify the impact of both natural and human-made hazard events on people, buildings, infrastructure, and the community, as appropriate. Each hazard is discussed in terms of its potential impact on individual communities, including the structures that may be at risk. This assessment allows the county and its municipalities to focus on and prioritize local mitigation efforts on areas that are most likely to be damaged or require early response to a hazard event. A vulnerability analysis was performed which identifies structures, critical facilities, and/or populations that may be impacted during hazard events and describes what events can do to physical, social, and economic assets. Depending upon data availability, assessment results consist of an inventory of vulnerable structures or populations. When available, potential losses were determined using historic data, data from the Franklin County GIS department, and structure assessed values.

Also included in this update are the FEMA National Risk Index numbers for each of the natural hazards. The FEMA National Risk Index Map was used to show a community's relative risk for a particular hazard using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience.

Finally, this section includes Community Lifelines information for each of the identified hazards. A lifeline enables the continuous operation of critical government and business functions and is essential to human health and safety or economic security. When disrupted, community lifelines

require intervention to stabilize them in order to enable all other aspects of society to function. FEMA has developed framework for an objectives-based response that helps to stabilize the Community Lifelines after a disaster. **Figure 4.1.1** identifies the FEMA Community Lifelines.



Figure 4.1.1: FEMA Community Lifelines

Impacts to the Community Lifelines for each hazard will vary depending on the type of hazard and the severity, but each hazard has been evaluated to determine potential impacts in order to be able to plan for and respond to incidents.

4.2. Hazard Identification

4.2.1. Table of Presidential Disaster Declarations

Presidential Disaster and Emergency Declarations are issued when it has been determined that state and local governments need assistance in responding to a disaster event. **Table 4.2.1.1** identifies 14 Presidential Disaster Declarations (DR) and 6 Presidential Emergency Declarations (EM) issued between 1972 through 2022 that have affected Franklin County. Future disaster

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declarations will be available for view on the FEMA website at: <https://www.fema.gov/disasters>. This was the most current data that was available when the plan was updated.

Declaration Number	Date	Event
DR-4618	September 2021	Remnants of Hurricane Ida
DR-4506	March 2020	COVID-19 Pandemic
EM-3441	March 2020	COVID-19 Pandemic
DR-4267	January 2016	Severe Winter Storm and Snowstorm
DR-4099	January 2013	Hurricane Sandy
EM-3356	October 2012	Hurricane Sandy
EM-3340	September 2011	Remnants of Tropical Storm Lee
DR-1898	April 2010	Severe Winter Storm
DR-1649	June 2006	Severe Storms, Flooding, and Mudslides
EM-3235	September 2005	Hurricane Katrina Evacuation
DR-1557	September 2004	Tropical Depression Ivan
EM-3180	March 2003	Snowstorm
DR-1120	June 1996	Flooding
DR-1093	January 1996	Flooding
DR-1085	January 1996	Blizzard
DR-1015	March 1994	Winter Storm, Severe Storm
EM-3105	March 1993	Severe Snowfall and Winter Storm
DR-523	October 1976	Severe Storms, Flooding
DR-485	September 1975	Severe Storms, Heavy Rains, Flooding
DR-340	June 1972	Tropical Storm Agnes

Table 4.2.1.1: Presidential Disaster and Emergency Declarations in Franklin County (1972-2022)

In addition to these federally declared events, 27 events warranted Gubernatorial Proclamations of Emergency. These events are listed in **Table 4.2.1.2** below.

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Declaration Number	Date	Event
2021-2	August 2021	Hurricane Ida
2021-1	February 2021	Severe Winter Weather
2020-2	December 2020	Severe Winter Weather
2020-1	March 2020	COVID-19 Pandemic
2019-1	January 2019	Severe Winter Weather
2018-3	July 2018	Rain and Flooding
2018-2	June 2018	Severe Weather
2018-1	January 2018	Opioid Crisis
2017-1	March 2017	Severe Winter Weather
2016-1	January 2016	Severe Winter Weather
2015-2	June 2015	Storms
2015-1	January 2015	Severe Winter Weather
2014-4	September 2014	State Trooper Emergency
2014-3	February 2014	Severe Winter Weather
2014-2	February 2014	Driver Hours Waived
2014-1	January 2014	Extended Prolonged Cold
2012-3	October 2012	Hurricane Sandy
2012-1	April 2012	Spring Storm
2011-2	August 2011	Hurricane Irene
2011-1	January 2011	Winter Storm/Winter Fuel Delivery
2010-2	December 2010	Winter Fuel Delivery
2010-1	February 2010	Winter Storms
2007-2	April 2007	Severe Storms
2007-1	February 2007	Winter Fuel Delivery
2006-2	September 2006	Tropical Depression Ernesto
2006-1	June 2006	Summer Floods
2004-2.3	September 2004	Hurricane Ivan

Table 4.2.1.2: Gubernatorial Proclamations in Franklin County (2004-2022)

4.2.2. Summary of Hazards

The Hazard Vulnerability Assessment describes each hazard's occurrence and the effects on the county. It also identifies the effects of natural or human-caused hazard events by estimating the exposure of people, buildings, and infrastructure to hazardous conditions.

The planning team started the assessment by reviewing the natural and man-made hazards identified in the Pennsylvania Hazard Mitigation Plan, dated Oct 2018. This plan identified 33 hazards that are prevalent in the state. A cursory review of these hazards was made to see if they were applicable to Franklin County. The team was able to identify six hazards (Coastal Erosion, Environmental Hazards - Coal Mining, Conventional Oil/Gas Well, Gas/Liquid Pipeline and Unconventional Wells, and Levee Failure) from this plan that are not a factor for our Community. The remaining hazards (27 in total) were deemed to have the potential to affect our county and were assessed for potential occurrence and impact. These hazards are listed in **Table 4.2.2.1** below.

Natural (N) and Man-made (M) Hazards	
Building Collapse (M)	Mass Food/Animal Feed Contamination (M)
Civil Disturbance (M)	Nuclear Incident (M)
Cyber Terrorism (M)	Opioid Addiction (M)
Dam Failure (M)	Pandemic/Infectious Disease (N)
Drought (N)	Radon Exposure (N)
Earthquake (N)	Subsidence/Sinkholes (N)
Environmental Hazards (M)	Terrorism (M)
Extreme Temperatures (N)	Tornado/Windstorm (N)
Flood, Flash Flood, Ice Jam (N)	Transportation Accident (M)
Hailstorm (N)	Urban Fire/Explosion (M)
Hurricane, Tropical Storm, Nor'easter (N)	Utility Interruption (M)
Invasive Species (N)	Wildfire (N)
Landslide (N)	Winter Storm (N)
Lightning Strike (N)	

Table 4.2.2.1: Summary of Natural and Man-made Hazard Threats to Franklin County

The definitions of these hazards to be assessed were provided in the 2018 Pennsylvania State Hazard Mitigation plan and are included in **Appendix E**.

4.3 Hazard Profiles

4.3.1 Building and Structure Collapse

Buildings and other engineered structures, including bridges, may collapse if their structural integrity is compromised, especially due to effects from other natural or human-made hazards. Older buildings or structures, structures that are not built to standard codes, or structures that have been weakened are more susceptible to be affected by these hazards.

Adherence to modern building codes can lower a building's risk to collapse. Building codes – developed by the International Code Council (ICC) in partnership with its members – provide minimum standards to safeguard homes, buildings and other structures. These codes specify the minimum legal design and construction requirements for structural integrity, construction materials, and fire protection.

4.3.1.1 Location and Extent

Most buildings constructed after 1961 in the Commonwealth were built under modern building codes as adopted in the Pennsylvania Uniform Construction Code. According to Census data, 28.7% of occupied housing units in Franklin County were built prior to 1960¹⁴.

In addition, the vast majority of historic resources (which are typically considered eligible for listing in the National Register of Historical Places once they are past 50 years in age) were constructed prior to 1960. Historic resources are addressed in association with other hazards, but the hazard of building collapse poses a distinct, heightened risk. Based on the historic resources inventory provided by the PA SHPO, Franklin County has at least 72 historic buildings/structures classified as Eligible, Listed, or National Historic Landmark¹⁵.

Bridge structures serve as connectors for all types of roadways and communities within Franklin County and are a vital component of any transportation system, no matter its classification (i.e. local, state or federal). Franklin County currently owns and maintains 92 bridges. Inspection and maintenance are critical in extending the life and safety of the bridges, many of which are older. Franklin County has 8 bridge structures Listed on the National Register of Historic Places¹⁶.

4.3.1.2 Range of Magnitude

The effects of a collapse vary depending on the type of structure involved as well and the type and cause of the collapse. An outward building collapse with a wide debris field has the potential to injure and endanger the lives of not only the people inside, but also others that are in near proximity due to the outward movement of the building materials. An inward building collapse has a smaller debris footprint, but the density of the debris is higher, thus creating its own challenges for responders. While occupied buildings are less likely to collapse since they are usually better maintained, there is higher potential for injuries and deaths if a collapse occurs in a denser area.

Maintaining bridge integrity is a key component in minimizing the risk of bridge collapse. Of the County's 92 bridges, 16 of them have weight restrictions in place to help maintain integrity. The bridges are inspected on a regular basis and minor repairs are made by the County's bridge crew. Major repairs are submitted for consideration to the Franklin County Metropolitan Planning Organization. Projects are added to the Franklin County Transportation Improvement Program in coordination with the Pennsylvania Department of Transportation (PennDOT) District 8 Office. Once a bridge repair or replacement is selected, the project is sent out to bid prior to being completed by the selected contractor. Franklin County's bridge inventory consists

¹⁴ US Census, 2021

¹⁵ National Park Service, 2022

¹⁶ National Park Service, 2022

primarily of smaller bridges on local roads, but a structural collapse on any of them could result in potential injuries or death.

4.3.1.3 Past Occurrence

Franklin County does not have an extensive history of building or bridge collapses, but a building collapse did occur at an industrial facility located in Guilford Township on August 30, 2022. The collapse occurred during construction of a new building on the property; multiple walls collapsed and there was one fatality. Emergency response efforts were affected by heavy rain and winds that came through near the time of the collapse as well. The collapse is still being investigated by the Occupational Safety and Health Administration.

4.3.1.4 Future Occurrence

In Franklin County, building and structure collapses are not common, making it difficult to predict the probability of future occurrences.

Social Equity

While the overall risk appears to be low, portions of our socially vulnerable populations could be affected by building/structural collapse due to the number of older structures within the county. Most of the county's older structures are able to withstand normal weather conditions, but any that are not being properly maintained and are in disrepair are at higher risk of collapse. In some cases, renters with no control over building upkeep and homeowners with limited economic means to correct structural deficiencies may be more at risk of experiencing a collapse.

Climate Change

Climate change is not expected to increase the intensity, duration or location of a Building/Structural Collapse within Franklin County unless it is a result of or in conjunction with other identified hazards such as flooding, winter weather, landslide or subsidence. Those hazard-specific impacts will be discussed later in the plan.

Due to the low number of occurrences in the county, the probability of a Building/Structural Collapse occurring in Franklin County is considered *possible* as defined by the Risk Factor ranking probability criteria (See Section 4.4).

4.3.1.5 Vulnerability Assessment

Figure 4.3.1.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Building/Structural Collapse hazard. One can see that only 6 of 22 municipalities rated this threat as either a Major or Moderate event. This is a Minor threat ranked 18 overall for Franklin County.

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	Building and Structure Collapse Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	10.12%	0.1619
Chambersburg Borough	1	30%	1	30%	2	20%	3	10%	4	10%	1.7	14.05%	0.2389
Fannett Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	1.59%	0.0302
Greencastle Borough	1	30%	2	30%	2	20%	4	10%	4	10%	2.1	2.73%	0.0573
Greene Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	11.82%	0.2246
Guilford Township	2	30%	3	30%	1	20%	4	10%	4	10%	2.5	9.38%	0.2345
Hamilton Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	7.29%	0.1385
Letterkenny Township	2	30%	2	30%	1	20%	4	10%	4	10%	2.2	1.58%	0.0348
Lurgan Township	1	30%	1	30%	1	20%	2	10%	4	10%	1.4	1.42%	0.0199
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	0.97%	0.0155
Metal Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	1.13%	0.0215
Mont Alto Borough	1	30%	1	30%	1	20%	2	10%	4	10%	1.4	1.01%	0.0141
Montgomery Township	2	30%	2	30%	1	20%	4	10%	4	10%	2.2	3.68%	0.0810
Orstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	2.86%	0.0543
Quincy Township	1	30%	2	30%	1	20%	4	10%	4	10%	1.9	3.41%	0.0648
Shippensburg Borough	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	0.75%	0.0120
Southampton Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	5.49%	0.0878
St Thomas Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	3.79%	0.0720
Warren Township	1	30%	2	30%	2	20%	4	10%	4	10%	2.1	0.21%	0.0044
Washington Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	9.55%	0.1815
Waynesboro Borough	2	30%	2	30%	1	20%	4	10%	4	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													1.906

Figure 4.3.1.5.1: Municipal Building and Structure Collapse Threat Vulnerability Self-Assessment

4.3.1.6 Community Lifeline Integration

Potential impacts to the Community Lifelines by a Building and Structure Collapse are shown below. There is potential for some impact to all but one of the lifelines (Transportation), but significant impacts to any of them would not be expected unless there is a large-scale event that affects a large number of structures.

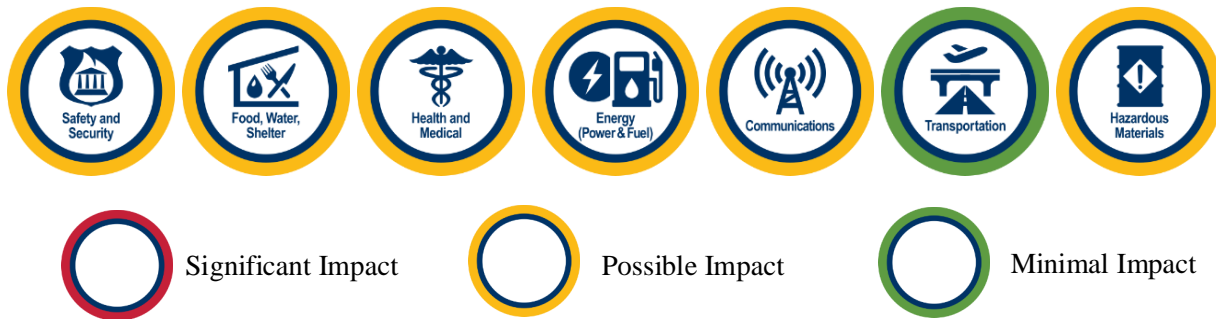


Figure 4.3.1.6.1: Building and Structural Collapse Community Lifeline Impacts

4.3.2 Civil Disturbance

Civil Disturbance is a broad term typically used by law enforcement to describe one or more forms of unrest that may include peaceful demonstrations or acts of violence. A civil disturbance can be an individual or collective action seriously interfering with peace, security, and/or functioning of a community. Demonstrations, civil unrest, public disorder, and riots happen for a number of reasons that include economic hardships, social injustices, ethnic differences, objections to world organizations, or certain governments, political grievances, and terrorist acts.

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. Demonstrations can range from a peaceful sit-in to a full-scale riot, during which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, group blockage of roadways, sidewalks, or buildings interferes with public order. Many protests intended to be peaceful demonstrations to the public and the government can escalate into general chaos.

Two types of large gatherings typically are associated with civil disturbances: a crowd and a mob. A crowd can be identified as causal, sighting, agitated, or mob-like:

- A causal crowd is identified as individuals or small groups with nothing in common to bind them together. If each has an agenda, it is his/her own. Casual crowds are made up of individuals or small groups occupying the same common place.
- Sighting crowds are similar to casual crowds; however, they gather for an event. People migrating as a crowd to sporting events, a group of people attracted to fires and accidents, and those attending music concerts are all types of sighting crowds. Individuals or small groups gather at these events for the same purpose. It is the event and/or individuals' curiosity that compels a crowd to come together.
- Agitated crowds add responses based on the elements (people, space, and event). Individuals with strong emotional feelings within a crowd can quickly spread and infect the rest of the crowd. As more people within the crowd become emotionally involved, a sense of unity may develop, causing changes in the overall demeanor of the crowd. Yelling, screaming, and name-calling all are associated with an agitated crowd.

- Mob-like crowds have all the elements of crowd types described above, in addition to aggressive, physical, and sometimes violent actions. Under these conditions, individuals within a crowd will often say or do things they usually would not do. Extreme acts of violence and property damage are often part of mob activities. These consist of, or involve elements of people and groups mixing together and becoming fluid¹⁷.

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 the following four categories¹⁸:

- Aggressive Mob: An aggressive mob 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 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 unreasoning terror.
- Acquisitive Mob: An acquisitive mob is one motivated by a desire to acquire something. Riots caused by other factors often turn into looting spree. This mob exploits an authority's lack of control 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.

4.3.2.1 Location and Extent

Although Franklin County is a rural setting, there are still areas in the county that could be subject to civil disturbances. Government facilities, landmarks, county jail, and university campuses are common sites where crowds and mobs may gather. Other types of institutions such as juvenile correctional facilities, treatment units, and youth development centers may be targets for civil unrest.

Civil unrest and disturbances affect the following factions of society:

- The Public: The general population could serve as participants or targets in actions of civil unrest. Widespread unrest could cause fear among the populace and cause them to be absent from school or work activities. During an event, bystanders may be harmed because of activities of participants.

¹⁷HQ, Department of the Army FM 3-19.15, 2005

¹⁸ Alvarez and Bachman, 2007

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- **Responders:** Responses to civil unrest events are generally handled at the local level. Response to a large event of this type may exceed the resources of a local jurisdiction. In this instance, State resources would be activated to fill the need. During an event, responders may become targets, which could hamper their effectiveness.
- **Continuity of Operations, including delivery of services:** An outbreak of widespread rioting or looting could impact the State's and County's ability to provide services and conduct normal operations. Protesters could occupy government buildings and interrupt normal functions of government, or targeted attacks on government facilities could halt operations entirely.
- **Property:** Private property often serves as a target in instances of civil unrest. Businesses can be targeted for looting or vandalism. If an event is particularly large, damage could reach millions of dollars and recovery could take years.
- **Facilities:** Often in acts of civil unrest, government facilities become the focus of protests or targets for vandalism. Damage during an event or inability of workers to enter a facility may greatly reduce a facility's effective capacity or close it completely.
- **Infrastructure:** Similar to government facilities, public and private infrastructure can become targets of civil unrest. Damage to transportation, communications, or utilities infrastructure could further exacerbate the situation.
- **Environment:** Normally, civil unrest would minimally impact the environment. However, if petroleum or other chemical facilities become targets for vandalism or large-scale fires occur, effects on the environment could be significant.
- **Economic Condition of the County:** Civil unrest could prove economically crippling to Franklin County. Large-scale events are usually accompanied by wide-spread absenteeism and damage to private property.
- **Public Confidence in the County's Governance:** If an event becomes prolonged or is perceived to be mismanaged, it could greatly decrease public confidence in the governance of the County. If the response is seen to be inadequate, individuals may attempt to protect their properties by their own means and further exacerbate the situation.

Civil Disorders can result in numerous secondary hazards. Depending on the size and scope of the incident, civil unrest may lead to widespread urban fire, utility failure, transportation interruption, and environmental hazards. The most significant impact of civil unrest is the secondary hazard of interrupted continuity of government, which can also lead to other secondary hazards cited in the previous paragraphs. The extent of secondary hazards will vary significantly based on the extent and nature of the civil unrest.

4.3.2.2 Range of Magnitude

The magnitude or severity of a civil unrest depends on the nature of the disturbance. This can take form as a small gathering or a large group blocking access to buildings or disrupting normal activities. Civil unrest events can range from peaceful sit-ins to a full-scale riot.

4.3.2.3 Past Occurrence

Civil Disturbances are rare in Franklin County. Most involve very small crowds or individuals protesting about perceived political/social injustices. In November and December of 2016, there were several protests held outside the Franklin County Courthouse after the 2016 Presidential elections. These gatherings were formed to express dissatisfaction with the election results. Some of these protests also centered on the proposed repeal and replacement of the Affordable Care Act (Obama Care) proposed by the newly elected president. These protests amounted to no more than a nuisance for the public that work in and around the county seat. However, there has been another type civil unrest that has been growing in the region and we have seen an example of this is Franklin County. This unrest is the emergence of the Sovereign Citizen movement.

The Sovereign Citizen movement is based on a decades-old conspiracy theory. At some point in history, sovereign citizens believe, the American government set up by the founding fathers, with a legal system the sovereign citizens refer to as “common law”, was secretly replaced by a new government system based on “admiralty law”, the law of the sea and international commerce. Under common law, or so they believe, the sovereign citizens would be free men. Under admiralty law, they are slaves, and secret government forces have a vested interest in keeping them that way. Some sovereign citizens believe this perfidious change occurred during the Civil War, while others blame the events of 1933, when the U.S. abandoned the gold standard. Either way, they stake their lives and livelihoods on the idea that judges around the country know all about this hidden government takeover, but are denying the sovereign citizens' motions and filings out of treasonous loyalty to hidden and malevolent government forces.

In May of 2017, a gentleman claiming to be a sovereign citizen espoused, in his criminal trial for assault, that laws did not apply to him as a sovereign citizen. He was subsequently convicted and jailed for simple assault, but not before proclaiming his sovereign citizen status above the jurisdiction of the Franklin County judicial system. This was a relatively benign case, but the movement has been growing in Pennsylvania and has spawned several frivolous Sovereign Citizen civil lawsuits that are tying up normal judicial processes and resources.

Another example of Civil Disturbance in Franklin County was the 1990 strike of T.B. Woods Corporation in Chambersburg. The union at the company voted for a strike to grieve the company's refusal to arbitrate on a \$0.50 per hour raise demanded by the worker's. The strike lasted 2.5 years and was quite intense at times. The Pennsylvania State Police were even called in to make sure things did not get out of hand. No damages or injuries were reported. The company eventually resumed business operations and the strike was broken when the union was voted out, saving over 230 jobs at the manufacturing plant. This disturbance disrupted the daily

lives of over 300 local families for over 2 years and resulted in over \$12M in losses for the company¹⁹.

However, the starkest example of Civil Disturbance in Franklin County was the burning of Chambersburg during the Civil War. On July 30, 1864, Brigadier General John McCausland and 2,800 Confederate cavalymen entered Chambersburg and demanded \$100,000 in gold or \$500,000 in greenbacks in response to the Union Army's actions in the Shenandoah Valley earlier in the War. The residents of Chambersburg failed to raise the ransom, and McCausland ordered his men to burn the town. It is understood that this instance is an extreme case due to the nature of the war that was being waged at the time, but it is still part of the history of Franklin County, and one that is remembered every year with a reenactment every July.

4.3.2.4 Future Occurrence

Many civil unrest incidents are spontaneous and can occur at any time, rendering prediction of probability of future occurrences difficult. When these incidents occur, they can become extremely disruptive and difficult to control. Assumedly, civil unrest incidents including marches, protests, demonstrations, and gatherings will continue to occur throughout Franklin County.

Social Equity

Overall risk is low for a Civil Disturbance and our socially vulnerable populations would not necessarily be impacted if one were to occur.

Climate Change

Climate change is not likely to increase the intensity, duration or location of a Civil Disturbance within Franklin County.

Due to the relative rarity of occurrences and the minimal disruptions they have caused in the county in the past (excluding the Civil War), the probability of a Civil Disturbance occurring again in Franklin County is considered *possible* as defined by the Risk Factor ranking probability criteria (See **Section 4.4**).

4.3.2.5 Vulnerability Assessment

Figure 4.3.2.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Civil Disturbance hazard. One can see that only 2 of 22 municipalities rated this threat as a Moderate event. This is a Minor threat ranked 26 overall for Franklin County. However, mitigation actions will still be developed for this threat in **Section 6**.

¹⁹ Hartford Courant, 2014

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	<div style="text-align: center;"> Civil Disturbance Hazard Threat Risk Assessment </div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	2	20%	1	10%	2	10%	1.3	10.12%	0.1316
Chambersburg Borough	1	30%	2	30%	2	20%	2	10%	2	10%	1.7	14.05%	0.2389
Fannett Township	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	1.59%	0.0207
Greencastle Borough	2	30%	2	30%	1	20%	3	10%	2	10%	1.9	2.73%	0.0519
Greene Township	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	11.82%	0.1891
Guilford Township	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	9.38%	0.1501
Hamilton Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	7.29%	0.1021
Letterkenny Township	1	30%	2	30%	2	20%	4	10%	2	10%	1.9	1.58%	0.0300
Lurgan Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.42%	0.0156
Mercersburg Borough	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	0.97%	0.0155
Metal Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.13%	0.0136
Mont Alto Borough	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.01%	0.0121
Montgomery Township	1	30%	3	30%	1	20%	4	10%	2	10%	2.0	3.68%	0.0736
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.14%	0.0015
Peters Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	2.86%	0.0486
Quincy Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	3.41%	0.0375
Shippensburg Borough	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	0.75%	0.0090
Southampton Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	5.49%	0.0604
St Thomas Township	2	30%	2	30%	1	20%	4	10%	2	10%	2.0	3.79%	0.0758
Warren Township	1	30%	2	30%	2	20%	3	10%	2	10%	1.8	0.21%	0.0038
Washington Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	9.55%	0.1337
Waynesboro Borough	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	7.02%	0.0983
Municipal Weighted Average Risk Factor (RF)													1.513

Figure 4.3.2.5.1: Municipal Civil Disturbance Threat Vulnerability Self-Assessment

The entire county is considered vulnerable to this hazard. Potential losses from civil unrest incidents include human health, life, and property resources. In the transportation industry alone, it was assessed in 2011, that 1.2 billion tons of goods valued at \$1.6 trillion traversed PA highways. A large portion of that transits the two major arteries traversing Franklin County (I-81 and the Pennsylvania Turnpike). Any disruption to these major arteries or their feeder routes would have a negative impact not only to Franklin County, but might be felt all over the East Coast of the United States.²⁰

Civil disorder incidents can lead to injury and/or death for both the involved persons and innocent bystanders. If a civil disturbance turns violent, it can lead to injury and/or death for personnel responding to the incident. The number of people exposed to a civil disturbance depends on population density at the place and time of the incident. Increases in population or

²⁰ PennDOT, 2016

hosting of major political, economic, or social events could increase the likelihood and severity of a civil unrest incident.

4.3.2.6 Community Lifeline Integration

Potential impacts to the Community Lifelines by a Civil Disturbance incident are shown below. There is potential for some impact to all of the lifelines, but a significant impact to Safety & Security could be expected.



Figure 4.3.2.6.1: Civil Disturbance Community Lifeline Impacts

4.3.3 Cyber Terrorism

Cyber terrorism refers to acts of terrorism committed using computers, networks, and the Internet. The most widely cited definition comes from Denning's Testimony before the Special Oversight Panel on Terrorism: "Cyberterrorism...is generally understood to mean unlawful attacks and threats of attacks against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. Further, to qualify as cyberterrorism, an attack should result in violence against persons or property, or at least cause enough harm to generate fear²¹."

Table 4.3.3.1 lists the types and methods of cyber attacks as described by The Pennsylvania Department of Homeland Security.

²¹ Denning, 2000

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THREAT	DESCRIPTION
Botnet (also zombies)	A collection of computers subject to control by an outside party, usually without the knowledge of the owners, using secretly installed software robots. The robots are spread by trojan horses and viruses. The botnets can be used to launch denial-of-service attacks and transmit spam.
Card Skimming	The act of using a skimmer to illegally collect data from the magnetic stripe of a credit, debit or ATM card. This information, copied onto another blank card's magnetic stripe, is then used by an identity thief to make purchases or withdraw cash in the name of the actual account holder. Skimming can take place at an ATM and can occur at restaurants, taxis, or other places where a user surrenders his or her card to an employee.
Denial-of-service attack	Flooding the networks or servers of individuals or organizations with false data requests so they are unable to respond to requests from legitimate users.
Malicious code (also malware)	Any code that can be used to attack a computer by spreading viruses, crashing networks, gathering intelligence, corrupting data, distributing misinformation and interfering with normal operations.
Pharming	The act of sending an e-mail to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft. The e-mail directs the user to visit a website where they are asked to update personal information, such as passwords and credit card, social security, and bank account numbers that the legitimate organization already has. The website, however, is bogus and set up only to steal the user's information.
Phishing	Using fake e-mail to trick individuals into revealing personal information, such as Social Security numbers, debit and credit card account numbers and passwords, for nefarious uses.
Spam	Unsolicited bulk e-mail that may contain malicious software. Spam is now said to account for around 81 percent of all e-mail traffic.
Spear Phishing	A type of phishing attack that focuses on a single user or department within an organization, addressed from someone within the company in a position of trust and requesting information such as login IDs and passwords. Spear phishing scams will often appear to be from a company's own human resources or technical support divisions and may ask employees to update their username and passwords. Once hackers get this data, they can gain entry into secured networks. Another type of spear phishing attack will ask users to click on a link, which deploys spyware that can thief data.
Spoofing	Making a message or transaction appear to come from a source other than the originator.
Spyware	Software that collects information without a user's knowledge and transfers it to a third party.
Trojan horse	A destructive program that masquerades as a benign application. Unlike viruses, Trojan horses do not replicate themselves but they can be just as destructive. One of the most insidious types of Trojan horse is a program that claims to rid your computer of viruses but instead introduces viruses onto your computer.
Virus	A program designed to degrade service, cause inexplicable symptoms or damage networks.
Worm	Program or algorithm that replicates itself over a computer network and usually performs malicious actions, such as using up the computer's resources and possibly shutting the system down. A worm, unlike a virus, has the capability to travel without human action and does not need to be attached to another file or program.

Table 4.3.3.1: Types and Methods of Cyber Attacks

Cyber attacks may not always constitute acts of cyber terrorism because some acts may have relatively small impacts and only produce annoyances. A cyber attack is generally considered an act of cyberterrorism when the following motivations are present:

- Effects-based: When computer attacks result in effects that are disruptive enough to generate fear comparable to a traditional act of terrorism.
- Intent-based: When unlawful or politically motivated computer attacks are done to intimidate or coerce a government or people to further a political objective, or to cause grave harm or severe economic damage²².

Cyber attacks can be further divided into the following categories based on the complexity of the attack:

- Simple-Unstructured: Simple-unstructured attacks are the most common. These are amateurish attacks with relatively minimal consequences.
- Advanced-Structured: Advanced-structured attacks are more sophisticated and consequential, and have a greater emphasis on targeting victims prior to an attack, resulting in a more debilitating effect.
- Complex-Coordinated: Complex-coordinated attacks are the most advanced and most troublesome type of attack where success could mean a network shutdown²³.

4.3.3.1 Location and Extent

In recent years, cyber terrorism has become a significant threat and can impact people, businesses, institutions, local governments, and state agencies to varying degrees. Impacts from a large-scale cyber terrorism event could disrupt the state's economy and potentially threaten its economic stability.

4.3.3.2 Range of Magnitude

The magnitude of a cyber terrorism attack will vary greatly based on the extent of systems affected and duration of the impact. Additionally, the magnitude will vary based upon which specific system is affected by an attack, the ability to preempt an attack, and an attack's effect on continuity of operations. The largest threat to institutions from cyberterrorism comes from any processes that are networked and controlled via computer. A successful cyber attack of either the power grid or communications system could significantly impact the entire county and beyond. The loss of either or both of these systems would also have the potential to delay emergency response to incidents.

²² Rollins, 2007

²³ Denning, 2000

4.3.3.3 Past Occurrence

Disruptive attacks have become more common in recent years; the attacks have evolved from curious hackers testing the limits of new internet technology to sophisticated crime organizations intent on stealing information and money. Critical government infrastructure attacks have occurred, resulting in significant service disruptions and costs to government operations.

4.3.3.4 Future Occurrence

As many counties, including Franklin, transition to Next Generation 911 systems that rely on both private and public networks, cyber security will continue to be a critical issue. As technology advances to prevent cyber terrorism, there will always be attackers finding new ways to attack and exploit any weaknesses that they identify.

Social Equity

Overall risk is low for a Civil Disturbance and one could occur anywhere within Franklin County, so the effect on socially vulnerable populations would be difficult to predict, but there is potential for them to be impacted.

Climate Change

Climate change is not likely to increase the risk of a Cyber Attack within Franklin County.

4.3.3.5 Vulnerability Assessment

Figure 4.3.3.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Cyber terrorism hazard. One can see that only 3 of 22 municipalities rated this threat as either a Major or Catastrophic event. This is a Minor threat ranked 13 overall for Franklin County.

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	Cyberterrorism Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	10.12%	0.1417
Chambersburg Borough	2	30%	4	30%	2	20%	4	10%	2	10%	2.8	14.05%	0.3934
Fannett Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.59%	0.0175
Greencastle Borough	3	30%	2	30%	2	20%	4	10%	2	10%	2.5	2.73%	0.0683
Greene Township	3	30%	3	30%	4	20%	4	10%	2	10%	3.2	11.82%	0.3782
Guilford Township	2	30%	1	30%	4	20%	4	10%	2	10%	2.3	9.38%	0.2157
Hamilton Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	7.29%	0.1021
Letterkenny Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	1.58%	0.0348
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.0170
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	0.97%	0.0136
Metal Township	2	30%	1	30%	1	20%	2	10%	2	10%	1.5	1.13%	0.0170
Mont Alto Borough	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	1.01%	0.0222
Montgomery Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	3.68%	0.0515
Orstown Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.14%	0.0015
Peters Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	2.86%	0.0486
Quincy Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	3.41%	0.0375
Shippensburg Borough	2	30%	2	30%	3	20%	4	10%	2	10%	2.4	0.75%	0.0180
Southampton Township	2	30%	1	30%	1	20%	3	10%	2	10%	1.6	5.49%	0.0878
St Thomas Township	2	30%	2	30%	1	20%	4	10%	2	10%	2.0	3.79%	0.0758
Warren Township	1	30%	1	30%	2	20%	2	10%	2	10%	1.4	0.21%	0.0029
Washington Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	9.55%	0.1337
Waynesboro Borough	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	7.02%	0.1193
Municipal Weighted Average Risk Factor (RF)													1.998

Figure 4.3.3.5.1: Municipal Cyber Terrorism Threat Vulnerability Self-Assessment

4.3.3.6 Community Lifeline Integration

Potential impacts to the Community Lifelines by a Cyber Attack incident are shown below. There is potential for significant impact to four of the seven lifelines (Safety & Security, Health & Medical, Energy, & Communications), and possible impact to the remaining three.

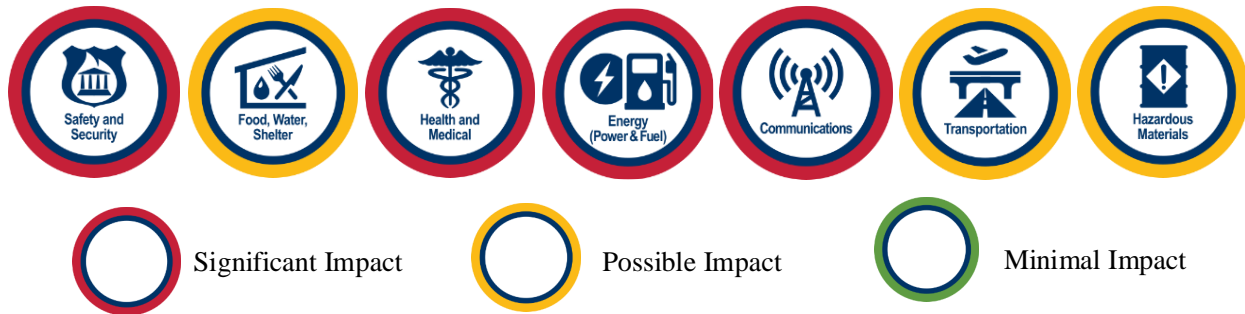


Figure 4.3.3.6.1: Cyber Terrorism Community Lifeline Impacts

4.3.4 Dam Failure

A dam is an artificial barrier that has the ability to store water, wastewater, or liquid-borne materials for the storage or control of water.²⁴ Dams are built for a variety of reasons which include recreation, water supply, hydroelectric power generation, agriculture irrigation, and flood control. Dams are typically constructed of concrete, earthen materials, timber and stone²⁵.

Over 95% of the dams listed in the National Inventory of Dams are either privately owned, public utility owned, or locally owned and under the responsibility of the individual State for which they are located. The vast majority of the dams (over 88%) consist of an earthen embankment. Over 93% of the regulated dams have a dam height less than or equal to 50 feet and 50% of the regulated dams have a dam height less than or equal to 25 feet. The inventory of regulated dams is aging, with 70% of the dams older than 43 years. By 2029, over 85% of the dam inventory will be older than 50 years²⁶.

Dam failures can result from one or more of the following reasons:

- Cracking caused by natural settling of a dam or movement caused by an earthquake.
- Structural failure due to faulty materials used in construction.
- Inadequate maintenance or upkeep of the dam due to failure to remove trees or repair seepage problems.
- Deliberate acts of sabotage.
- Overtopping caused by flooding due to excessive rain.
- Piping and internal erosion is caused by seepage.

4.3.4.1 Location and Extent

Table 4.3.4.1.1 below lists the 33 dams in Franklin County (See **Figure 4.3.4.1.1** below for purpose/type definitions). We have B-1, C-3 and C-4 class dams (Refer to **Figure 4.3.4.1.2** below for description of these classifications). These classes of dams are found in the Pennsylvania Code (§ 105.91. classification of dams and reservoirs). They are used for

²⁴ The National Dam Safety Act of 2006

²⁵ FEMA P-946, 2013

²⁶ FEMA P-946, 2013

hydroelectric, intake drinking water, irrigation, mill operations, private pond, public water source, recreation, and snow making water supply. The description of Franklin County dams are concrete, earth, gravity, masonry, run of river, and stone.

Table 4.3.4.1.1 also contains 6 dams that are located outside of Franklin County, but have the potential to impact our population. Three (3) dams are located in Adams County, 1 dam is located in Fulton County, and 2 dams are located in Washington County, Maryland which would inundate Franklin County if the dams failed. The inspection dates are listed for the dams, when available. A mitigation Action will be developed to research dam ownerships and latest inspection dates.

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Dam #	Name	Municipality	Stream	Class	Purpose	Type	Last Inspection
28-001	Mercersburg Reservoir	Peters	Buck Run	C-4	S	RE	
28-004	Roxburg	Letterkenny	Conodoguinet	C-4	R	RE	
28-006	Rattlesnake	Quincy	Little Antietam	C-4	JS	CN	
28-011	Caledonia Furnace	Greene	Birch Run	C-4	R	RE	
28-014	US Papermill	Guilford	Conococheague	C-4			
28-037	W. H. Walker	Metal	Creek	C-4	R	RE	7/1/2014
28-043	Williamson	St Thomas	Back Creek	C-4	M	CN	
28-044	Montgomery Mills	Montgomery	WB Conococheague	C-4	HM	T	
28-045	C. A. Anderson	Montgomery	WB Conococheague	C-4	M	CN	
28-048	Mercersburg Reservoir	Peters	Buck Run	C-4			
28-073	Shockleys	Washington	EB Little Antietam	C-4	M	R	
28-075	Middour	Washington	EB Antietam	C-4	RP	S	
28-088	Shippensburg Borough	Lurgan	Trout Run	C-4	SJ	CN	
28-092	Red Run Lake	Washington	Red Run	C-4	R	S	
28-095	Wohelo Lake	Washington	Red Run	C-3	R	RE	6/26/2017
28-096	Roxbury	Letterkenny Township	Conodoguinet	B-1	S	G	10/26/2017
28-103	Comet Lake	Washington Township	Spring Run	C-3	R	RE	6/26/2017
28-108	Caledonia Water Co.	Greene Township	Stump Run	C-3	S	RE	7/26/2017
28-110	Lake Letterkenny Dam	Letterkenny Township	TR Rocky Spring Br	C-3	R	S	
28-111	Rocky Spring Dam	Letterkenny Township	Rocky Spring Br Back	C-3	R	RE	
28-112	Pond	Letterkenny Township	TR Keasy Run	C-4	I	RE	
28-114	Whitetail Land Co - A	Montgomery Township	TR Licking Creek	B-1	UIR	RE	12/29/2017
28-116	Scotland Pond #1	Greene Township	Conococheague	C-4	R	CN	
28-117	Scotland Pond #2	Greene Township	Conococheague	C-4	P	RR	
28-118	Scotland Pond #3	Greene Township	Conococheague	C-4	P	N	
28-119	Habig	Fannett Township	WB Conococheague	C-4	P	CN	
28-121	Amberson Valley Estates	Fannett Township	WB Conococheague	C-4	P	S	
28-122	Whitetail D	Montgomery Township	Conococheague	C-4	P	RE	
28-123	Whitetail C	Montgomery Township	TR Licking Creek	C-3	P	RE	6/26/2017
28-124	Beacon of Greene	Guilford Township	TR Conococheague	C-4	P	RE	
28-125	Conocodell Golf Club	Greene Township	TR Conococheague	C-4	R	RE	
28-128	Timmons Farm Pond	Letterkenny Township	TR Conodoguinet	C-4			
28-129	Intake Pond	Quincy Township	EB Antietam	C-4			
01-073	Antietam	Hamiltonban Twp (Adams)	EB Antietam	B-1	S	RE	3/16/2018
01-077	Carbaugh Run	Franklin Twp (Adams)	Carbaugh Run	C-1	S	RE	11/15/2017
01-082	Long Pine Run	Franklin Twp (Adams)	Birch Run	A-1	S	RE	11/8/2017
29-032	Meadow Grounds	Ayr Twp (Fulton)	Roaring Run	B-1	R	RE	6/22/2017
MD00070	Lower Lake Royer	Washington Co., MD	TR Falls Creek	High	SR	RE	7/20/2017
MD00157	Upper Lake Royer	Washington Co., MD	TR Falls Creek		SR	RE	7/20/2017

Table 4.3.4.1.1: Dams with Potential to Impact Franklin County (June 2021)

Franklin County Hazard Mitigation Plan - 2023

Type Code	Description	Purpose Code	Description
CB	Butress	A	Ash Basin
CN	Concrete	B	Sediment Basin
ER	Rockfill	C	Flood Control
MS	Masonry	D	Debris Control
MV	Multi-arch	E	Slurry Impoundment
OT	Other	F	Stormwater Detention
PG	Gravity	G	Industrial/Mining Water Supply
QQ	Unpopulated	H	Hydroelectric
RC	RCC	I	Irrigation
RE	Earth	J	Intake Drinking Water
RR	Run of River	K	Intake Non-Drinking Water
SH	Sheetpile	L	Water Treatment Lagoon
ST	Stone	M	Mill Operation
TC	Timber Crib	N	Navigation
VA	Arch	O	Farm Pond
		P	Private Pond
		Q	Unpopulated
		R	Recreation
		S	Public Water Supply
		T	Tailings
		U	Snowmaking Water Supply
		V	Diversion
		W	Waste Impoundment (Untreated)
		X	Treated Waste Impoundment
		Y	Wetland Mitigation
		Z	Frac Water Lagoon

Figure 4.3.4.1.1: Definitions of Type and Purpose codes in Table 4.3.4.1.1

Franklin County Hazard Mitigation Plan - 2023

Hazard Classification		Impound Storage (acre ft)		Dam Height (ft)		Category Population at Risk		Economic Loss		Inspections	
A1		A >= 50,000		H >= 100		Substantial (Numerous homes or small businesses or a large business or school).		Excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.		Once a year by owner’s engineer	
A2						Few (A small number of homes or small businesses).		Appreciable such as limited residential, commercial, or agricultural damage, or moderate public inconvenience.		Once a year by owner’s engineer	
A3						None expected (no permanent structures for human habitation or employment),		Significant damage to private or public property and short duration public inconvenience such as damage to storage facilities or loss of critical stream crossings.		Every 2 years by DEP	
A4						None expected (no permanent structures for human habitation or employment)		Minimal damage to private or public property and no significant public inconvenience.		Every 5 years by DEP	
B1		1000 < A < 50,000		40 < H < 100		Substantial (Numerous homes or small businesses or a large business or school).		Excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.		Once a year by owner’s engineer	
B2						Few (A small number of homes or small businesses).		Appreciable such as limited residential, commercial, or agricultural damage, or moderate public inconvenience.		Once a year by owner’s engineer	
B3						None expected (no permanent structures for human habitation or employment),		Significant damage to private or public property and short duration public inconvenience such as damage to storage facilities or loss of critical stream crossings.		Every 2 years by DEP	
B4						None expected (no permanent structures for human habitation or employment)		Minimal damage to private or public property and no significant public inconvenience.		Every 5 years by DEP	
C1		A <= 1000		H <= 40		Substantial (Numerous homes or small businesses or a large business or school).		Excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.		Once a year by owner’s engineer	
C2						Few (A small number of homes or small businesses).		Appreciable such as limited residential, commercial, or agricultural damage, or moderate public inconvenience.		Once a year by owner’s engineer	
C3						None expected (no permanent structures for human habitation or employment),		Significant damage to private or public property and short duration public inconvenience such as damage to storage facilities or loss of critical stream crossings.		Every 2 years by DEP	
C4						None expected (no permanent structures for human habitation or employment)		Minimal damage to private or public property and no significant public inconvenience.		Every 5 years by DEP	
A is Area of Dam		H is Height of Dam									

Figure 4.3.4.1.2: Pennsylvania Dam Classifications

Hazard Potential Category 1 and 2 Dams (A-1, A-2, B-1, B-2, C-1 and C-2) are required to be inspected by the owner's engineer every year and the report submitted to FCDES by December 31st. The Pennsylvania Department of Environmental Protection (DEP) also inspects these dams on an annual basis²⁷.

Hazard Potential Category 3 and 4 Dams (A-3, A-4, B-3, B-4, C-3 and C-4) are not required to have an annual inspection report submitted. However, they should be inspected and observed every 3 months by the dam owner for any changes in condition. DEP inspects the Category 3 dams every other year and the Category 4 dams every 5 years²⁸.

4.3.4.2 Range of Magnitude

Dam failures could cause significant or catastrophic damage to communities downstream of high hazard dams. The impact is determined by the amount of water which is released from the dam overflow or complete failure of the dam. DEP defines a high hazard dam as "any dam so located as to endanger populated areas downstream by its failure."

Dam failure evacuation time for people, pets, or livestock from the inundation area may vary due to circumstance. Dam failures can cause loss of life, hazardous materials releases, loss of critical infrastructure, agricultural damage, loss of livestock, loss of homes/businesses, and damage to natural resources. It can devastate a community and the economy. Seepage in earth dams could give a few hours for evacuation if detected early before failure. Overtopping due to heavy rain may give a few hours to evacuate or there may be a flash flood that gives little warning of dam failure. Dam failure could also be manmade due to terrorism or faulty operation of the dam.

The following high hazard dam failures would cause significant or catastrophic impact in Franklin County (See **Figure 4.3.4.2.1** below for overall map of County Dam Inundation Zones).

- Roxbury Dam would affect Lurgan, Letterkenny, and Southampton Townships.
- Whitetail Land Co. A. would affect Borough of Mercersburg and Montgomery Township.
- Gunter Valley Dam would affect Lurgan and Letterkenny Townships (at this time it has been breached, and was removed from the list of dams in 2021).
- Adams County Dams that would affect Franklin County are; Antietam, Carbaugh Run and Long Pine Run.
- Meadow Grounds Dam in Fulton County which will affect Warren Township (visibly emptied, but dam wall still intact).
- Lower Lake Royer Dam in Maryland which will affect Washington Township.

²⁷ DEP, 2013

²⁸ DEP, 2013

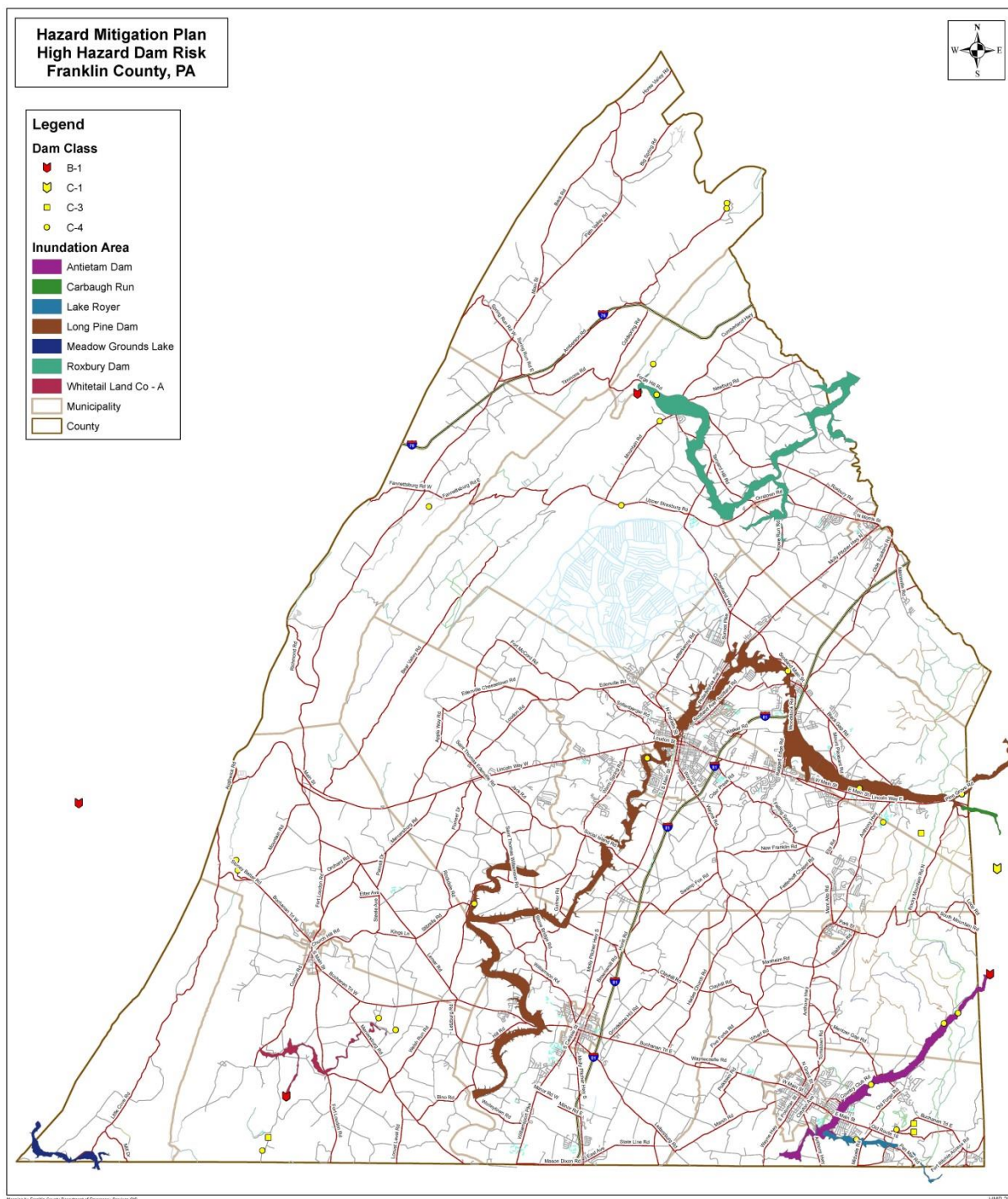


Figure 4.3.4.2.1: Franklin County Dam Inundation Zones (Mar 2023)

4.3.4.3 Past Occurrence

There have been three significant dam failures in Pennsylvania. The notorious Johnstown Flood is one of America's best-known disasters. The disaster occurred when an unusually large amount of rain fell over western Pennsylvania in May of 1889. Consequently, the earthen South

Fork Dam breached on May 31, 1889 and released 20 million tons of water into the Conemaugh River Valley, Cambria County. As the water rushed through the valley it swept away part of the community of South Fork and the communities of Mineral Point, Woodvale, Franklin, East Conemaugh, and finally, Johnstown. The dam had been known to be leaking and gave way when it was overtopped by the floodwaters. The narrow valley and the dense build-up along the Conemaugh floodplain downstream from the dam aggravated the flood catastrophe. When the flood was over, 16,000 people were homeless and 2,209 were dead.

On September 30, 1911, the Bayless Dam broke, claiming 78 lives in Austin, Potter County²⁹. On July 19-20, 1977, a dam failure occurred on Laurel Run, Johnstown, PA. The filling of the lake and overtopping of the Laurel Run Dam went unnoticed during a late-night storm. The dam break came as a complete surprise, even though it probably occurred over a time span of roughly one hour. The failure killed 84 people and caused between \$3 - 6 million in damages.

4.3.4.4 Future Occurrence

Provided that adequate engineering and maintenance measures are in place, high hazard dam failures are unlikely in Franklin County. DEP inventories and generally regulates all dams that meet one of the following criteria³⁰:

- The dam is located across a watercourse and the contributory drainage area to the dam exceeds 100 acres;
- The dam is located across a watercourse and the maximum depth of water, measured from the upstream toe of the dam to the top of the dam at maximum storage elevation, is greater than 15 feet;
- The dam is located across a watercourse and the impounding capacity (storage volume) at maximum storage elevation is greater than 50 acre-feet;
- The dam stores water, is not located on a watercourse, and has no contributory drainage, but the maximum depth exceeds 15 feet and the maximum storage volume exceeds 50 acre-feet; or
- The dam is used for storage of fluids or semi-fluids other than water, the escape of which may result in air, water, or land pollution or endanger to persons or property.

The construction, operation, maintenance, modification, and abandonment of dams regulated by the DEP is reviewed and monitored by the Department's Program of Dam Safety. Dams are evaluated based on categories such as slope stability, undermining seepage, and spillway adequacy. The presence of structural integrity and inspection programs significantly reduces the potential for major dam failure events to occur. Minor dam failures are more common since low hazard structures are minimally regulated, but the impact of these events is minimal.

²⁹ ASDSO, 2010

³⁰ DEP, 2013

Dam Emergency Action Plans drafted in accordance with the Federal Guidelines for Dam Safety identify the risk related information including the inundation area and the time lapse between failure and flooding reaching specific destinations downstream. Seven (7) of the 34 dams located in Franklin County are regulated by DEP and have approved Emergency Action Plans. These plans are also reviewed and approved by PEMA and a copy is kept at Franklin County Department of Emergency Services (FCDES).

Dams regulated by federal agencies are subject to the dam safety offices of the regulating agency. The Federal Emergency Regulatory Commission (FERC) Office of Energy Projects' Dam Safety and Inspections Division conducts construction, operation, exemption, special, pre-license, and environmental and public use inspections of energy production dams to minimize risk associated with FERC dams. United States Army Corps of Engineers (USACE) dams are inspected and maintained by the district where the dam is located.

Social Equity

Anyone living in these inundation zones could be affected, including some of our socially vulnerable populations within those zones. Homeless people, the elderly, and our residents with disabilities would be most impacted by an event.

Climate Change

Climate change may increase the probability of Dam Failure in the future within Franklin County, especially if the county's annual rainfall amount increases in intensity and duration. Per NOAA's Climate Mapping for Resilience and Adaptation program, annual average rainfall for Franklin County could increase between 1.9 and 2.8 inches between 2015 and 2044. This change would likely be maintained by the dams that are currently in place, but any significant variation in that amount, could result in potential dam failures. Impacted areas would be those already identified in the inundation mapping for each dam and a failure at one facility would not affect the entire county.

4.3.4.5 Vulnerability Assessment

The Pennsylvania Code classifies dams based on impoundment storage, dam height, loss of life, and economic loss. Vulnerability is defined by identifying the location of dams having high hazard potential, as defined by The Pennsylvania Code (§ 105.91 Classification of dams and reservoirs). Specifically, Category 1 dams were identified, indicating that the loss of life would be substantial or that economic loss would be excessive to residential, commercial, and agricultural areas and cause substantial public inconvenience. Notably, in 2011, the provisions for dam hazard potential classification changed; a fourth category of dam was added to capture instances where there might be damage to property but not loss of human life³¹.

³¹ PEMA, 2013

The extent of downstream inundation areas vary based on dam characteristics. Inundation maps show the area that is projected to be impacted by flooding due to a dam failure. A county wide GIS layer of inundation maps would be effective in identifying risk more precisely than a dam location map. The inundation areas included on the maps in this document were digitized in GIS using the newest plans that have been provided to Franklin County. The accuracy of the areas is dependent on the quality and size of the maps in those plans. However inundation maps are not available in ArcGIS or AutoCAD for Franklin County due to the various levels of ownership and administration; the inundation information is hosted by a variety of different federal, state, local agencies and private owners.

Franklin County has 3 high hazard dams; Gunter Valley Dam (removed in 2021), Roxbury Dam, and the Whitetail Land Co – A Dam located in county, but is impacted by an additional 5 external high hazard dams; Antietam Dam (Adams County), Carbaugh Run Dam (Adams County), Long Pine Run Dam (Adams County), Meadow Grounds Dam (Fulton County), and Lower Lake Royer Dam (Washington County, MD). The following section shows inundation maps and pictures of these dams.

Gunter Valley Dam

Gunter Valley Dam (28-102) is visibly breached, and was removed from the list of dams in 2021. **Figure 4.3.4.5.1** and **Figure 4.3.4.5.2** below show the lakebed and the tributary to the Gunter Valley Dam respectively.



Figure 4.3.4.5.1: Gunter Valley Dam Lakebed

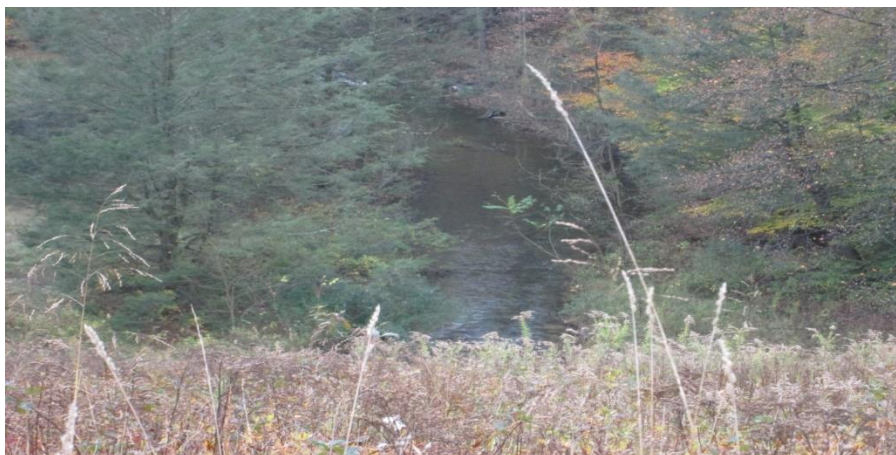


Figure 4.3.4.5.2: Stream Leading into Gunter Valley Dam

Figure 4.3.4.5.3 below shows an aerial view of the Gunter Valley Dam. However, no inundation area is shown due to the dam being breached. This document will be updated if the circumstances of the operation of this dam changes.



Figure 4.3.4.5.3: Aerial View of Gunter Valley Dam Without Inundation Zones

Roxbury Dam

The Roxbury Dam (28-096) is classified as a B-1 high hazard dam. **Figure 4.3.4.5.4, Figure 4.3.4.5.5, and Figure 4.3.4.5.6** below show south end of the dam wall, the north wing wall, and the entrapment area respectively.



Figure 4.3.4.5.4: South Wall of Roxbury Dam



Figure 4.3.4.5.5: North Wing Wall of Roxbury Dam



Figure 4.3.4.5.6: Entrapment Area of the Roxbury Dam

Figure 4.3.4.5.7 below shows the Roxbury Dam inundation area. It impacts Letterkenny, Lurgan, and Southampton Townships before flowing into Cumberland County.

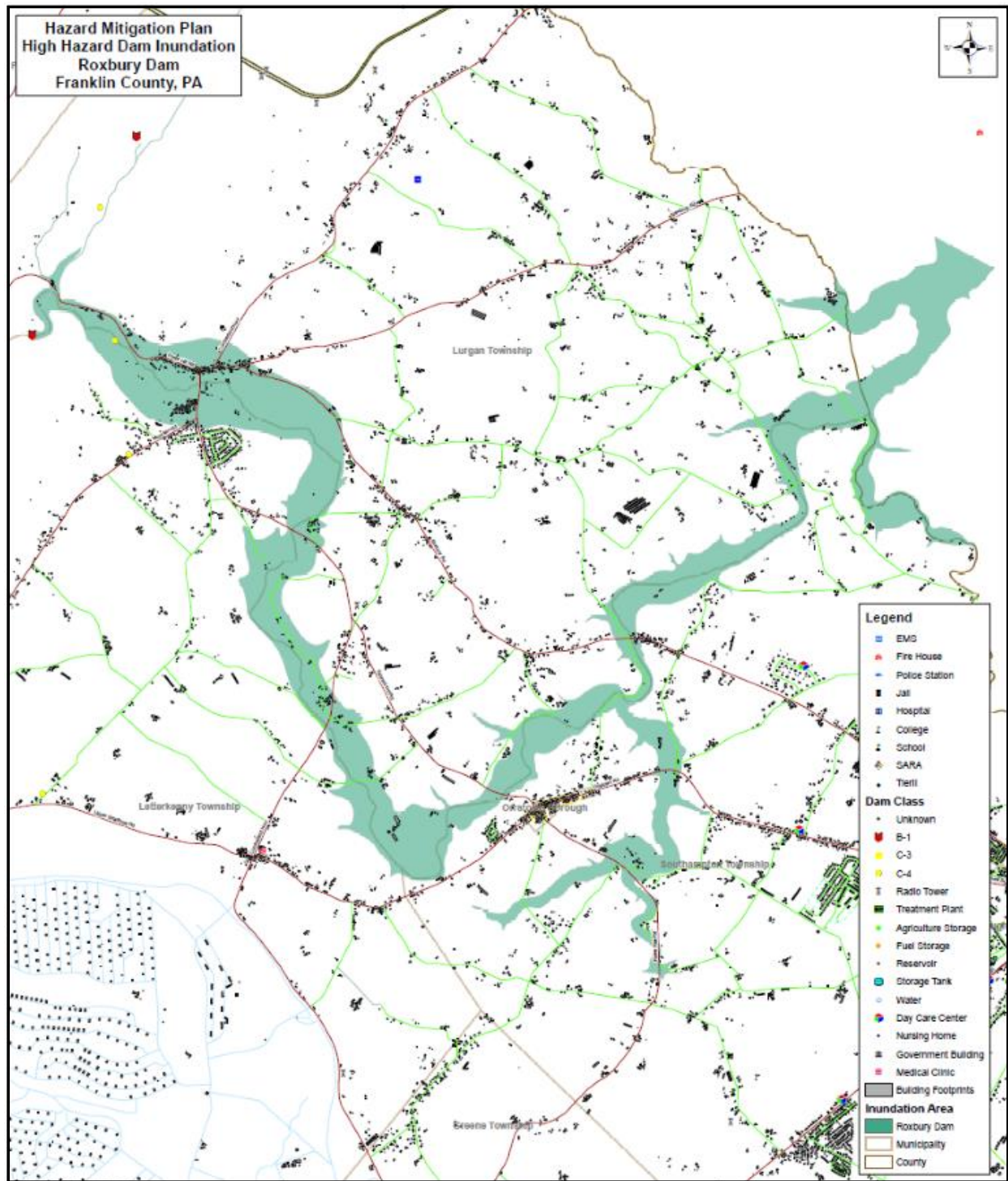


Figure 4.3.4.5.7: Roxbury Dam Inundation Zones

Table 4.3.4.5.1 below identifies the number of structures impacted by the Roxbury Dam inundation zone and the estimated value of those structures. The assessed values of these

structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Roxbury Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Letterkenny Township	17	134	\$561,570	\$5,913,332
Lurgan Township	163	411	\$1,902,080	\$20,028,902
Southampton Township	35	86	\$678,330	\$7,142,815
Totals	215	631	\$3,141,980	\$33,085,049

Table 4.3.4.5.1: Roxbury Dam Inundation Zone Structural Impacts

Whitetail Dam Land Co. – A

The Whitetail Land Co. – A Dam (28-114) is classified as a B-1 high hazard dam. **Figure 4.3.4.5.8, Figure 4.3.4.5.9, and Figure 4.3.4.5.10** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.8: Whitetail Land Co. – A Dam Entrapment Area



Figure 4.3.4.5.9: Whitetail Land Co. – A Dam Spillway



Figure 4.3.4.5.10: Whitetail Land Co. – A Dam Wall

Figure 4.3.4.5.11 below shows the Whitetail Land Co. – A Dam inundation area. It impacts Montgomery Township.

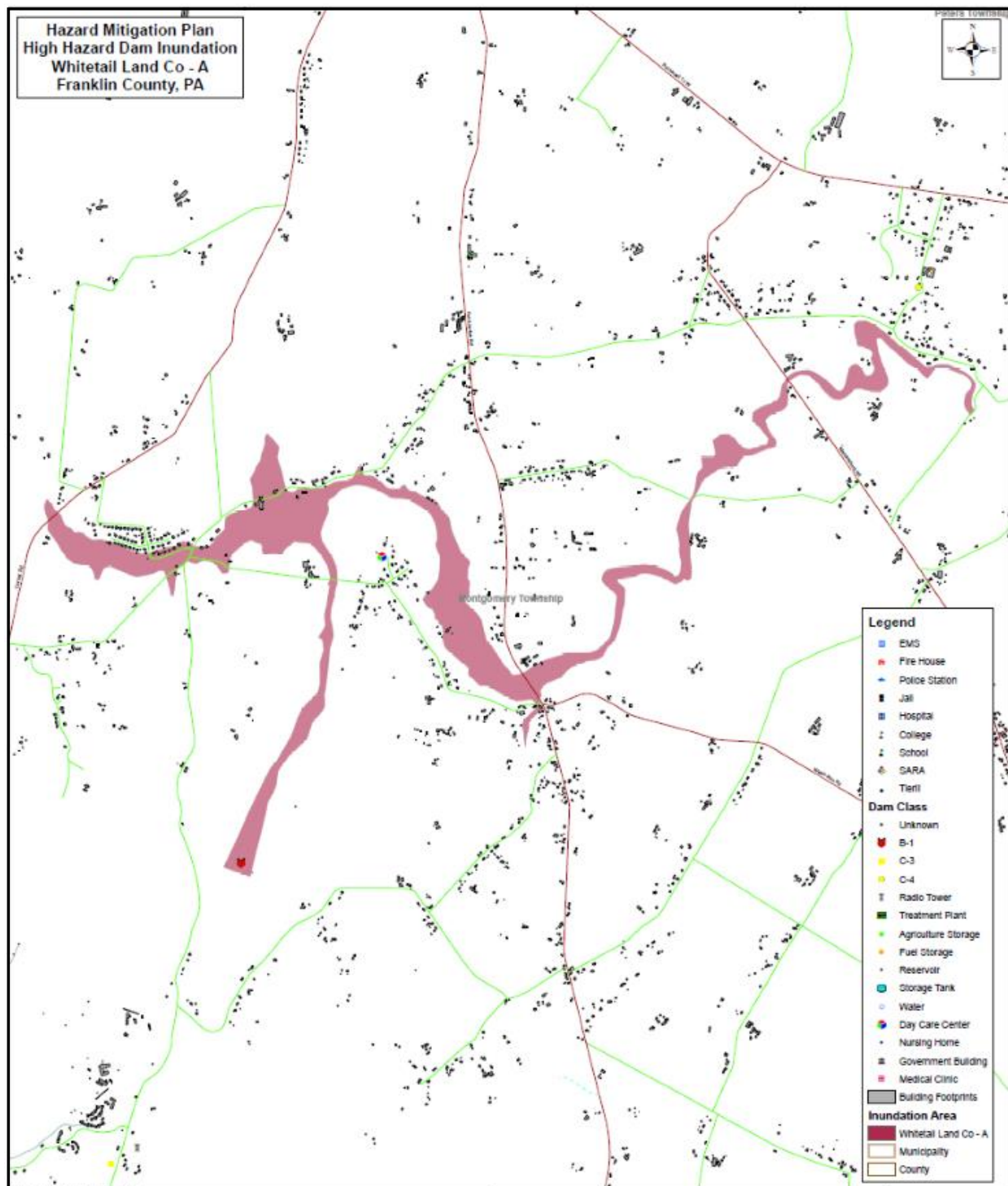


Figure 4.3.4.5.11: Whitetail – A Dam Inundation Zone

Table 4.3.4.5.2 below identifies the number of structures impacted by the Whitetail Land Co. – A Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Whitetail Land Co. - A Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Montgomery Township	18	35	\$511,070	\$5,381,567
Totals	18	35	\$511,070	\$5,381,567

Table 4.3.4.5.2: Whitetail Land Co. – A Dam Inundation Zone Structural Impacts

Antietam Dam (Adams County)

The Antietam Dam (01-073) is classified as a B-1 high hazard dam. **Figure 4.3.4.5.12, Figure 4.3.4.5.13, and Figure 4.3.4.5.14** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.12: Antietam Dam Entrapment Area



Figure 4.3.4.5.13: Antietam Dam Spillway



Figure 4.3.4.5.14: Antietam Dam Wall

Figure 4.3.4.5.15 below shows the Antietam Dam inundation area. It impacts Quincy Township, Washington Township, and Waynesboro Borough.

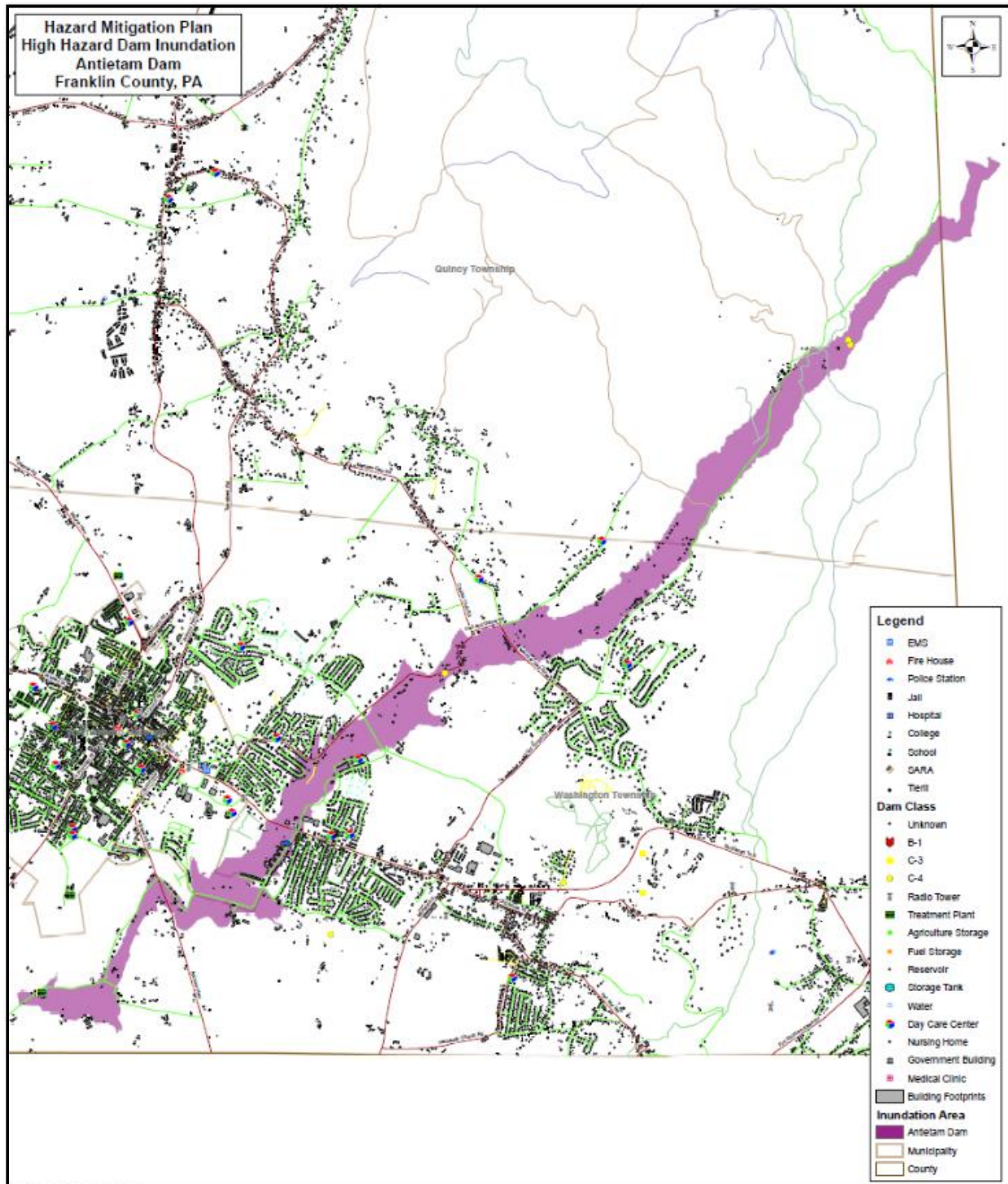


Figure 4.3.4.5.15: Antietam Dam Inundation Zone

Table 4.3.4.5.3 below identifies the number of structures impacted by the Antietam Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Antietam Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Quincy Township	8	20	\$402,070	\$4,233,797
Washington Township	165	407	\$4,913,080	\$51,734,732
Waynesboro Borough	2	6	\$13,270	\$139,733
Totals	175	433	\$5,328,420	\$56,108,263

Table 4.3.4.5.3: Antietam Dam Inundation Zone Structural Impacts

Carbaugh Run Dam (Adams County)

The Carbaugh Run Dam (01-077) is classified as a C-1 high hazard dam. **Figure 4.3.4.5.16**, **Figure 4.3.4.5.17**, and **Figure 4.3.4.5.18** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.16: Carbaugh Run Dam Entrapment Area



Figure 4.3.4.5.17: Carbaugh Run Dam Spillway



Figure 4.3.4.5.18: Carbaugh Run Dam Wall

Figure 4.3.4.5.19 below shows the Carbaugh Run Dam inundation area. It impacts Greene Township.

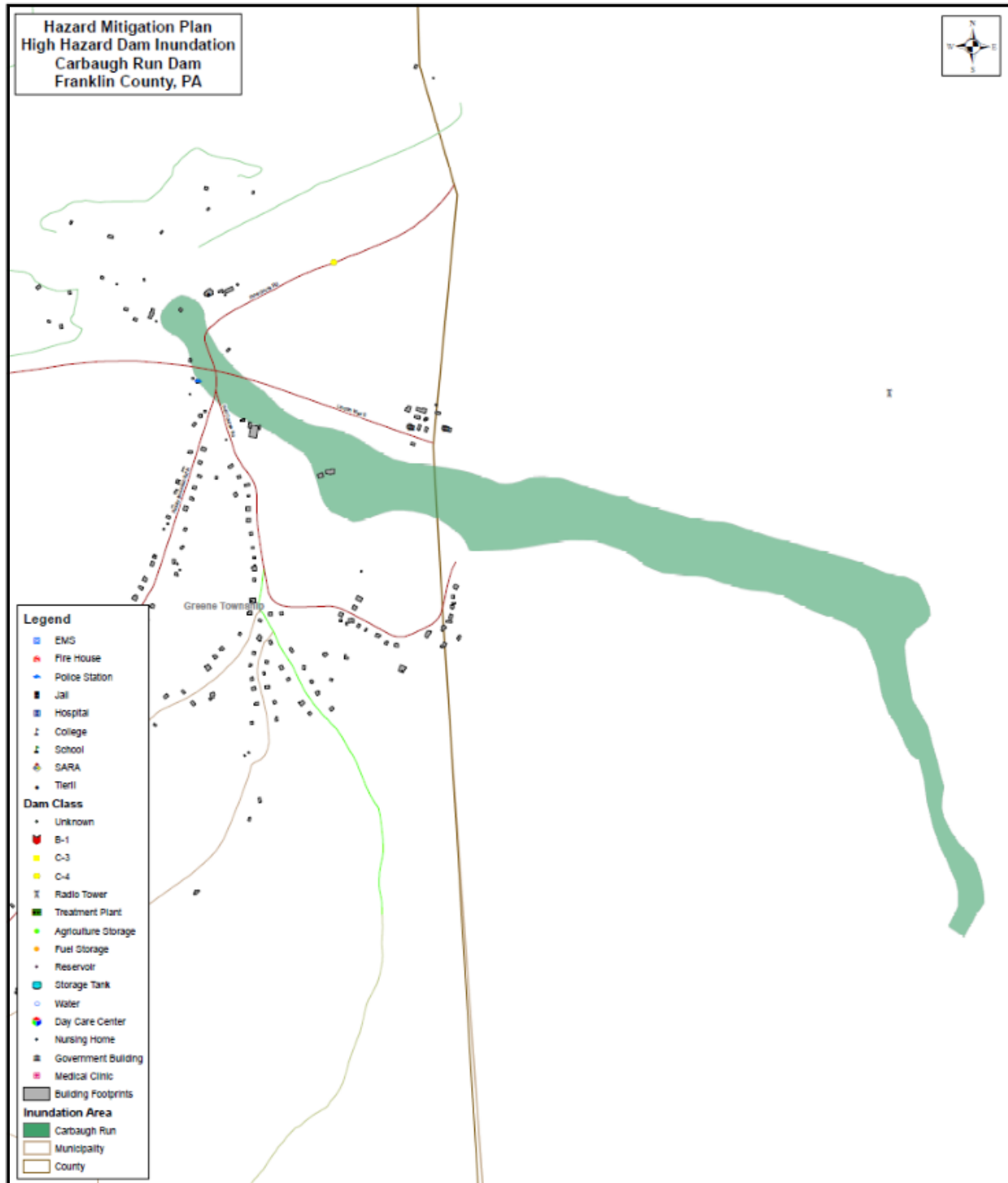


Figure 4.3.4.5.19: Carbaugh Run Dam Inundation Zone

Table 4.3.4.5.4 below identifies the number of structures impacted by the Carbaugh Run Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Carbaugh Run Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Greene Township	2	3	\$63,020	\$663,601
Totals	2	3	\$63,020	\$663,601

Table 4.3.4.5.4: Carbaugh Run Dam Inundation Zone Structural Impacts

Long Pine Run Dam (Adams County)

The Long Pine Run Dam (01-082) is classified as a A-1 high hazard dam. **Figure 4.3.4.5.20**, **Figure 4.3.4.5.21**, and **Figure 4.3.4.5.22** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.20: Long Pine Run Dam Entrapment Area



Figure 4.3.4.5.21: Long Pine Run Dam Spillway



Figure 4.3.4.5.22: Long Pine Run Dam Wall

Figure 4.3.4.5.23 below shows the Long Pine Run Dam inundation area. It impacts Antrim Township, Chambersburg Borough, Greene Township, Guilford Township, Hamilton Township, Peters Township, and St Thomas Township.

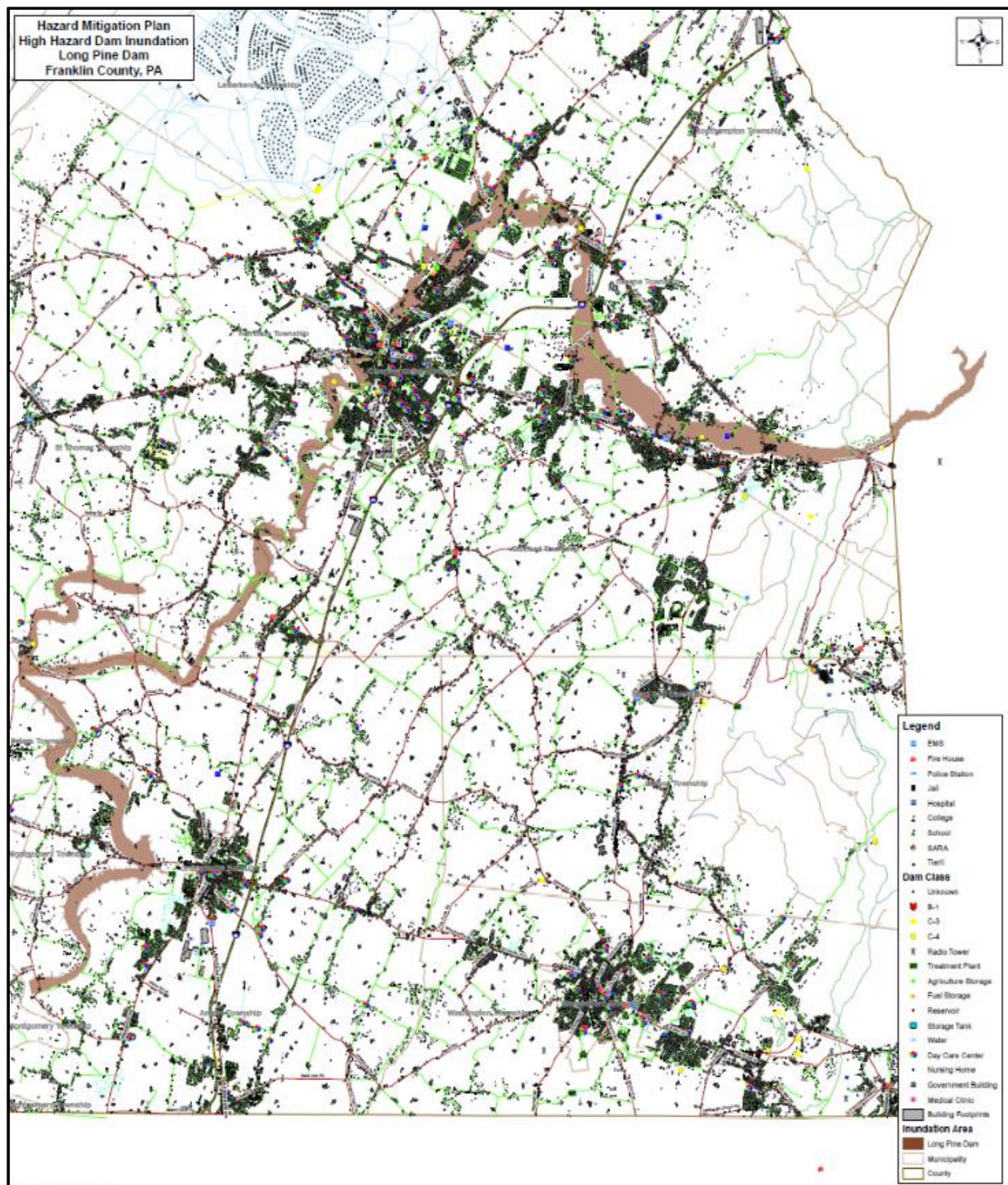


Figure 4.3.4.5.23: Long Pine Run Dam Inundation Zone

Table 4.3.4.5.5 below identifies the number of structures impacted by the Long Pine Run Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Long Pine Run Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Antrim Township	76	165	\$1,548,700	\$16,307,811
Chambersburg Borough	449	600	\$25,700,150	\$270,622,580
Greene Township	857	1676	\$22,925,480	\$241,405,304
Guilford Townhsip	51	89	\$594,290	\$6,257,874
Hamilton Township	32	78	\$545,660	\$5,745,800
Peters Township	2	5	\$40,020	\$421,411
St Thomas Township	44	98	\$557,200	\$5,867,316
Totals	1511	2711	\$51,911,500	\$546,628,095

Table 4.3.4.5.5: Long Pine Run Dam Inundation Zone Structural Impacts

Meadow Grounds Dam (Fulton County)

The Meadow Grounds Dam (29-032) is classified as a B-1 high hazard dam. **Figure 4.3.4.5.24**, **Figure 4.3.4.5.25**, and **Figure 4.3.4.5.26** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.24: Meadow Grounds Dam Entrapment Area



Figure 4.3.4.5.25: Meadow Grounds Dam Spillway



Figure 4.3.4.5.26: Meadow Grounds Dam Wall

Figure 4.3.4.5.27 below shows the Meadow Grounds Dam inundation area. It impacts Warren Township.

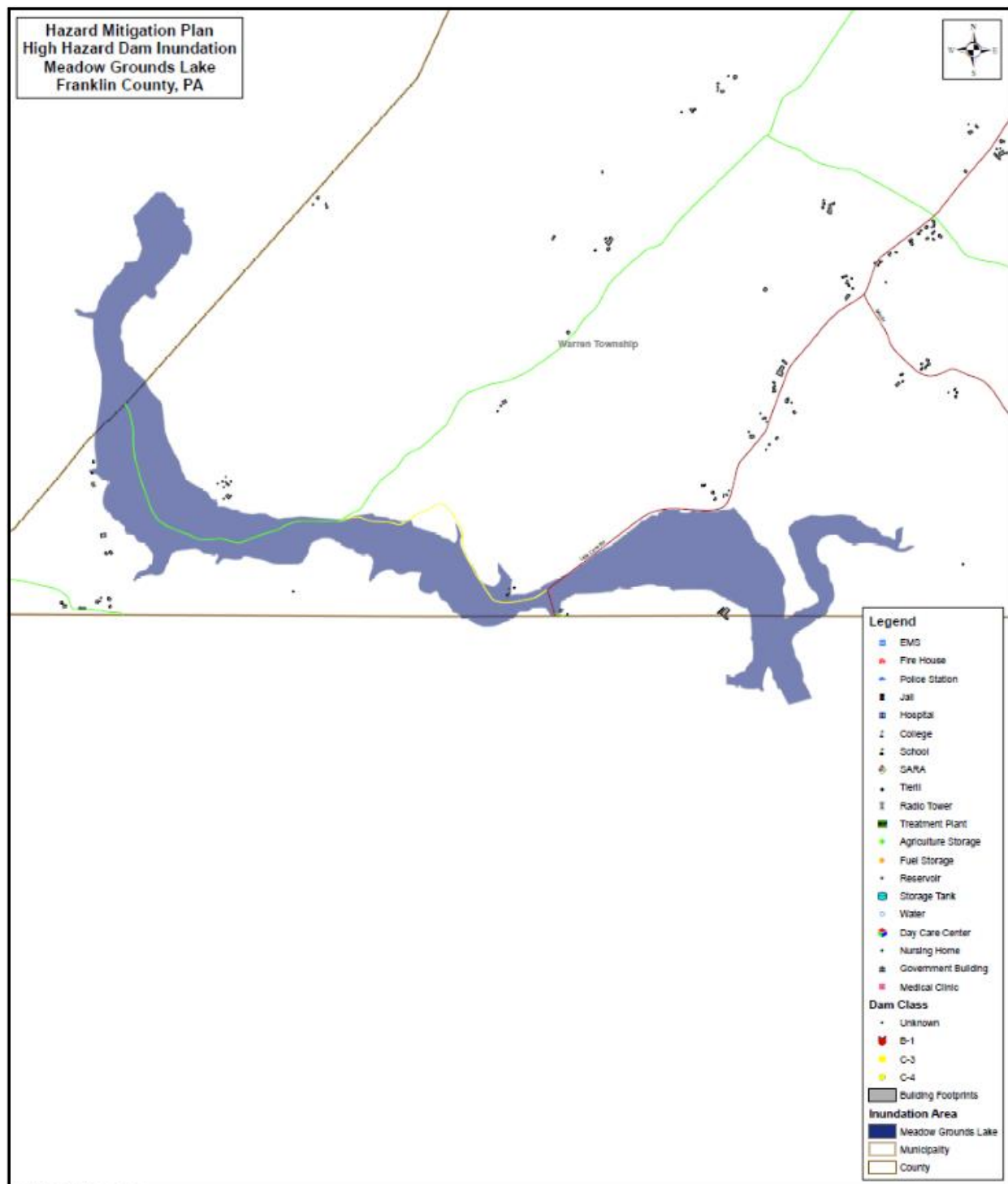


Figure 4.3.4.5.27: Meadow Grounds Dam Inundation Zone

Table 4.3.4.5.6 below identifies the number of structures impacted by the Meadow Grounds Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Meadow Grounds Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Warren Township	1	3	\$2,450	\$25,799
Totals	1	3	\$2,450	\$25,799

Table 4.3.4.5.6: Meadow Grounds Dam Inundation Zone Structural Impacts (Oct 2021)

Lower Lake Royer Dam (Washington County, MD)

The Lower Lake Royer Dam (MD00070) is classified as a High hazard dam. **Figure 4.3.4.5.28**, **Figure 4.3.4.5.29**, and **Figure 4.3.4.5.30** below show the entrapment area, spillway, and dam wall respectively.



Figure 4.3.4.5.28: Lower Lake Royer Dam Entrapment Area



Figure 4.3.4.5.29: Lower Lake Royer Dam Spillway



Figure 4.3.4.5.30: Lower Lake Royer Dam Wall

Figure 4.3.4.5.31 below shows the Lower Lake Royer Dam inundation area. It impacts Washington Township and Waynesboro Borough.

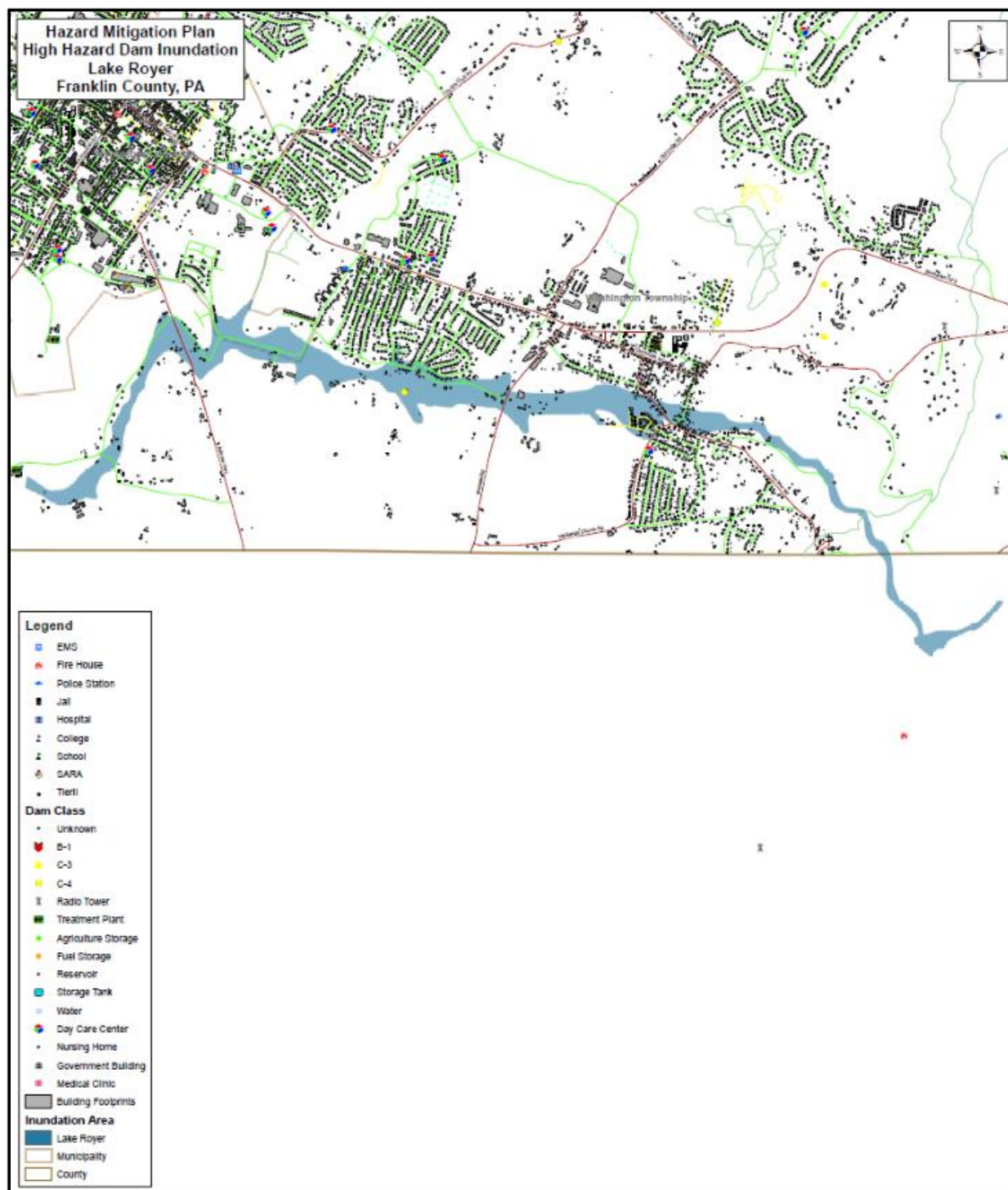


Figure 4.3.4.5.31: Lower Lake Royer Inundation Zone

Franklin County Hazard Mitigation Plan - 2023

Table 4.3.4.5.7 below identifies the number of structures impacted by the Lower Lake Royer Dam inundation zone and the estimated value of those structures. The assessed values of these structures were recorded in the Franklin County Tax Assessment database and reflect values as assessed in 1961. Therefore, to get approximate value of these structures in 2022 dollars they were multiplied by a factor of 10.53. This factor is given to the county by the state and is based off of sales in the previous year.

Low Lake Royer Dam Failure Impacts				
Municipality	Impacted Parcels	Impacted Structures	Assessed Value (1961)	Estimated Value (2022)
Quincy Township	109	273	\$1,516,160	\$15,965,165
Washington Township	2	2	\$59,630	\$627,904
Totals	111	275	\$1,575,790	\$16,593,069

Table 4.3.4.5.7: Lower Lake Royer Dam Inundation Zone Structural Impacts

Table 4.3.4.5.8 shows the critical facilities in the inundation zones of the high hazard dams in each municipality of Franklin County.

Municipality	Total Number of Critical Facilities	Critical Facilities in Risk Areas
Antrim Township	93	2
Chambersburg Borough	107	16
Fannett Township	31	0
Greencastle Borough	25	0
Greene Township	130	18
Guilford Township	108	1
Hamilton Township	51	1
Letterkenny Township	29	1
Lurgan Township	24	4
Mercersburg Borough	16	0
Metal Township	21	0
Mont Alto Borough	7	0
Montgomery Township	31	1
Orrstown Borough	1	0
Peters Township	34	0
Quincy Township	53	2
Shippensburg Borough	6	0
Southampton Township	45	2
St Thomas Township	32	1
Warren Township	4	0
Washington Township	58	7
Waynesboro Borough	55	0
Totals	961	56

Table 4.3.4.5.8: Critical Facilities per Municipality Impacted by High Hazard Dams

Table 4.3.4.5.9 shows the number of critical facilities that fall in the inundations zone of the 7 functional high hazard dams that impact Franklin County or the Franklin County population.

Dam	Total Number of Critical Facilities Impacted
Antietam Dam	6
Carbaugh Run Dam	0
Lake Royer Dam	4
Long Pine Run Dam	39
Meadow Grounds Lake Dam	0
Roxbury Dam	7
Whitetail – A Dam	1
Total	57

Table 4.3.4.5.9: Critical Facilities Impacted per High Hazard Dam

Figure 4.3.4.5.32 represents the municipality hazard threat risk assessment for dam failures in Franklin County. This self-assessment by the municipalities ranks a Dam Failure as the number 17 highest threat in the county and is considered an overall Minor risk. However, based on the lack of history of this threat in the county, the future occurrence of a dam failure can be considered *unlikely* as defined by the Risk Factor Methodology criteria (See **Section 4.4**).

Franklin County Hazard Mitigation Plan - 2023


	<div>Dam Failure</div> <div>Hazard Threat Risk Assessment</div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	10.12%	0.1316
Chambersburg Borough	2	30%	2	30%	3	20%	4	10%	4	10%	2.6	14.05%	0.3653
Fannett Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	1.59%	0.0254
Greencastle Borough	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	2.73%	0.0410
Greene Township	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	11.82%	0.1773
Guilford Township	1	30%	2	30%	3	20%	4	10%	4	10%	2.3	9.38%	0.2157
Hamilton Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	7.29%	0.1166
Letterkenny Township	1	30%	2	30%	1	20%	4	10%	4	10%	1.9	1.58%	0.0300
Lurgan Township	2	30%	4	30%	3	20%	4	10%	4	10%	3.2	1.42%	0.0454
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	0.97%	0.0155
Metal Township	1	30%	1	30%	2	20%	4	10%	4	10%	1.8	1.13%	0.0203
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.01%	0.0131
Montgomery Township	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	3.68%	0.0552
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	2	30%	2	20%	1	10%	4	10%	1.8	3.41%	0.0614
Shippensburg Borough	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	0.75%	0.0120
Southampton Township	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	5.49%	0.0824
St Thomas Township	2	30%	1	30%	1	20%	2	10%	4	10%	1.7	3.79%	0.0644
Warren Township	2	30%	2	30%	2	20%	3	10%	4	10%	2.3	0.21%	0.0048
Washington Township	1	30%	3	30%	2	20%	3	10%	4	10%	2.3	9.55%	0.2197
Waynesboro Borough	2	30%	2	30%	2	20%	4	10%	4	10%	2.4	7.02%	0.1685
Municipal Weighted Average Risk Factor (RF)													1.913

Figure 4.3.4.5.32: Municipal Dam Failure Threat Vulnerability Self-Assessment

Even though Franklin County has not experienced a dam failure in recorded history, it is still a distinct possibility. The most troublesome aspect of the above information is the total number of critical facilities that could be impacted by a breach of the Long Pine Run Dam, which is in Adams County. This means that we could have very little impact to mitigate the actual failure of the Dam Failure itself and may have to develop some mitigation actions that address expected flow of water from such a breach.

4.3.4.6 Community Lifeline Integration

Potential impacts to the Community Lifelines by a Dam Failure are shown below. There is potential for possible impact to all seven lifelines, depending on the severity and location of the breach.

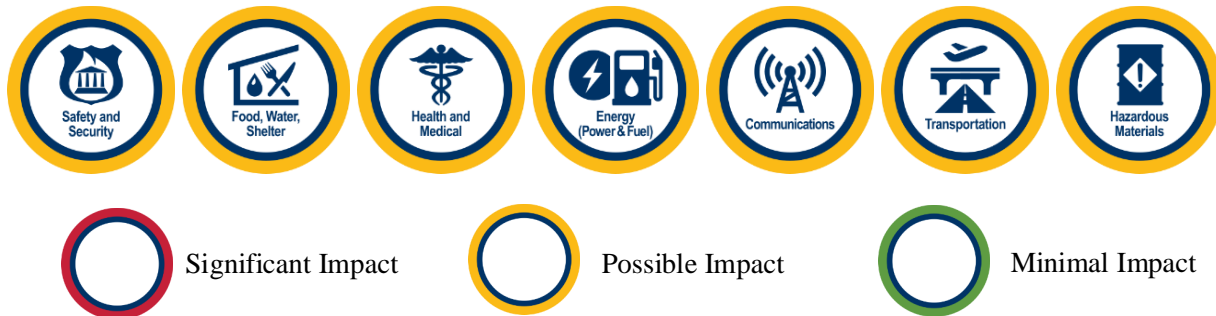


Figure 4.3.4.6.1: Dam Failure Community Lifeline Impacts

4.3.5 Drought

National Geographic explains drought to be an extended period of unusually dry weather when there is not enough rain. The lack of precipitation can cause a variety of problems for local communities, including damage to crops and a shortage of drinking water. These effects can lead to devastating economic and social disasters, such as famine, forced migration away from drought-stricken areas, and conflict over remaining resources.

Because the full effects of a drought can develop slowly over time, impacts can be underestimated. However, drought can have drastic and long-term effects on vegetation, animals, and people. Since 1900, more than eleven 11 million people have died and more than 2 billion people have been affected by drought. Drought is also one of the costliest weather-related disasters. In the past 30 years, the U.S. has experienced 16 billion-dollar droughts, totaling \$195 billion in losses³².

The National Oceanic and Atmospheric Administration (NOAA) depicts drought to be an *absence* of water. The climatological community has defined four types of drought:

- Meteorological drought happens when dry weather patterns dominate an area. Meteorological drought can begin and end rapidly.
- Hydrological drought occurs when low water supply becomes evident, especially in streams, reservoirs, and groundwater levels, usually after many months of meteorological drought. Hydrological drought takes much longer to develop and then to recover.
- Agricultural drought happens when crops become affected.
- Socioeconomic drought relates the supply and demand of various commodities to drought.

³² NGS, 2023

The U.S. Drought Monitor established a drought scale much like those that rate hurricanes and tornadoes. The "D-scale" speaks to the "unusualness" of a drought episode. Over the long run, D1 conditions are expected to occur about 10 to 20 percent of the time. D4 is much rarer, expected less than 2% of the time³³.

Figure 4.3.5.1 shows the current drought conditions in Pennsylvania using the D-scale according to the USDA (as of **May 2023**):

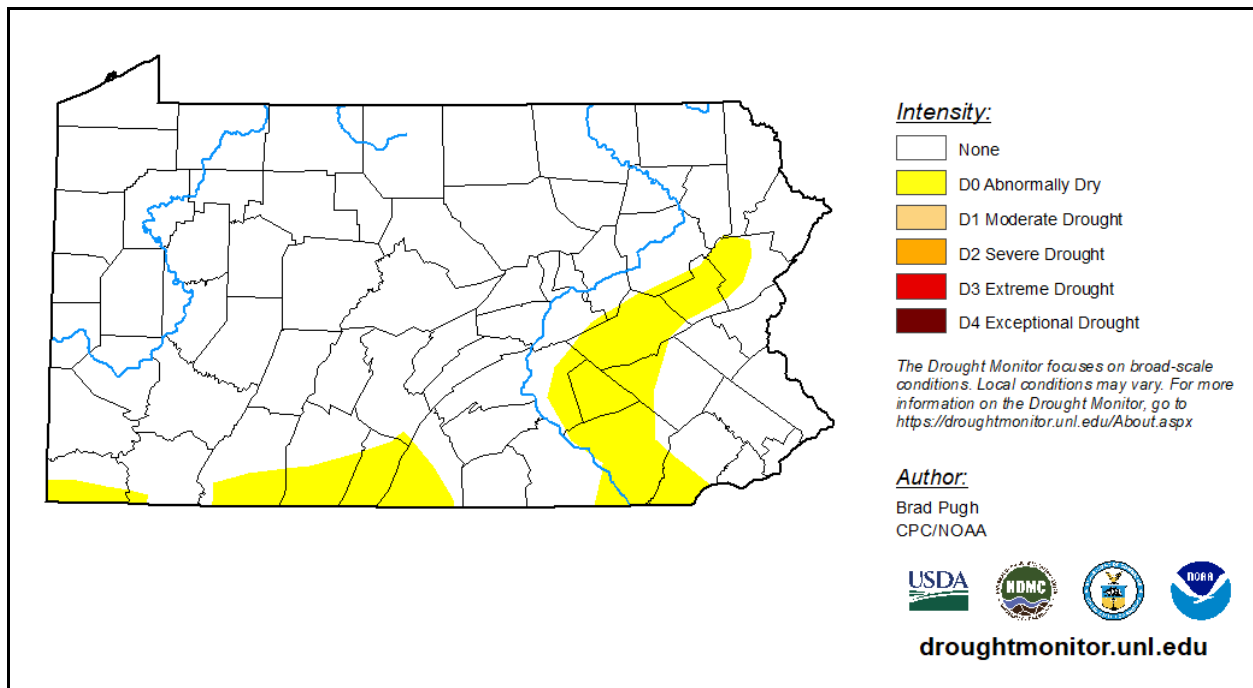


Figure 4.3.5.1: Pennsylvania Drought Conditions (May 2023)

4.3.5.1 Location and Extent

The current climate in Pennsylvania, when compared to many other states across the U.S., is generally water-rich. However, like all other states, Pennsylvania is subject to periodic droughts that impact the Commonwealth's ability to meet its water needs. While large geographic areas can be impacted by a given drought, areas with extensive agricultural land use can experience particularly significant impacts. Agriculture comprises more than 269,530 acres of land in Franklin County. Franklin County ranks 4 in the state in total agricultural cash receipts (market value of all agricultural products = \$476,469,000), additionally, statewide Franklin County ranks 2 in the production of milk, cattle, melons, and corn for silage and 3 for fruit and berry production. Because of its high agriculture production, a drought incident could have a tremendous impact on the county.

Figure 2.1.7 in **Section 2**, County Profile shows Franklin County's Agricultural Resources and Land breakdown.

³³ NOAA, 2023

4.3.5.2 Range of Magnitude

Droughts can have varying effects, depending upon what month they occur, severity, duration, and location. Some droughts may have their greatest impact on agriculture and even short term droughts, when coupled with extreme temperatures, can be devastating. Others may impact water supply or other water use activities such as recreation. Most droughts cause direct impacts to aquatic resources. Drought events are defined by rainfall amounts, vegetation conditions, soil moisture conditions, water levels in reservoirs, stream flow, agricultural productivity, or economic impacts.

Hydrologic drought events result in a reduction of stream flows, reduction of lake/reservoir storage, and reduced groundwater levels. These events have a significant adverse impact on public water supplies for human consumption, rural water supplies for livestock consumption/agricultural operations, water quality, natural soil water/irrigation water for agriculture, soil moisture, conditions conducive to wildfire events, and water for navigation/recreation.

The DEP, Office of Water Resources Planning, is responsible for drought management. Many drought management activities are coordinated at the county level, so the office's monitoring efforts are oriented primarily on a county basis as well. On a routine basis, the office reviews precipitation, stream flow, groundwater level, soil moisture, and reservoir storage information. Regular attention to these drought "indicators" is designed to provide timely identification of developing drought conditions.

- **Precipitation Deficits**

The earliest indicators of a potential drought are precipitation deficits, because it is precipitation that provides the basis for both our ground and surface water resources. The National Weather Service has long-term monthly averages of precipitation for each county (each county uses a varied number of rain gauges to determine the county average). These averages are updated at the end of each decade, based upon the most recent 30 years, and are considered "normal" monthly precipitation. Each month, the total cumulative precipitation values in each county, for periods ranging from 3 to 12 months, are compared against the normal values for the same periods. Totals that are less than the normal values represent deficits, which are then converted to percentages of the normal values.

Table 4.3.5.2.1 below is provided by PADEP which indicates Precipitation Deficit Drought Indicators:

Duration of Deficit Accumulation (months)	Drought Watch (Deficit as Percentage of Normal Precipitation)	Drought Warning (Deficit as Percent of Normal Precipitation)	Drought Emergency (Deficit as Percent of Normal Precipitation)
3	25	35	45
4	20	30	40
5	20	30	40
6	20	30	40
7	18.5	28.5	38.5
8	17.5	27.5	37.5
9	16.5	26.5	36.5
10	15	25	35
11	15	25	35
12	15	25	35

Table 4.3.5.2.1: Precipitation Deficiency Drought Indicators

- **Stream Flows**

After precipitation, stream flows provide the next earliest indication of a developing drought. Stream flows typically lag behind precipitation in signaling a drought. The U.S. Geological Survey (USGS) maintains a network of stream gages across the state. PADEP currently uses 61 of these gauges (58 in Pennsylvania, 2 in Maryland, and 1 in West Virginia), equipped with satellite communication transmitters, as its drought monitoring network. Similar to precipitation, long-term 30-day average stream flow values have been computed for each of the stream gauges, but rather than using only the past 30 years, the entire period of record for each gauge is used. Both the Commonwealth of Pennsylvania and the USGS use “percentiles” in regard to stream-flow statistics. Every day, USGS stream-gauge records are used to compute an average flow of the last 30 days preceding that day (called the “30-day moving average daily flow”), that serves as a stream-flow indicator. The stream-flow indicators are then compared with statistical flow values known as “percentiles” derived from historic stream-gauge records. A flow percentile is a value on a scale from 0 to 100 that indicates the percent of the time on that given date throughout the gauge period of record that flow has been equal to or below that value. An average flow over the last 30 days having a percentile range of:

- 10 to 25 is considered as the entry into Drought Watch.
- 5 to 10 as entry into Drought Warning.
- 0 to 5 as entry into Drought Emergency.

Suitable stream gauges with adequate periods of record do not exist in each of the 67 counties; therefore, surrogate stream-flow gauges are used for some counties. The term “Exceedances” is sometime used to describe drought statistics and may be considered the

complement of percentiles; i.e., a 10% exceedance is equivalent to a 90th percentile value, a 75% exceedance is equivalent to a 25th percentile value, etc.

- **Groundwater Levels**

Groundwater is usually the third indicator of a developing drought. Groundwater typically lags behind precipitation, largely because of the storage effect. About 80 trillion gallons of groundwater is stored throughout Pennsylvania, enough to cover the entire state with more than 8 feet of water, according to Department of Conservation and Natural Resources (DCNR) publication ES3, “The Geology of Pennsylvania’s Groundwater.” Therefore, precipitation deficits can accumulate for several months before the resultant lack of groundwater recharge becomes clearly evident in groundwater levels. As with stream-flow, the term “percentiles” is used in regard to groundwater statistics. Groundwater levels are used to indicate drought status in a manner similar to stream flows. Every day, groundwater levels in USGS observation wells are used to compute an average level of the last 30 days preceding that day (called the “30-day moving average groundwater level”), that serves as a groundwater indicator. The groundwater indicators are then compared with statistical groundwater-level values known as “percentiles” derived from historic observation-well records. A percentile is a value on a scale from 0 to 100 that indicates the percent of the time on that given date throughout the observation well period of record that water levels have been equal to or below that value. Groundwater percentile ranges of 10 to 25, 5 to 10, and 0 to 5 are used to represent entry into watch, warning and emergency, respectively. Suitable observation wells with adequate periods of record do not exist in each of the 67 counties; therefore, surrogate wells are used for some counties.

- **Soil Moisture**

Palmer Drought Severity Index Soil moisture information is provided by NOAA in the form of the “Palmer Drought Severity Index.” The Palmer Index is a computed value, based on a number of meteorological and hydrological factors; it is compiled weekly by the Climate Prediction Center of the National Weather Service. Palmer values of:

- -2.00 to -2.99 indicate a watch status.
- -3.00 to -3.99 indicate warning.
- -4.00 and less indicate emergency.

The Palmer Indices are available for the 10 Palmer regions of the state and are updated weekly³⁴.

³⁴ USGS, 1984

Severity Category	PSDI Value	Drought Status
Extremely Wet	4.0 or more	none
Very Wet	3.0 to 3.99	none
Moderately Wet	2.0 to 2.99	none
Slightly wet	1.0 to 1.99	none
Incipient wet spell	0.5 to 0.99	none
Near normal	0.49 to -0.49	none
Incipient dry spell	-0.5 to -0.99	none
Mild drought	-1.0 to -1.99	none
Moderate drought	-2.0 to -2.99	Watch
Sever drought	-3.0 to -3.99	Warning
Extreme drought	-4.0 or less	Emergency

Table 4.3.5.2.2: Palmer Drought Severity Index

- **Reservoir storage levels**

Depending on the total quantity of storage and the length of the refill period for the various reservoirs, DEP uses varying percentages of storage draw down to indicate the 3 drought stages for each of the reservoirs. The worst drought event on record for Pennsylvania occurred in 1963, when precipitation statewide averaged below normal for 10 of 12 months. Drought emergency status led to widespread water use restrictions, and reservoirs dipped to record low levels. Corn, hay, and other agricultural products shriveled in parched fields, causing economic losses. Governor William Scranton sought drought aid for Pennsylvania in the face of mounting agricultural losses, and the event became a presidentially declared disaster in September 1963.

DEP and PEMA manage droughts based on a 3-stage process. The indicators are used to identify, generally on a county basis, the overall water supply conditions. These indicators are used by DEP and PEMA to manage water supply droughts. While some of the indicators could be used as well to help identify meteorological or agricultural or other types of droughts, the primary objective is to identify and manage water supply droughts.

- **Drought Watch**

Generally, when 3 or more of the indicators are signaling a drought watch condition for a county or group of counties, DEP will notify PEMA of the developing conditions and will ask PEMA to convene a meeting of the Commonwealth Drought Task Force. Based upon recommendations from the Task Force, including direction from the Governor, the Secretary

of DEP may issue a drought watch on behalf of the Governor. Press releases are issued to the media and letters are sent to all public water suppliers in the affected area, notifying them of the need to monitor their own supplies and begin following their drought contingency plans and to update their plans if necessary. Approved drought contingency plans are valid for only 3 years from the date of approval. Citizens are requested to voluntarily reduce water usage by about 5%. DEP increases its monitoring activities from monthly to weekly and begins to monitor the status of public water suppliers in the affected area. Regular meetings of the Task Force are also scheduled to review developing conditions. The general goal is to reduce water use by 5-10 percent through voluntary water conservation.

General guidelines to follow when in a drought watch may contain such practices as the following:

- Run water only when necessary.
- Avoid running the faucet while brushing your teeth or shaving, or letting the shower run for several minutes before use.
- Check for household leaks.
- Run dishwashers and washing machines only with full loads.
- Replace older appliances with high-efficiency, front-loading models that use about 30 percent less water and 40 to 50 percent less energy.
- Install low-flow plumbing fixtures and aerators on faucets.

- **Drought Warning**

When the indicators signal a warning condition, a similar process is followed, leading to a drought warning announcement, again by the Secretary of DEP on behalf of the Governor. Press releases are issued to the media and letters are again sent to all public water suppliers in the affected area, notifying them of the developing conditions. Citizens are asked to voluntarily reduce water use by 10-15 percent. Frequency of Task Force meetings may be increased as well.

- **Drought Emergency**

When an emergency is indicated (and upon the recommendation of the Task Force), PEMA convenes a meeting of the Emergency Management Council under the chair of the Lt. Governor. Upon consideration of all the information available, including input from the county commissioners and county emergency management staff in the affected counties, the council may recommend that the Governor issue a proclamation of drought emergency. Upon issuance of the emergency proclamation by the Governor, Chapters 118, 119, and 120 of the Emergency Management Regulation become effective. Again, letters are sent to the public water suppliers. DEP increases its monitoring activities from weekly to daily, and drought reports may be prepared daily and posted on the DEP drought website. PEMA's county drought task forces meet on a regular basis and the Commonwealth Drought Task Force may begin weekly meetings to ensure continued coordination among the agencies. During an emergency, the Commonwealth Drought Coordinator is responsible for overseeing and coordinating the day-to-day drought management activities of DEP and is also

responsible for reviewing and either granting or denying requests for variances from the Chapter 119 nonessential water use restrictions³⁵.

Also provided by DEP are two possible restrictions that could happen as a result of drought:

- **Nonessential Water Use Restrictions**

The drought management activities most visible to the general public during a declared drought emergency are the nonessential water use restrictions required by Chapter 119. These restrictions are designed to achieve a reduction in overall water use of up to 25%. The overall objective of all drought management activities is to protect public health, safety, and welfare, with health and safety being paramount. To help protect welfare, water use restrictions are limited, at least initially, to nonessential uses. These restrictions apply generally to watering of lawns, gardens and shrubs; washing vehicles and paved surfaces; filling swimming pools; and use of water for ornamental purposes. Chapter 119.6 states: “If compliance with the prohibition of nonessential use of water would result in extraordinary hardship upon a water user, the water user may apply for an exemption or variance. These requests are reviewed and variances are either granted or denied by the Commonwealth Drought Coordinator.”

- **Water Rationing**

In some cases, the Chapter 119 water use restrictions may not be sufficient to protect the supplies of an individual public water supplier. When an individual supplier’s sources are so depleted as to threaten health and safety, it may become necessary to ration water within that system in order to protect the sources for these most essential uses. Under the provisions of Chapter 120, a public water supplier or a municipality may request approval to ration water within its service area. Rationing water is a more severe measure than merely banning nonessential uses of water. Under rationing, each customer on the system is allotted a given amount of water, based on a method of allotment developed by the supplier or municipality. Generally it will be based on a percentage of previous usage or on a specific daily quantity per household. These restrictions are more likely to have some effect on welfare, because industry and commerce may be cut back as well. Under Pennsylvania law, only the Governor has authority to ration resources, including water resources. For this reason, approval from the Commonwealth Drought Coordinator, acting as agent for the Emergency Management Council and on behalf of the Governor, is required for a water supplier or municipality to ration water. Requests are reviewed by the Commonwealth Drought Coordinator to ensure that rationing is justified and that appropriate rationing methods will be employed³⁶.

4.3.5.3 Past Occurrence

Figure 4.3.5.3.1 below, from the Public Opinion, was taken on Dec 26, 2016 at the Long Pine Run Dam in Adams County. Normally at that time of year, the person in the photo would have been underwater, in a year with normal precipitation.

³⁵ DEP, 2018

³⁶ DEP, 2018



Figure 4.3.5.3.1: Long Pine Run Dam Drought Impact (Dec 2016)

Table 4.3.5.3.1 below represents the times that Franklin County has been under anything except for a “normal” status for drought conditions from September 30, 1999 through January 25, 2023.

Dates	Drought Status	Dates	Drought Status
Nov 9, 2016 – May 16, 2017	Watch	Nov 7, 2002 – Dec 19, 2002	Watch
Jun 17, 2015 – Jul 10, 2015	Watch	Feb 12, 2002 – Nov 7, 2002	Emergency
Aug 5, 2011 – Sep 2, 2011	Watch	Nov 6, 2001 – Feb 12, 2002	Warning
Sep 16, 2010 – Nov 10, 2010	Warning	Aug 8, 2001 – Nov 6, 2001	Watch
Aug 6, 2007 – Feb 15, 2008	Watch	Sep 30, 1999 – May 5, 2000	Watch
Apr 11, 2006 – Jun 30, 2006	Watch		

Table 4.3.5.3.1: History of Drought in Franklin County (1999-2023)³⁷

4.3.5.4 Future Occurrence

It is difficult to forecast the severity and frequency of future drought events in Pennsylvania, and Franklin County is no different. There is no pattern to the history of drought events in the county. The past occurrences happen randomly and the durations are consistent with past

³⁷ DEP, 2023

averages. In the past 10 years, we have only experienced 7 months under Drought Watch status, approximately 6% of the time. Franklin County has not exceeded a Drought Watch in over 12 years.

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for Drought using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Drought is classified as Relatively Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Low as compared to other communities in the United States. Socially vulnerable populations could be affected by drought since those with limited economic means may not be able to deepen their wells or be able to afford additional water costs if they are on a public system.

Historically, 9 of 10 areas in the Commonwealth are under a drought warning or emergency 5-10% of the time while one area in central Pennsylvania is under a drought warning or emergency 10-15% of the time. Overall, with most of the Commonwealth being in severe or extreme drought less than 15% of the time, the probability of future droughts is considered *possible* as defined in **Section 4.4**.

The USGS routinely monitors well levels across the state. Measurements from the Franklin County Observation Well can be found in **Figure 4.3.5.4.1** below.

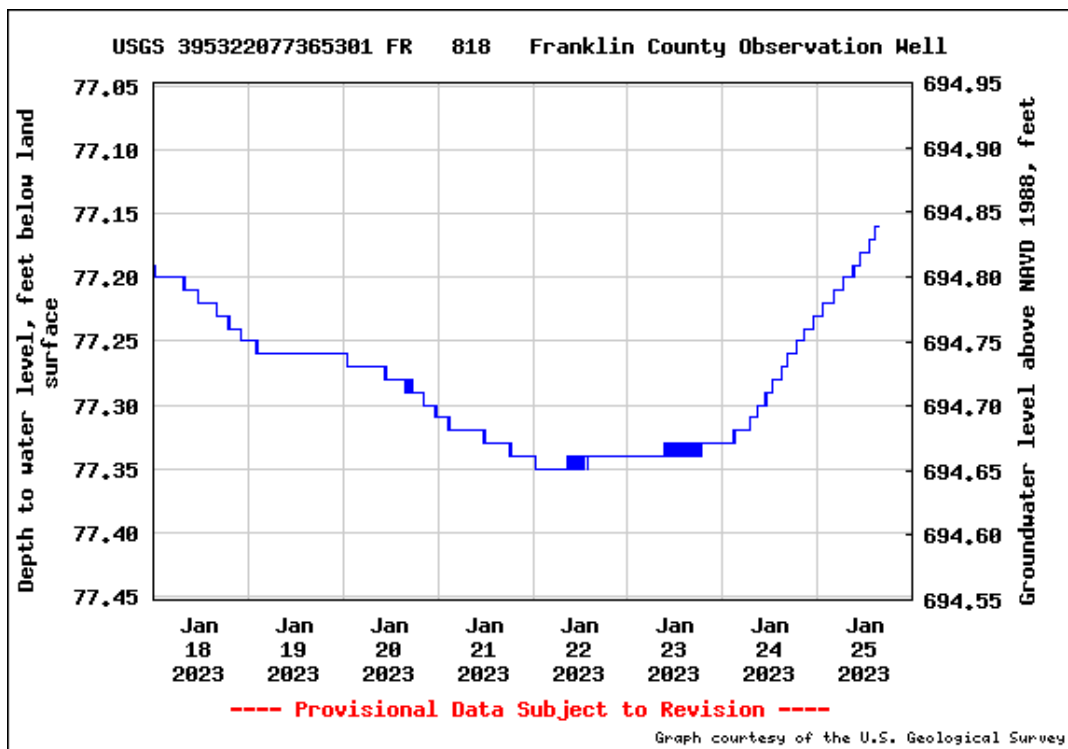


Figure 4.3.5.4.1: Sample of Franklin County Well Observations (Jan 2023)³⁸

³⁸ USGS, 2023

Another factor to consider when dealing with drought is that a neighboring county's conditions can negatively impact the residents of Franklin County. For example, the reservoir in Michaux State Forest (Long Pine Run Dam) in Adams County supplies drinking water to the largest borough (Chambersburg) in Franklin County. Therefore, the drought status of neighboring counties can also have impacts on the local communities.

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would make it less likely for the county to have an increased risk for Drought. This does not imply that drought conditions will not happen during that time, but they may be less likely to occur due to an anticipated increase in the average annual precipitation.

4.3.5.5 Vulnerability Assessment

As a hazard, droughts primarily impact water supply and agricultural land. Areas of the Commonwealth that rely on private wells are more impacted by water supply reductions than areas of the Commonwealth on public water supply; frequently, these areas reliant on groundwater wells are more rural in nature. In 2023, records from the Pennsylvania Groundwater Information System showed a total of 13,590 domestic water wells in the county³⁹.

According to the National Drought Mitigation Center at the University of Nebraska-Lincoln (2023), environmental impacts of drought include:

- Damage to animal species in the form of reduced water and feed availability
- Degradation of fish and wildlife habitat, migration and concentration issues (too many or too few animals in a given area), stress to endangered species and loss of biodiversity
- Lower water levels in reservoirs, lakes, and ponds
- Reduced stream flow
- Loss of wetlands
- Increased groundwater depletion, land subsidence, and reduced groundwater recharge.
- Water quality impacts like salinity, water temperature increases, pH changes, dissolved oxygen, or turbidity
- Loss of biodiversity
- Loss of trees
- Increased number and severity of fires
- Reduced soil quality and erosion issues
- Increased dust or pollutants

Jurisdictions with large amounts of farmland and high agricultural yields, like Franklin County are more likely to be affected by drought hazards. According to the 2017 US Department of

³⁹ DCNR, 2023

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Agriculture Agricultural Census, Franklin County was ranked number 4 in the state for agriculture sales.

Figure 4.3.5.5.1 represents the municipality hazard threat risk assessment for Drought in Franklin County. One can see from **Figure 4.3.5.5.1** below, 4 municipalities ranked this hazard as either a Catastrophic or Major and 11 of the remaining 18 municipalities rated it as a Moderate risk. This self-assessment by the municipalities ranks the Drought hazard as the number 9 highest threat in the county and is considered an overall Moderate risk.


	<div style="text-align: center;"> Drought Hazard Threat Risk Assessment </div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	10.12%	0.2226
Chambersburg Borough	2	30%	2	30%	2	20%	2	10%	4	10%	2.2	14.05%	0.3091
Fannett Township	2	30%	1	30%	1	20%	1	10%	4	10%	1.6	1.59%	0.0254
Greencastle Borough	3	30%	3	30%	2	20%	4	10%	4	10%	3.0	2.73%	0.0819
Greene Township	2	30%	2	30%	3	20%	1	10%	4	10%	2.3	11.82%	0.2719
Guilford Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	9.38%	0.1876
Hamilton Township	2	30%	2	30%	3	20%	1	10%	4	10%	2.3	7.29%	0.1677
Letterkenny Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	1.58%	0.0316
Lurgan Township	2	30%	1	30%	1	20%	2	10%	4	10%	1.7	1.42%	0.0241
Mercersburg Borough	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	0.97%	0.0213
Metal Township	1	30%	2	30%	1	20%	1	10%	4	10%	1.6	1.13%	0.0181
Mont Alto Borough	2	30%	2	30%	3	20%	1	10%	4	10%	2.3	1.01%	0.0232
Montgomery Township	3	30%	1	30%	4	20%	2	10%	4	10%	2.6	3.68%	0.0957
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	2.86%	0.0543
Quincy Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	3.41%	0.0682
Shippensburg Borough	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	0.75%	0.0165
Southampton Township	1	30%	1	30%	3	20%	1	10%	4	10%	1.7	5.49%	0.0933
St Thomas Township	3	30%	2	30%	1	20%	4	10%	4	10%	2.5	3.79%	0.0948
Warren Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	0.21%	0.0042
Washington Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	9.55%	0.1242
Waynesboro Borough	3	30%	1	30%	4	20%	1	10%	4	10%	2.5	7.02%	0.1755
Municipal Weighted Average Risk Factor (RF)													2.113

Figure 4.3.5.5.1: Municipal Drought Threat Vulnerability Self-Assessment

4.3.5.6 Community Lifeline Integration

Potential impacts to the Community Lifelines by a Drought are shown below. While five of the lifelines would likely be unaffected, Food, Water & Shelter could see a significant impact and Safety & Security could also be impacted.



Figure 4.3.5.6.1: Drought Community Lifeline Impacts

4.3.6 Earthquake

An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 1-20 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 the 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.

4.3.6.1 Location and Extent

Per the DCNR, earthquakes are not common in Pennsylvania. Earthquakes in Pennsylvania occur primarily in the southeastern and northwestern portions of the state. However, earthquakes have also occurred sporadically across the state. While the majority of events are small, there have been moderate size events recorded, as well. The Pennsylvania State Seismic Network (PASEIS), which is now made up of 30 seismic stations in Pennsylvania State Parks and Penn State University campuses, has been monitoring seismicity in Pennsylvania since its inception in 2006. These stations measure seismic activity across the state, based on magnitude and depth. Their historical records and ongoing monitoring efforts indicate that Franklin County has a documented history of two earthquakes originating in the county since 1931.

4.3.6.2 Range of Magnitude

Earthquake magnitude is typically measured by using the Richter scale, a scale which describes the energy release of an earthquake. **Table 4.3.6.2.1** summarizes the effects of an earthquake at various magnitudes.

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded
3.5 – 5.4	Often felt, but rarely cause damage
Under 6.0	At most, slight damage to well designed buildings; can cause major damage to poorly constructed buildings over small regions
6.1 – 6.9	Can be destructive in areas where people live; up to about 100 kilometers across
7.0 – 7.9	Major earthquake; can cause serious damage over large areas
8.0 or Greater	Great earthquake; can cause serious damage in areas several hundred kilometers across

Table 4.3.6.2.1: Richter Scale Magnitude and Associated Earthquake Size Effects

While the Richter scale measures the size or magnitude of an earthquake and related effects, intensity is typically measured by the Modified Mercalli scale as shown in **Table 4.3.6.2.2**.

Scale	Intensity	Description of Effects	Richter Magnitudes
I	Instrumental	Detected only on seismograph	Less than 4.2
II	Feeble	Some people feel it	Less than 4.2
III	Slight	Felt by people resting; like a truck rumbling by	Less than 4.2
IV	Moderate	Felt by people walking	Less than 4.2
V	Slightly Strong	Sleepers awake; church bells ring	Less than 4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	Less than 5.4
VII	Very Strong	Mild alarm, walls crack, plaster falls	Less than 6.1
VIII	Destructive	Moving cars lose control, masonry fractures, poorly constructed buildings are damaged	Less than 6.9
IX	Ruinous	Some houses collapse, ground cracks, pipes break	Less than 6.9
X	Disastrous	Ground cracks profusely, many buildings destroyed, landslides widespread	Less than 7.3
XI	Very Disastrous	Most buildings and bridges collapse, roads, railways, pipes, and cables destroyed; general triggering of other hazards	Less than 8.1
XII	Catastrophic	Total destruction, trees fall, ground rises and falls in waves	Greater than 8.1

Table 4.3.6.2.2: Modified Mercalli Intensity Scale with Associated Impacts

The economic and environmental impact of earthquakes can be devastating, especially when flooding, landslides, poor water quality, broken pipes, and downed lines occur as the result of earthquake.

4.3.6.3 Past Occurrence

Earthquakes are relatively rare on the East Coast of the United States, but there have been a few that were felt in Franklin County in the recent past. See **Table 4.3.6.3.1** below for the past events.

Date	Magnitude	Depth	Epicenter
August 23, 2011	5.8	0.5 miles	Virginia
July 16, 2013	1.8	3.1 miles	Guilford Township
February 26, 2019	1.1	3.1 miles	Southampton Township

Table 4.3.6.3.1: Earthquakes Felt or Located in Franklin County (2007-2023)⁴⁰

Although all events were felt by residents in the county, there was little to no damage reported. See **Figure 4.3.6.3.1** below for an example of minor damage caused by the Aug 2011 earthquake.

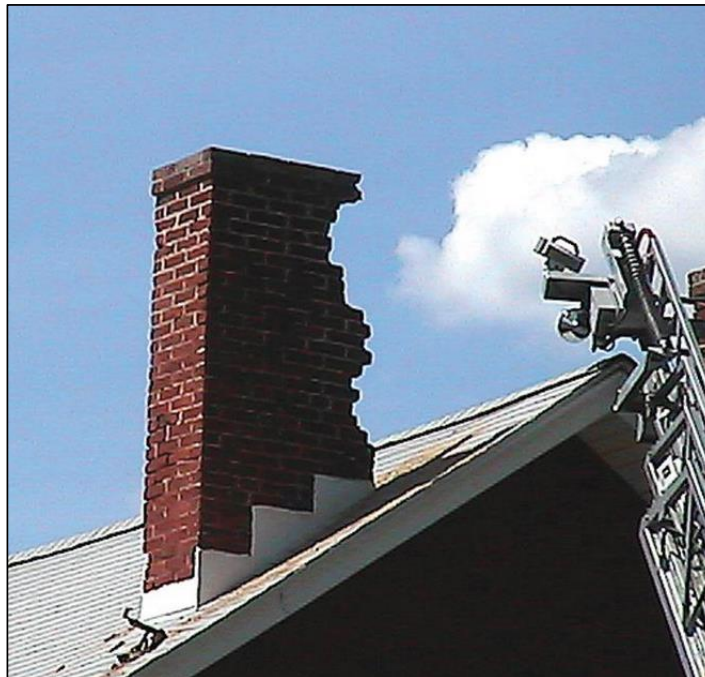


Figure 4.3.6.3.1: Chimney Damage (Fayetteville, PA) - Aug 2011 Earthquake⁴¹

⁴⁰ USGS, 2023

⁴¹ The Record Herald, 2011

4.3.6.4 Future Occurrence

The FEMA National Risk Index Map calculates a community's relative risk for an Earthquake using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for an Earthquake is classified as Very Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Very Low as compared to other communities in the United States. Socially vulnerable populations could be impacted by an earthquake, but continued implementation and monitoring of existing municipal building codes would help to minimize risk and mitigate those impacts.

The probability of a minor earthquake in Franklin County is low, but possible, given the history of events. Franklin County may also feel the impact of an event occurring in a neighboring county or outside of the State, which can occur in the documented range of 3.5 or lower. Per the USGS survey models the chance of an incident above 5.0 on the Richter scale in Franklin County is less than 1% over the next 50 years. Therefore, the future occurrence of an earthquake in Franklin County can be considered *unlikely* as defined by the Risk Factor Methodology probability criteria (See **Section 4.4**).

Climate Change

Climate change is not likely to increase the intensity, duration or location of an Earthquake within Franklin County.

4.3.6.5 Vulnerability Assessment

While earthquake risk is very low overall across the county, the assets that would be most vulnerable to future earthquake damage would primarily be any structures that were built prior to the implementation of current building codes. These assets would include older structures located across the county, but there would be an even higher risk for structures in higher-density areas such as the larger boroughs due to the close proximity of the buildings. These conditions could also result in higher casualties in those densely populated areas.

Figure 4.3.6.5.1 represents the municipality hazard threat risk assessment for Earthquakes in Franklin County. One can see from **Figure 4.3.6.5.1** below, 3 municipalities ranked this hazard as a Major risk and 5 of the remaining 19 municipalities rated it as a Moderate risk. This self-assessment by the municipalities ranks the Earthquake hazard as the number 14 highest threat in the county and is considered an overall Minor risk.

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	Earthquake Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	4	20%	4	10%	1	10%	2.5	10.12%	0.2530
Chambersburg Borough	2	30%	3	30%	4	20%	4	10%	1	10%	2.8	14.05%	0.3934
Fannett Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.59%	0.0159
Greencastle Borough	1	30%	2	30%	3	20%	4	10%	1	10%	2.0	2.73%	0.0546
Greene Township	2	30%	1	30%	4	20%	4	10%	1	10%	2.2	11.82%	0.2600
Guilford Township	1	30%	2	30%	4	20%	4	10%	1	10%	2.2	9.38%	0.2064
Hamilton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	7.29%	0.0948
Letterkenny Township	1	30%	1	30%	3	20%	4	10%	1	10%	1.7	1.58%	0.0269
Lurgan Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.42%	0.0142
Mercersburg Borough	1	30%	4	30%	4	20%	4	10%	1	10%	2.8	0.97%	0.0272
Metal Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	1.13%	0.0181
Mont Alto Borough	1	30%	2	30%	2	20%	3	10%	1	10%	1.7	1.01%	0.0172
Montgomery Township	1	30%	2	30%	4	20%	4	10%	1	10%	2.2	3.68%	0.0810
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	3.41%	0.0375
Shippensburg Borough	1	30%	1	30%	2	20%	4	10%	1	10%	1.5	0.75%	0.0113
Southampton Township	1	30%	1	30%	2	20%	1	10%	1	10%	1.2	5.49%	0.0659
St Thomas Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	3.79%	0.0493
Warren Township	1	30%	2	30%	3	20%	1	10%	1	10%	1.7	0.21%	0.0036
Washington Township	1	30%	1	30%	2	20%	4	10%	1	10%	1.5	9.55%	0.1433
Waynesboro Borough	1	30%	2	30%	4	20%	4	10%	1	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													1.975

Figure 4.3.6.5.1: Municipal Earthquake Threat Vulnerability Self-Assessment

Overall, the probability of a minor earthquake impacting Franklin County is possible, but low, based on the documentation available. The probability of a major earthquake, in excess of 5.0 on the Richter scale is far less likely.

4.3.6.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for an earthquake are shown below. There is potential for significant impact to two of the seven lifelines (Safety & Security and Energy), and possible impacts to four of the remaining five lifelines.



Figure 4.3.6.6.1: Earthquake Community Lifeline Impacts

4.3.7 Environmental Hazards

The release of hazardous materials into the local environment can be generated from a fixed facility, pipeline, or along any route of travel, and may be the result of carelessness, technical failure, external incidents, or an intentional act against the facility/container. The volatility of products being stored or transported, along with the potential impact on a local community, may increase the risk of intentional acts against a facility or transport vehicle. The release of certain products deemed to be hazardous materials can have an immediate adverse impact on the general population ranging from the inconvenience of evacuations to injury and even death. In addition to human impacts, any release can compromise the local environment through the contamination of soil, groundwater, or local flora and fauna.

For the purposes of this document, explosions are included under Environmental Hazard, as all reported and confirmed explosions have been the result of the loss of containment of a hazardous material, thus creating the explosion. According to the National Fire Protection Agency, the definition of explosion is “the sudden conversion of potential energy (chemical or mechanical) into kinetic energy with the production and release of gases under pressure, or the release of gas under pressure. These high-pressure gases then do mechanical work such as moving, changing, or shattering nearby materials.” This pairing of the two hazards is a natural process, as once the explosion occurs the product released is always considered a hazardous material.

4.3.7.1 Location and Extent

Franklin County has 134 identified facilities that utilize, ship, or house chemicals that are considered hazardous in nature. These facilities are shown in **Figure 4.3.7.1.1** and listed by municipality in **Table 4.3.7.1.1**.

It is understood that due to the nature of the mission of the Letterkenny Army Depot that there is the potential for a hazardous material incident. All mitigation processes and incident operations of these potential events is governed by federal regulations and processes and will not be addressed in this plan.

Franklin County Hazard Mitigation Plan - 2023

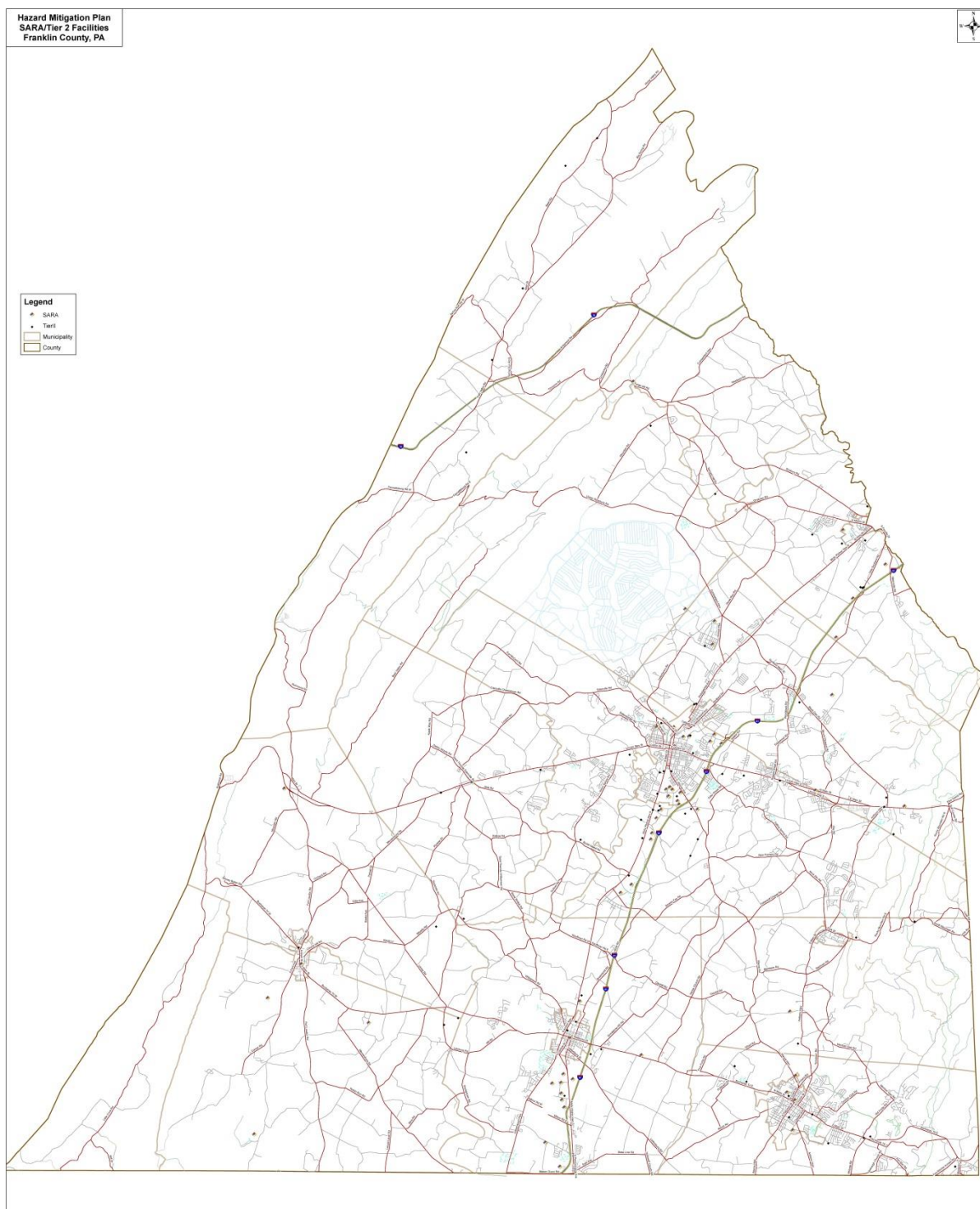


Figure 4.3.7.1.1: Hazardous Materials Processing Facilities in Franklin County (June 2023)

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Municipality	SARA Facilities	Storage tanks	Totals	% of Population
Antrim Township	16	5	21	9.95%
Chambersburg Borough	24	3	27	13.55%
Fannett Township	4	1	5	1.70%
Greencastle Borough	3	2	5	2.67%
Greene Township	12	15	27	11.16%
Guilford Township	22	4	26	9.71%
Hamilton Township	3	3	6	7.21%
Letterkenny Township	2	1	3	1.55%
Lurgan Township	2	0	2	1.44%
Mercersburg Borough	3	2	5	1.04%
Metal Township	1	1	2	1.25%
Mont Alto Borough	1	0	1	1.14%
Montgomery Township	4	0	4	4.09%
Orrstown Borough	0	0	0	0.18%
Peters Township	3	2	5	2.96%
Quincy Township	3	9	12*	3.70%
Shippensburg Borough	1	0	1	0.72%
Southampton Township	10	2	12	5.34%
St Thomas Township	4	3	7	3.97%
Warren Township	0	0	10+10	0.25%
Washington Township	8	2	10	9.36%
Waynesboro Borough	8	2	10	7.06%
Totals	134	57	191	100%
* The number of environmental threat facilities in each municipality is roughly proportional to the population density of that municipality, Quincy Township being the exception.				

Table 4.3.7.1.1: Number of SARA and HAZMAT Facilities per Municipality (Dec 2022)

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Additionally, Franklin County has 3 major gas distribution pipelines traversing the county. These distribution systems carry a variety of petro-chemicals, sometimes at pressures exceeding 300 psi⁴². These systems are shown in **Figure 4.3.7.1.2** below.

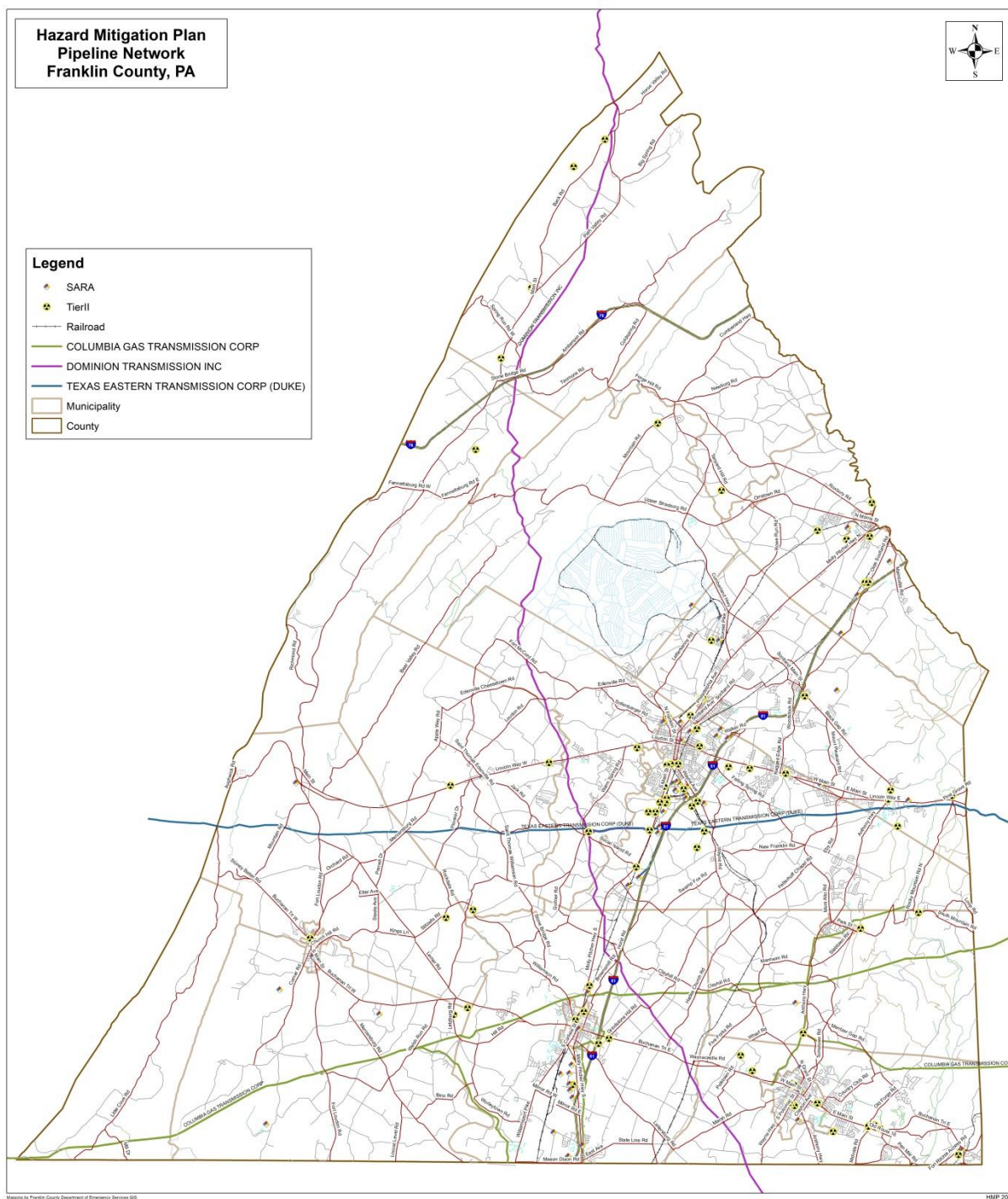


Figure 4.3.7.1.2: Major Gas Pipelines in Franklin County (Mar 2023)

⁴² PUC, Exhibit 10

Hazardous materials are classified by the Department of Transportation (DOT) into nine classes based on the chemical characteristics producing the risk. The nine classifications are:

- Class 1: Explosives
- Class 2: Gases
- Class 3: Flammable Liquids
- Class 4: Flammable Solids
- Class 5: Oxidizers and organic pesticides
- Class 6: Poisons and etiologic materials
- Class 7: Radioactive materials
- Class 8: Corrosives
- Class 9: Miscellaneous

Franklin County's past occurrences of hazardous materials releases are accidental and are not considered acts of terrorism or criminal in nature. While past occurrences have not been deemed intentional, the impact from the intentional release of any of these products in large quantity would pose a threat to the local population, economy, and environment resulting in lost revenue, injuries, and deaths.

In addition to the major routes of transportation, each fixed facility identified within the Cumberland Valley poses a potential threat to the surrounding community.

4.3.7.2 Range of Magnitude

Within Franklin County we have a major transportation corridor with over 600 miles of major highway, 2 rail hubs, and 3 major gas pipeline systems that provide for an increase in transportation of hazardous materials through rail, air, and road. These routes of transportation combined with the number of fixed facilities and end users of hazardous materials have provided for an incidence of frequent chemical and petroleum product releases.

Environmental hazards incidents within Franklin County can range from minor petroleum spills to industrial based incidents.

4.3.7.3 Past Occurrence

Environmental hazard incidents within Franklin County occur on a regular basis with the majority being handled by the local first responders with guidance from DEP. Franklin County does report a number of incidents to PEMA. **Table 4.3.7.3.1** below lists the significant Hazardous Materials incidents reported in CAD for the county from January 2021 through December 2022. The limited date range is due to a change in reporting within the CAD system for these types of incidents. Of note in this table is that Greene Township is the residence of the Letterkenny Army Depot, where several chemicals are used for vehicle maintenance and repair. This may explain the higher numbers for Greene Township incidents attributed to chemical spills other than petro-chemicals.

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Municipality	Fluid Spill	HAZMAT	Totals
Antrim Township	8	4	12
Chambersburg Borough	17	1	18
Fannett Township	0	1	1
Greencastle Borough	3	0	3
Greene Township	5	8	13
Guilford Township	8	0	8
Hamilton Township	0	1	1
Letterkenny Township	0	0	0
Lurgan Township	0	0	0
Mercersburg Borough	1	1	2
Metal Township	0	0	0
Mont Alto Borough	0	0	0
Montgomery Township	4	0	4
Orrstown Borough	0	0	0
Peters Township	2	1	3
Quincy Township	2	0	2
Shippensburg Borough	0	0	0
Southampton Township	0	1	1
St Thomas Township	1	0	1
Warren Township	0	0	0
Washington Township	11	1	12
Waynesboro Borough	11	1	12
Totals	73	20	93

Table 4.3.7.3.1: Hazardous Materials Incidents in Franklin County (2021-2022)⁴³

4.3.7.4 Future Occurrence

Due to the wide scope of definition of environmental hazards, ranging from a small spill to a large release of a highly volatile or toxic hazardous material, incidents are considered ***highly likely*** as defined by the Risk Factor Methodology criteria (See **Section 4.4**).

Social Equity

While the risk of an event is very hard to predict, there is some risk to our socially vulnerable populations, especially the elderly and our residents with disabilities, in the case of an event requiring evacuation.

⁴³ Franklin County CAD System, 2023

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Climate Change

Climate change is not expected to increase the intensity, duration or location of an Environmental Hazard within Franklin County.

4.3.7.5 Vulnerability Assessment

Figure 4.3.7.5.1 represents the municipality hazard threat risk assessment for Environmental Hazards in Franklin County. One can see from **Figure 4.3.7.5.1** below, 3 municipalities ranked this hazard as a Major risk and 8 of the remaining 19 municipalities rated it as a Moderate risk. This self-assessment by the municipalities ranks Environmental Hazards as the number 10 highest threat in the county and is considered an overall Moderate risk.


	Environmental Hazards (HAZMAT Release) Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	3	20%	4	10%	2	10%	2.4	10.12%	0.2429
Chambersburg Borough	2	30%	1	30%	2	20%	4	10%	2	10%	1.9	14.05%	0.2670
Fannett Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	1.59%	0.0350
Greencastle Borough	2	30%	3	30%	3	20%	4	10%	2	10%	2.7	2.73%	0.0737
Greene Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	11.82%	0.2009
Guilford Township	4	30%	2	30%	1	20%	4	10%	2	10%	2.6	9.38%	0.2439
Hamilton Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	7.29%	0.1604
Letterkenny Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	1.58%	0.0269
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.0170
Mercersburg Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.97%	0.0107
Metal Township	3	30%	2	30%	2	20%	4	10%	2	10%	2.5	1.13%	0.0283
Mont Alto Borough	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	1.01%	0.0162
Montgomery Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	3.68%	0.0810
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.14%	0.0015
Peters Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	2.86%	0.0486
Quincy Township	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	3.41%	0.0443
Shippensburg Borough	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	0.75%	0.0120
Southampton Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	5.49%	0.1208
St Thomas Township	3	30%	2	30%	1	20%	4	10%	2	10%	2.3	3.79%	0.0872
Warren Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	0.21%	0.0046
Washington Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	9.55%	0.2101
Waynesboro Borough	1	30%	2	30%	2	20%	4	10%	2	10%	1.9	7.02%	0.1334
Municipal Weighted Average Risk Factor (RF)													2.066

Figure 4.3.7.5.1: Municipal Environmental Hazards Threat Vulnerability Self-Assessment

Environmental hazards have the greatest impact on the residential population within Franklin County. The majority of incidents reported within Franklin County are the result of motor vehicle accidents or spills/leaks within or at a residential structure.

The economic loss from environmental hazards and explosion incidents ranges from non-recordable to larger losses. The impact on the local economy from a single incident is almost impossible to measure due to the complexity of work lost, revenue losses, and loss of future business.

4.3.7.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a hazardous materials incident are shown below. There is potential for significant impact to one of the lifelines (Hazardous Materials), and possible impacts to four of the remaining six lifelines.



Figure 4.3.5.6.1: Environmental Hazards Community Lifeline Impacts

4.3.8 Extreme Temperatures

This section provides a hazard profile and vulnerability assessment for the Extreme Temperature hazard in Franklin County, including both extreme heat and extreme cold conditions. Extreme heat can be described as temperatures that hover 10 degrees F or more above the average high temperatures for a region during the Summer months. Extreme Heat is usually discussed using the term Heat Index. The Heat Index or the "Apparent Temperature" is an accurate measure of how hot it really feels when the Relative Humidity (RH) is added to the actual air temperature⁴⁴. See **Figure 4.3.8.1** for the Heat Index chart.

⁴⁴ NOAA

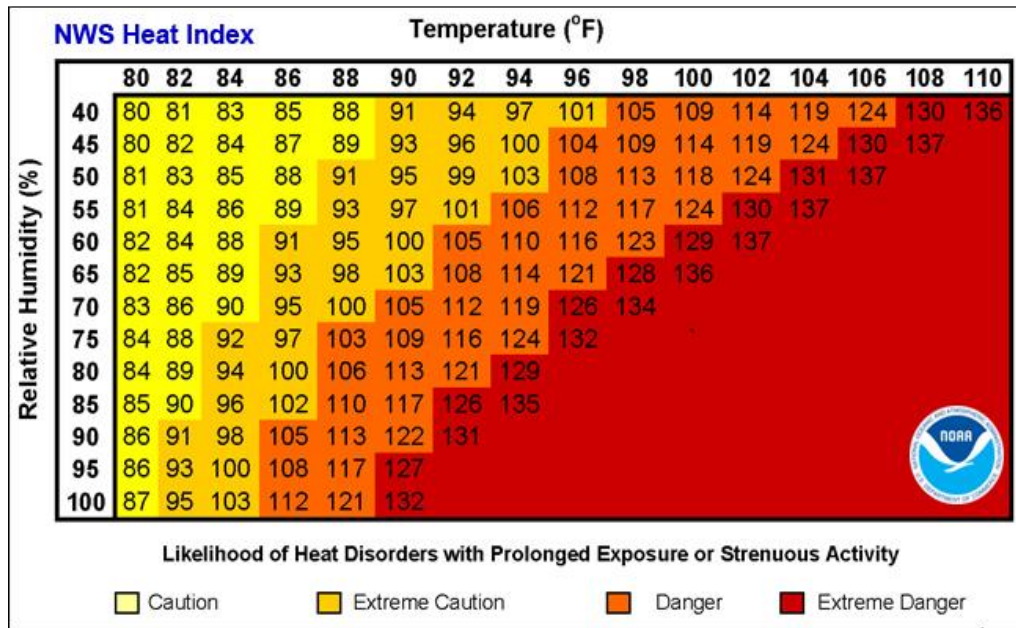


Figure 4.3.8.1: National Weather Service Heat Index (HI)⁴⁵

Parameters for extreme cold temperature events vary across different regions of the United States, but Franklin County and other areas accustomed to winter weather, below 0 degrees F may be considered extreme cold. However, Wind Chill Factor is the common terminology used to discuss extreme cold temperatures. Wind Chill Factor is only defined for temperatures at or below 50 degrees F and wind speeds above 3 mph⁴⁶. Combined with increases in wind speed, extreme cold temperatures in Pennsylvania can be life threatening to those exposed for extended periods of time. See **Figure 4.3.8.2** for the Wind Chill chart.

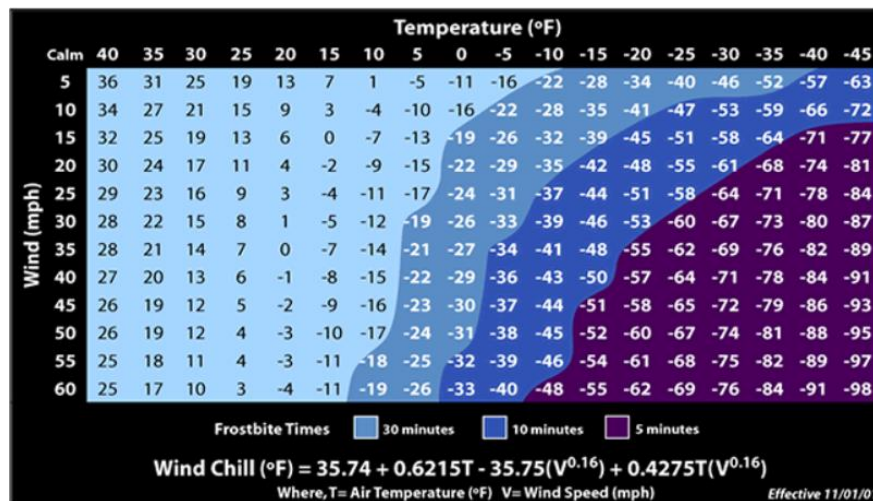


Figure 4.3.8.2: National Weather Service Wind Chill Chart⁴⁷

⁴⁵ NOAA, 2023

⁴⁶ NOAA, 2023

⁴⁷ NOAA, 2023

4.3.8.1 Location and Extent

Franklin County can experience many different temperature extremes in the Summer and Winter months. Areas most susceptible to extreme heat include urban environments, which tend to retain the heat well into the night, leaving little opportunity for dwellings to cool. The larger urban areas in the county, such as Chambersburg and Waynesboro and immediate vicinities, are more likely to retain heat more than the rest of the county. Areas most susceptible to extreme cold include higher elevations where the temperatures are naturally colder and access ways are more susceptible to closure due to severe weather, essentially isolating “at risk” communities. Franklin County has a few smaller communities situated along the ridgelines of the eastern and western boundaries of the county that may be more at likely to experience extreme cold.

June, July, and August are typically the warmest months in Franklin County (See **Figure 4.3.8.1.1**).

Average Max Temperatures (degrees F) by Month - 2018-2022						
Month	2018	2019	2020	2021	2022	2018-22 Average
January	37.9	37.4	43.3	39	35	38.5
February	47.0	43.7	47.1	37.4	45.2	44.1
March	44.4	49.6	56.9	56.3	54.5	52.3
April	58.7	65.9	58.8	63.8	60.6	61.6
May	77.6	74.8	68.9	71.6	73.8	73.3
June	79.5	80.3	83.2	83.0	82.3	81.7
July	84.9	87.6	89.5	85.8	86.0	86.8
Aug	84.4	84.5	85.5	86.7	86.3	85.5
September	76.9	81.4	75.0	77.6	76.0	77.4
October	65.3	67.1	66.3	69.4	62.6	66.1
November	46.7	49.6	59.7	52.0	55.4	52.7
December	43.7	42.5	41.9	49.8	40.9	43.8

Figure 4.3.8.1.1: Maximum Temperatures per Month (2018-2022)⁴⁸

Given the definition of extreme heat identified in **Section 4.3.8**, and the average high temperatures for the county’s hottest months (**Figure 4.3.8.1.1**), extreme heat can vary from mid to high 80s and apparent heat can be even higher with an increase in relative humidity (See **Figure 4.3.8.1**).

⁴⁸ NOAA/NCEI, 2023

Because of our geographic location in the northeast, Franklin County is more likely to experience extreme cold temperatures in the Winter months (November through March). **Figure 4.3.8.1.2** shows the minimum monthly temperatures for Franklin County over the past 5 years.

Average Min Temperatures (degrees F) by Month - 2018-2022						
Month	2018	2019	2020	2021	2022	2018-22 Average
January	17.9	21.2	25.9	24.4	17.4	21.4
February	27.4	24.5	28.6	23.0	22.2	25.1
March	26.8	28.0	35.2	32.0	31.1	30.6
April	36.3	43.2	37.3	40.4	37.9	39.0
May	54.4	54.1	46.9	46.6	50.7	50.5
June	58.8	57.7	58.6	59.2	58.8	58.6
July	62.2	63.8	65.0	62.7	64.1	63.6
Aug	64.3	61.3	63.8	64.3	62.9	63.3
September	60.7	56.5	52.4	55.5	55.4	56.1
October	46.9	45.8	43.8	50.3	40.6	45.5
November	32.2	29.1	36.2	29.6	33.9	32.2
December	27.6	26.6	24.9	30.4	23.2	26.5

Figure 4.3.8.1.2: Minimum Temperatures per Month (2018-2022)⁴⁹

Given the definition of extreme cold (Wind Chill) identified in **Section 4.3.8**, and the average low temperatures for the county's coldest months (**Figure 4.3.8.1.2**), extreme cold can dip as low as single digits with just a 25 mph sustained wind (See **Figure 4.3.8.2**).

4.3.8.2 Range of Magnitude

NOAA's heat alert procedures are based mainly on Heat Index (HI) values (See **Figure 4.3.8.1** above). The Heat Index indicates the temperature the body feels. It is important to note that the HI values are devised for shady, light wind conditions. Exposure to full sunshine can increase the heat index values by up to 15 degrees F.

Exposure to heat can cause health problems indirectly, such as an increased workload on the heart. This can be especially dangerous to young children and individuals with pre-existing medical conditions, typically the elderly whose bodies cannot manage the physical stress these events cause. Extremely high temperatures can cause heat stress, which can be divided into four categories (See **Table 4.3.8.2.1** below).

⁴⁹ NOAA/NCEI, 2023

Danger Category	Heat Disorders	Apparent Temperature (degrees F)
I (Caution)	Fatigue is possible with prolonged exposure and physical activity.	80 to 90
II (Extreme Caution)	Sunstroke, heat cramps, and heat exhaustion are possible with prolonged exposure and physical activity	90 to 105
III (Danger)	Sunstroke, heat cramps, and heat exhaustion are likely; heat stroke is possible with prolonged exposure and physical activity	105 to 130
IV (Extreme Danger)	Heatstroke or sunstroke are imminent	>130

Table 4.3.8.2.1: Four Categories of Heat Stress⁵⁰

The following impacts can be observed following an extreme temperature event:

- **Health Impacts:** Prolonged exposure to cold temperatures can lead to frost bite and/or hypothermia. This is especially true in areas where the primary source of heating is provided through or supplemented by electrical heat sources. When the power is lost due to winter storm damage, the elderly and young children without a heat source can be extremely vulnerable to the extreme cold conditions. However, extreme heat waves, can prove more deadly over a shorter duration, especially in areas where air conditioning is not present or lost due to power outages. The age of housing in the area can also be a factor in the health impacts of extreme heat conditions. **Table 4.3.27.5.1** in the Winter Storm hazard profile indicates that over 34% of houses in the county were built prior to 1960, meaning they were likely built without central air conditioning. This means the high risk communities can be in harm's way even if the power is not interrupted.
- **Transportation:** Cold weather can impact automotive engines and stress metal bridge structures. Highways and railroad tracks can become distorted in high heat, due to expansion of materials as they get hotter. Disruptions to the transportation network and accidents caused by extreme temperatures represent an additional risk as motorists can become stranded in these harsh elements.
- **Agriculture:** Absolute temperature and duration of extreme cold can have devastating effects on trees and winter crops. Livestock is especially vulnerable to heat, and crop yields can be impacted by heat waves that occur during key development stages.
- **Energy:** Energy consumption rises significantly during both extreme cold and extreme heat conditions. Residents are placed in extreme danger when any fuel shortages or utility failures prevent the heating or cooling of a dwelling. Utility Interruptions are specifically profiled in **Section 4.3.25**.

⁵⁰ NOAA, 2023

Franklin County's worst-case extreme heat scenario would be an excessive heat spell occurring during a summer holiday weekend, such as the Fourth of July. Summer holiday weekends bring people out of their air-conditioned work environments and homes and into the outdoors, often despite dangerous heat and humidity levels. The issue can be exacerbated due to heavy loads on the energy grid causing rolling brown-outs or black-outs. Couple this with reduced electrical generation/maintenance manpower coverage over the holiday and this could lead to extended periods of heat exposure without a means of relief.

The worst-case extreme cold temperature scenario involves extended below 0 temperatures and chilling winds that could threaten safety of residents and continuity of utilities. There are several nursing homes and assisted living centers in the county that would have to relocate these mobility challenged residents if the loss of utilities cause heating system failures. Add these to the number of single family home residents that also would be looking for shelter if they do not have a secondary source of heat in their homes, and you rapidly have a humanitarian crisis on your hands.

4.3.8.3 Past Occurrence

Data from the National Centers for Environmental Information (NCEI) reports that there have been 269 extreme temperature event days in Pennsylvania between 1950 and 2017, resulting in a total of 449 deaths and 455 injuries. One hundred and one (101) of these event days have been a result of extreme cold, resulting in 35 deaths and 1 injury. There have been 168 extreme heat event days, resulting in 414 deaths and 454 injuries⁵¹.

A refined search of the NCEI database was performed for Franklin County. **Table 4.3.8.3.1** below illustrates specific events contained in this database for the past 20 years (1993 through 2022).

⁵¹ NOAA/NCEI, 2023

Type of Event	Date	Temperature Extreme	Injuries	Deaths
Excessive Heat	07/03/2018	Heat Index of 105 to 115 degrees F	0	0
Excessive Heat	07/02/2018	Heat Index of 105 to 115 degrees F	0	0
Extreme Cold/Wind Chill	2/15/2015	Wind Chill of -25 to =35 degrees F	0	0
Extreme Cold/Wind Chill	1/6/2014	Wind Chill of -25 to -50 degrees F	0	0
Excessive Heat	7/21/2011	Heat Index of 105 to 115 degrees F	0	0
Extreme Cold/Wind Chill	2/5/2007	Wind Chill of -10 to -15 degrees F	0	0
Excessive Heat	8/1/2006	Heat Index of 103 to 108 degrees F	0	0
Excessive Heat	7/31/2006	Heat Index of 98 to 103 degrees F	0	0
Excessive Heat	7/17/2006	Heat Index of 96 to 101 degrees F	0	0

Table 4.3.8.3.1: Franklin County Extreme Temperature Events (1993-2022)⁵²

4.3.8.4 Future Occurrence

Because of its location and geography, Franklin County is more likely to encounter extreme cold than excessively hot weather. However, both are possibilities and must be planned for. We have high risk communities that are particularly susceptible to these threats and mitigation plans need to be made to plan for either scenario.

The FEMA National Risk Index Map calculates a community's relative risk for Extreme Heat and Extreme Cold using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Losses for Extreme Heat and Extreme Cold are both classified as Relatively Moderate, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Moderate as compared to other communities in the United States. Socially vulnerable populations could be impacted by extreme temperatures, especially the elderly and those without the financial means to afford air conditioning. Those with disabilities may also be affected by extreme temperatures if they cannot afford medical care needed to help cope with extreme temperature events.

Climate Change

Climate change is likely to increase the intensity and duration of an Extreme Temperature event within Franklin County, especially Extreme Heat. According to NOAA's Climate Mapping for Resilience and Adaptation, annual maximum high temperatures over five days are expected to

⁵² NOAA/NCEI, 2023

increase 4.0 – 4.3 degrees by 2044. During that same time period, they predict between 19.7 and 22.3 more days annually with temperatures above 90 degrees and an additional 379.7 - 426.4 cooling degree days per year. While extreme cold events are still possible, it seems more likely that Franklin County will be affected by higher temperatures in the future.

The future occurrence of extreme temperature can be considered *likely* as defined by the Risk Factor Methodology probability criteria (See **Section 4.4**).

4.3.8.4.1 Vulnerability Assessment

The entire county, including all critical infrastructure, is vulnerable to the effects of extreme temperatures. Refer to **Table 4.3.8.5.1** for specific critical facilities in the municipalities subject to extreme temperatures. These numbers include nursing homes, hospitals, and assisted living communities as well as schools and day care facilities that impact our members of the community at the greatest risk to this threat.

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Municipality	Schools	Childcare	Nursing/Group Home	Hospital	Medical/Urgent Care	Total Number of Critical Facilities
Antrim Township	6	17	1	0	1	93
Chambersburg Borough	12	16	7	1	6	107
Fannett Township	6	1	1	0	0	31
Greencastle Borough	5	5	0	0	0	25
Greene Township	5	25	7	0	0	130
Guilford Township	11	14	9	0	0	108
Hamilton Township	3	12	3	0	0	51
Letterkenny Township	0	1	1	0	0	29
Lurgan Township	9	0	0	0	0	24
Mercersburg Borough	2	1	0	0	0	16
Metal Township	3	1	0	0	0	21
Mont Alto Borough	1	1	0	0	0	7
Montgomery Township	1	1	0	0	0	31
Orrstown Borough	0	0	0	0	0	1
Peters Township	3	2	0	0	0	34
Quincy Township	8	2	3	0	0	53
Shippensburg Borough	3	0	0	0	0	6
Southampton Township	3	5	2	0	0	45
St Thomas Township	1	5	2	0	0	32
Warren Township	0	0	0	0	0	4
Washington Township	1	9	0	0	0	58
Waynesboro Borough	9	11	4	1	2	55
County Totals	92	129	40	2	9	961

Table 4.3.8.5.1: Critical Facilities at Risk of Extreme Temperatures

Figure 4.3.8.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Extreme Temperature hazard. One of 22 municipalities rated this threat as a Catastrophic event and 4 additional rated it as a Major event. Additionally, 12 of the remaining 17 municipalities rank this as a Moderate threat. This was ranked as the number 5 highest threat in the county and will require some attention during the Mitigation Strategy in **Section 6**.

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	Extreme Temperatures Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	4	20%	1	10%	3	10%	2.4	10.12%	0.2429
Chambersburg Borough	2	30%	2	30%	4	20%	4	10%	3	10%	2.7	14.05%	0.3794
Fannett Township	2	30%	2	30%	4	20%	1	10%	3	10%	2.4	1.59%	0.0382
Greencastle Borough	3	30%	3	30%	3	20%	1	10%	3	10%	2.8	2.73%	0.0764
Greene Township	3	30%	1	30%	4	20%	1	10%	3	10%	2.4	11.82%	0.2837
Guilford Township	3	30%	1	30%	4	20%	1	10%	3	10%	2.4	9.38%	0.2251
Hamilton Township	2	30%	1	30%	4	20%	1	10%	3	10%	2.1	7.29%	0.1531
Letterkenny Township	3	30%	1	30%	4	20%	1	10%	3	10%	2.4	1.58%	0.0379
Lurgan Township	1	30%	1	30%	1	20%	2	10%	3	10%	1.3	1.42%	0.0185
Mercersburg Borough	3	30%	1	30%	4	20%	1	10%	3	10%	2.4	0.97%	0.0233
Metal Township	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	1.13%	0.0136
Mont Alto Borough	2	30%	2	30%	2	20%	1	10%	3	10%	2.0	1.01%	0.0202
Montgomery Township	3	30%	2	30%	4	20%	1	10%	3	10%	2.7	3.68%	0.0994
Orstown Borough	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	0.14%	0.0017
Peters Township	3	30%	1	30%	1	20%	4	10%	3	10%	2.1	2.86%	0.0601
Quincy Township	1	30%	1	30%	2	20%	1	10%	3	10%	1.4	3.41%	0.0477
Shippensburg Borough	2	30%	1	30%	4	20%	1	10%	3	10%	2.1	0.75%	0.0158
Southampton Township	2	30%	2	30%	4	20%	4	10%	3	10%	2.7	5.49%	0.1482
St Thomas Township	2	30%	2	30%	2	20%	3	10%	3	10%	2.2	3.79%	0.0834
Warren Township	2	30%	2	30%	3	20%	1	10%	3	10%	2.2	0.21%	0.0046
Washington Township	1	30%	1	30%	1	20%	2	10%	3	10%	1.3	9.55%	0.1242
Waynesboro Borough	4	30%	2	30%	4	20%	1	10%	3	10%	3.0	7.02%	0.2106
Municipal Weighted Average Risk Factor (RF)													2.308

Figure 4.3.8.5.1: Municipal Extreme Temperatures Threat Vulnerability Self-Assessment

Extreme temperatures generally occur for a short period of time, but can cause a wide range of impacts, particularly to vulnerable populations that may not have access to adequate heating and/or cooling. This natural hazard can also cause impacts to agriculture (crops and animals) and infrastructure (pipe bursts and power failures) negatively affecting the economy of Franklin County.

4.3.8.5 Community Lifeline Integration

Potential impacts to the Community Lifelines for an extreme temperature event are shown below. There is potential for significant impact to one of the lifelines (Food, Water, Shelter), and possible impacts for two of the remaining six lifelines.



Figure 4.3.8.6.1: Extreme Temperatures Community Lifeline Impacts

4.3.9 Flood, Flash Flood, and Ice Jam

Floodplains are lowlands, adjacent to rivers, creeks, and streams that are subject to recurring floods. The size of the floodplain is described by the recurrence interval of a given flood. However, 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 its Flood Insurance Rate Maps (FIRMs) are published, identifies the 1%-annual-chance flood which is used to delineate the Special Flood Hazard Area (SFHA) and Base Flood Elevations. The SFHA serves as the primary regulatory boundary used by FEMA, the Commonwealth of Pennsylvania, and Franklin County local governments. Refer to **Appendix F** for a list of terms used to define the SFHA.

Figure 4.3.9.1 shows an example from the website used (<https://msc.fema.gov/portal/home>) to determine specific property's effective Flood Zone. In this example we used the address for Norlo Park in Guilford Township. The figure illustrates that a portion of the park falls within the Special Flood Hazard Area Zone "A", which, as defined in **Appendix F**, means it is High Risk and subject to inundation by the 1-percent-annual-chance flood event, as shown by the light blue shading. Any interested residential or commercial property owner can access this website to determine if their property is located within a flood hazard area.

National Flood Hazard Layer FIRMette

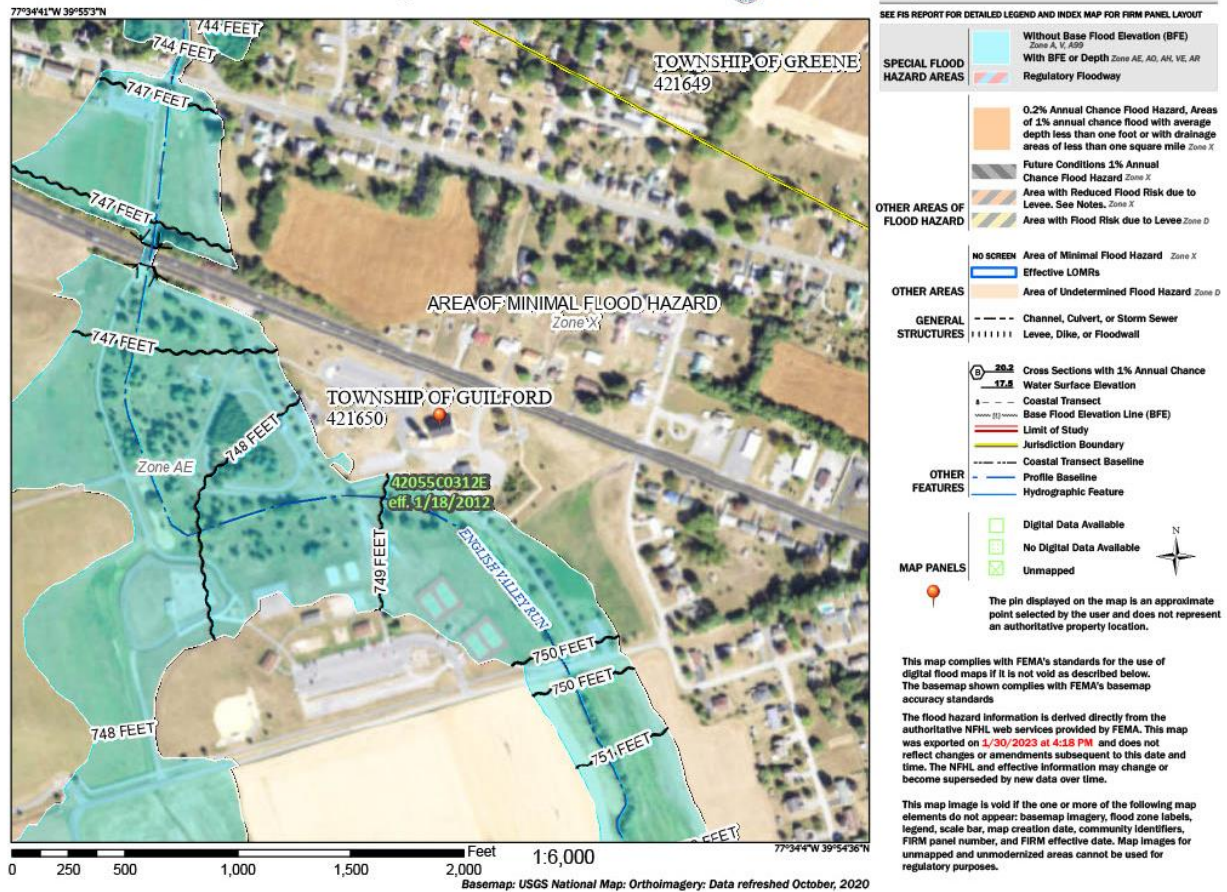


Figure 4.3.9.1: Example from FEMA Flood Hazard Layer FIRMette for Norlo Park in Guilford Township⁵³

4.3.9.1 Location and Extent

The countywide Digital Flood Insurance Rate Map (DFIRM) was published for Franklin County on January 18, 2012. All communities within the County are now shown on a single set of countywide DFIRMs. Previous FIRMs and Flood Boundary and Floodway Maps (FBFM) were digitized to produce a DFIRM that is compatible with geographic information systems (GIS). These maps can be used to identify the expected spatial extent of flooding from a 1%-annual-chance event. The following water courses are considered flood sources in the most recent DFIRMs: Burns Creek, Doylestown Stream, Dry Run, Main Branch and West Branch of the Conococheague Creek, Fetty Stewart Run, Trout Run, Conodoguinet Creek, Township Run, Broad Run, Buck Run, Johnston Run, Blue Spring Creek, Licking Creek, Welsh Run, Muddy Run, Back Creek, Campbell Run, Wilson Run, Dennis Creek, Rocky Spring Branch, Rowe Run, Laughlin Run, Clippingers Run, Paxton Run, Middle Spring Creek, Furnace Run, Mains Run, Mountain Run, Phillaman Run, Cold Spring Run, Stump Run, Rocky Mountain Creek, Raccoon Creek, Carbaugh Run, East and West Branch of the Antietam Creek, Biesecker Run, Red Run, and Paddy Run.

⁵³ FEMA, 2023

Figure 2.1.3 in **Section 2**, County Profile, shows the location of major watercourses in Franklin County and **Figure 2.1.2** in the same section shows all the watersheds impacted in the county. Flood events caused by ice jams would be limited primarily to the Conococheague Creek, the Antietam Creek, and the Conodoquinet Creek.

Figure 4.3.9.1.1 shows all the Franklin County DFIRM panels. However, in order to see the details of the panels more clearly, the map was segregated into 4 separate quadrants.

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Table 4.3.7.1.1 below lists the panels contained in each of these 4 quadrants.

Quadrant 1	Quadrant 2		Quadrant 3		Quadrant 4		
42055C0035E	42055C0015E	42055C0179E	42055C0230E	42055C0406E	42055C0278E	42055C0312E	42055C0480E
42055C0040E	42055C0020E	42055C0183E	42055C0235E	42055C0410E	42055C0280E	42055C0313E	42055C0440E
42055C0045E	42055C0055E	42055C0165E	42055C0255E	42055C0365E	42055C0281E	42055C0314E	42055C0445E
42055C0130E	42055C0060E	42055C0170E	42055C0260E	42055C0370E	42055C0282E	42055C0316E	42055C0461E
42055C0135E	42055C0080E	42055C0167E	42055C0240E	42055C0390E	42055C0283E	42055C0317E	42055C0462E
42055C0120E	42055C0065E	42055C0186E	42055C0245E	42055C0395E	42055C0284E	42055C0318E	42055C0463E
42055C0140E	42055C0070E	42055C0187E	42055C0265E	42055C0415E	42055C0301E	42055C0319E	42055C0464E
42055C0145E	42055C0090E	42055C0188E	42055C0270E	42055C0420E	42055C0302E	42055C0336E	42055C0470E
	42055C0155E	42055C0189E	42055C0360E	42055C0505E	42055C0303E	42055C0338E	42055C0468E
	42055C0160E	42055C0191E	42055C0380E	42055C0510E	42055C0304E	42055C0340E	42055C0469E
	42055C0176E	42055C0192E	42055C0385E	42055C0530E	42055C0310E	42055C0430E	42055C0490E
	42055C0177E	42055C0193E	42055C0383E	42055C0535E	42055C0330E	42055C0435E	42055C0580E
	42055C0181E	42055C0194E	42055C0384E	42055C0555E	42055C0286E	42055C0455E	42055C0585E
	42055C0178E	42055C0215E	42055C0405E	42055C0560E	42055C0290E	42055C0452E	42055C0601E
					42055C0291E	42055C0454E	42055C0602E
					42055C0292E	42055C0456E	42055C0606E
					42055C0295E	42055C0458E	42055C0607E
					42055C0311E	42055C0460E	42055C0630E

Table 4.3.9.1.1: List of Panels in Each Quadrant

Larger views of these quadrants are shown in **Figures 4.3.9.1.2 – 4.3.9.1.5**.

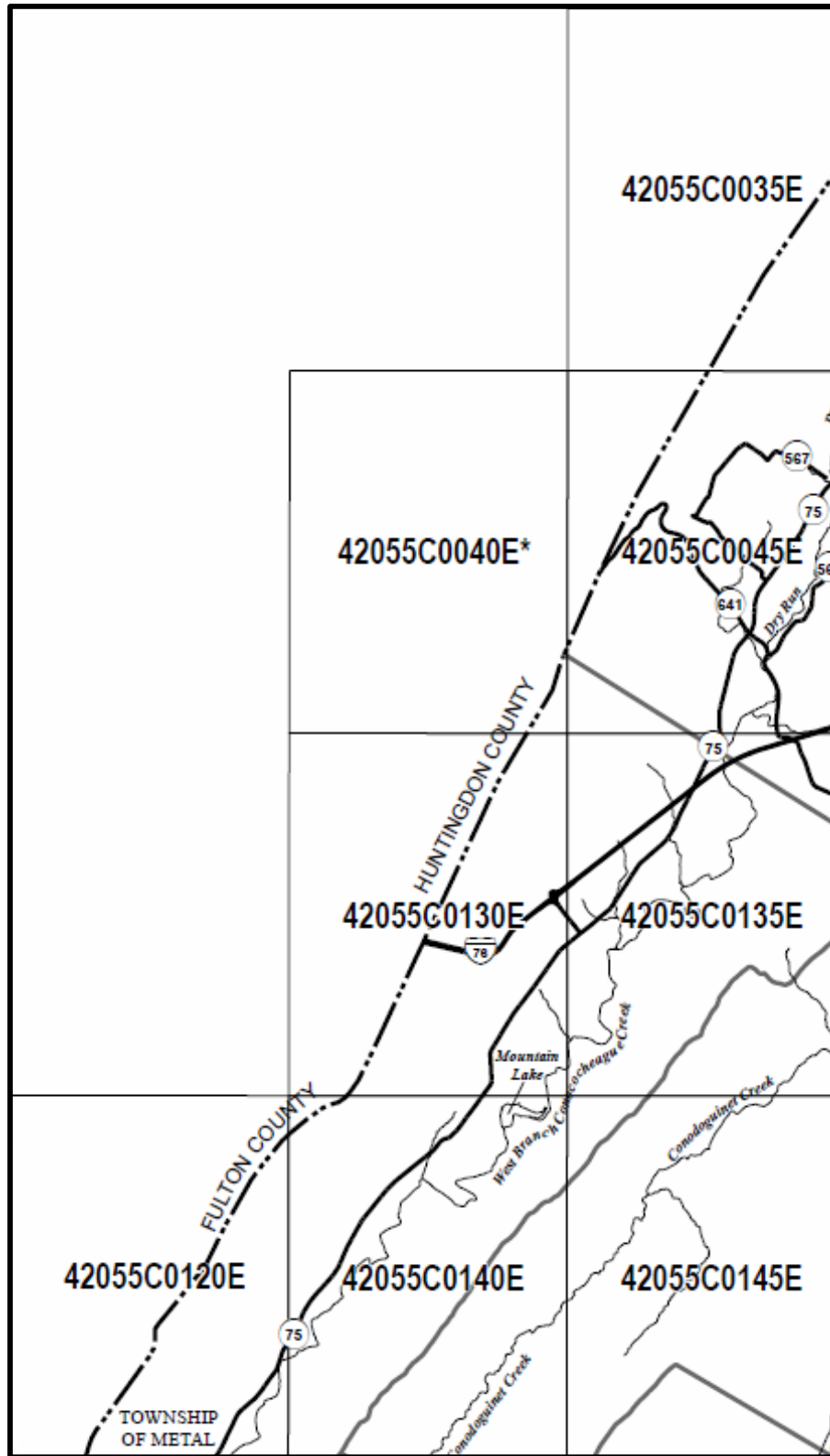


Figure 4.3.9.1.2: Quadrant 1 of County DFIRM Map

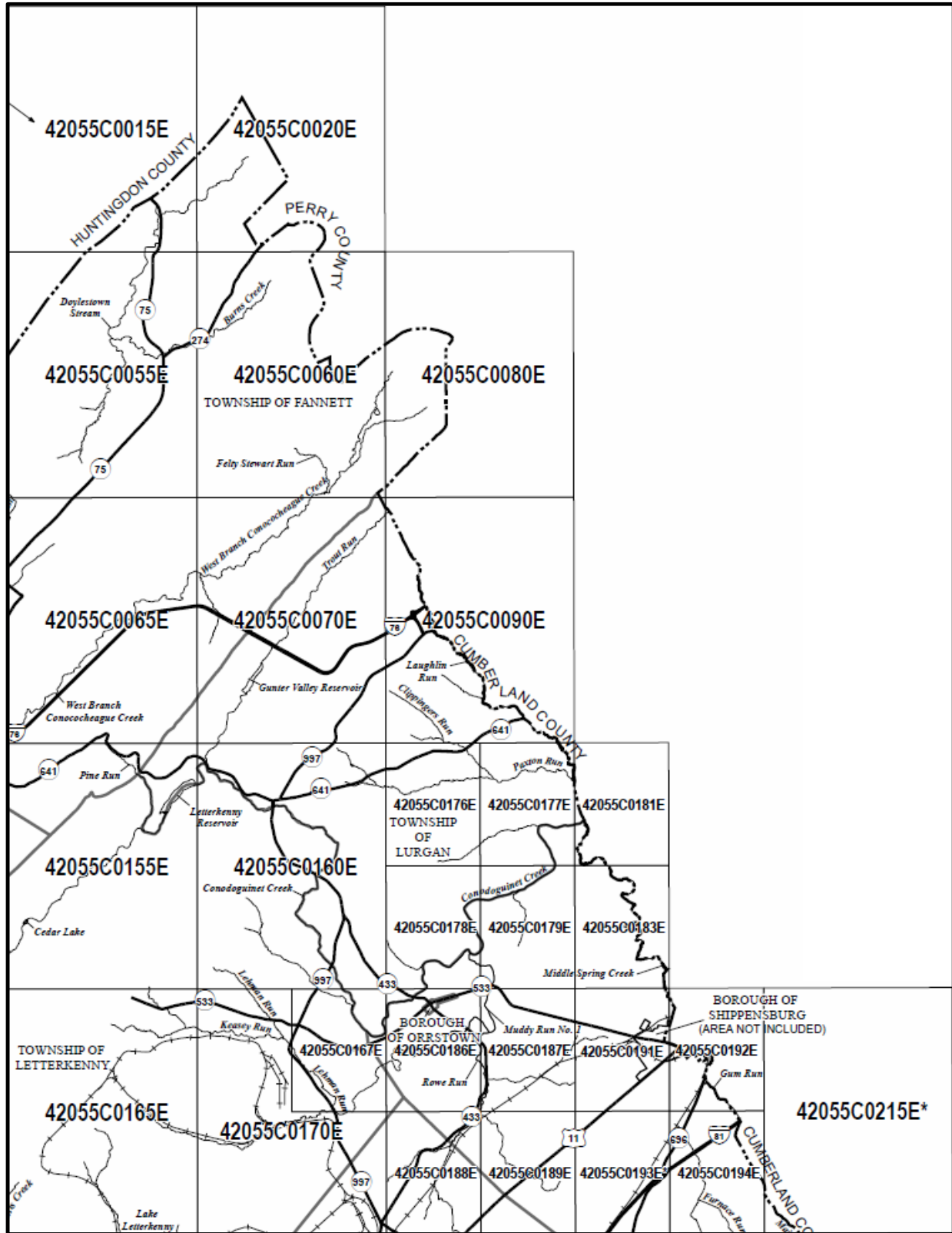


Figure 4.3.9.1.3: Quadrant 2 of County DFIRM Map

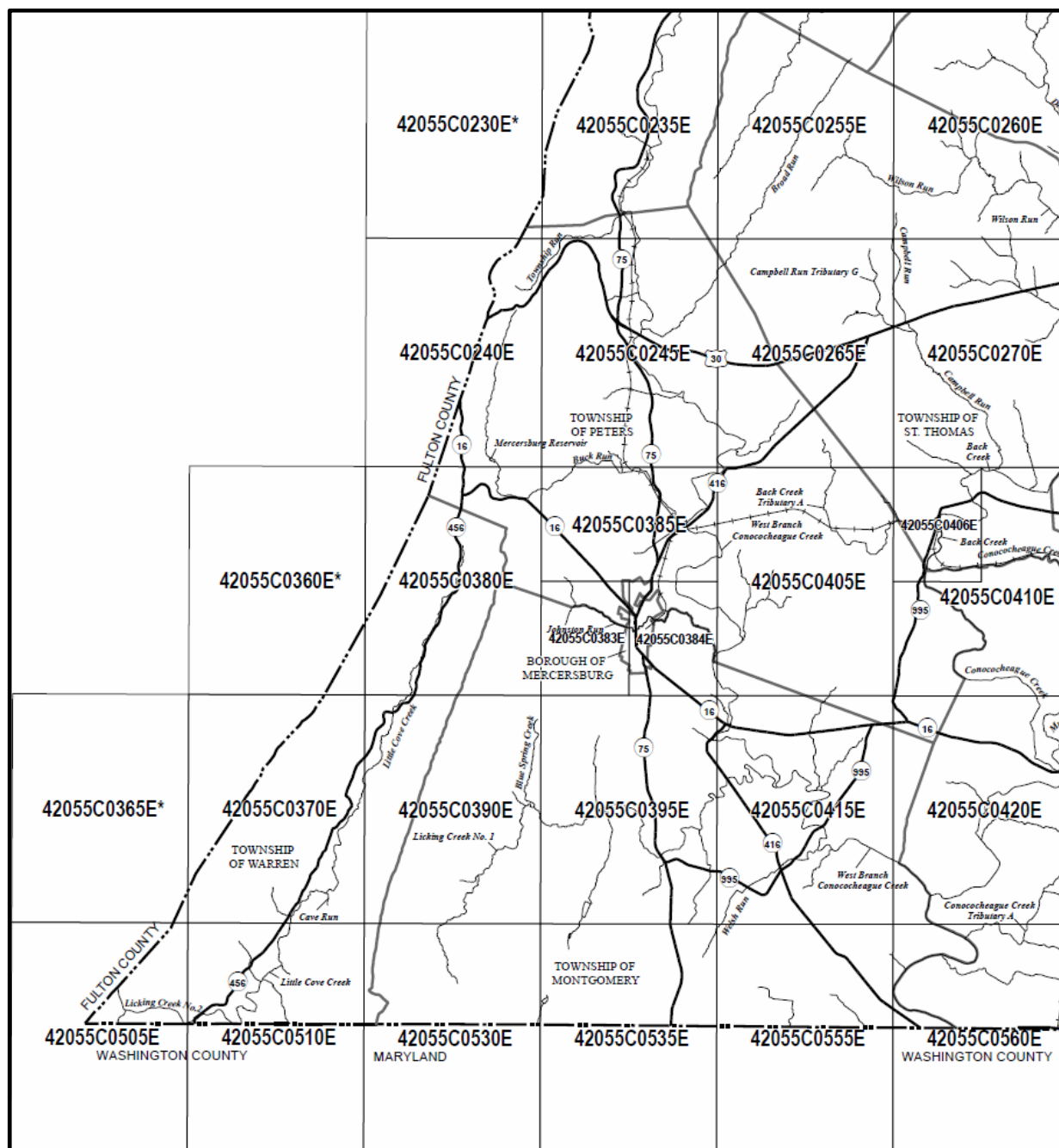


Figure 4.3.9.1.4: Quadrant 3 of County DFIRM Map

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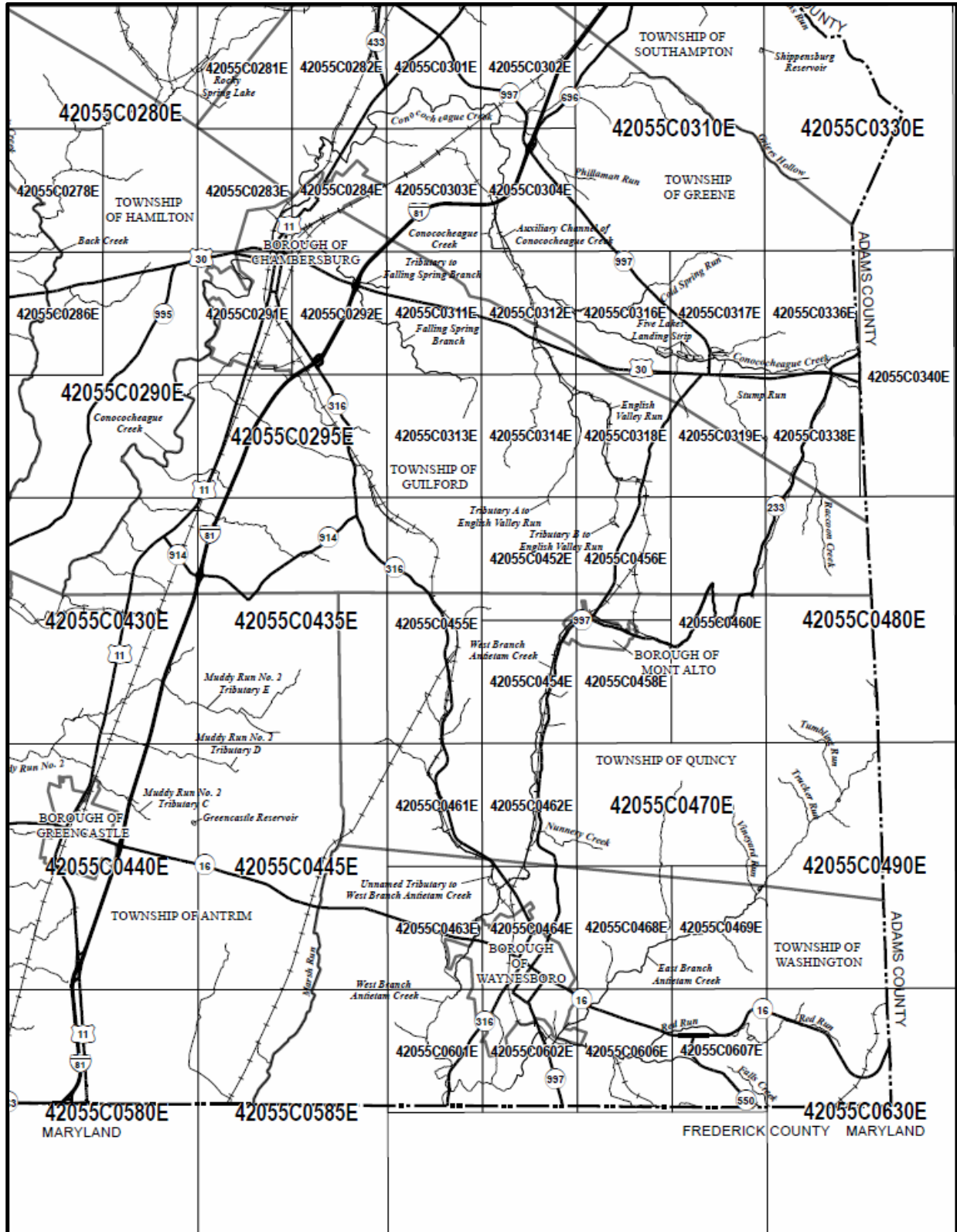


Figure 4.3.9.1.5: Quadrant 4 of County DFIRM Map

The Franklin County DFIRM consists of 118 panels. These panels are shown in **Appendix G** of this document.

Typically, built-up communities create conveyance systems to handle storm-water runoff. Sometimes debris clogs the conveyance system and prohibits the conveyance system from transporting storm-water runoff from the drain inlet to the discharge point. Debris can be, but not limited to, leaves and tree branches. Sometimes the pipes from the conveyance system can decay in time thus creating a cave-in of the pipe. If the conveyance system does not work, localized flooding within the built-up communities within Franklin County can occur thus creating numerous hazards across the community.

Some homes within Franklin County may not be near watercourses but still may be susceptible to flooding in their basements because of high water tables. This type of flooding may affect hot water heaters and other important utility equipment in the home.

Additionally, flooding can negatively impact local water treatment and wastewater treatment facilities by introducing or spreading contaminants. Franklin County has 4 water treatment facilities and 18 wastewater treatment facilities. However, of these 18 critical facilities, only 1 lies within the 1%-annual chance floodplain and that is in Washington Township. Fortunately, there is no history of this type of flooding impact in Franklin County. We have experienced boil water advisories due to water main breaks but these have been minor, localized, and short in duration.

Water contamination is still a major problem considering the number of residences serviced by these facilities and the number of private wells and septic systems that do lie within the 1%-annual chance flood zone.

Collection of private well and septic system data, as well as better tracking of boil water advisories, will be a mitigation action included in **Section 6** of this document.

4.3.9.2 Range of Magnitude

Floods are considered hazards when people and property are affected. Injuries and deaths can occur when people are swept away by flood currents or when bacteria and disease are spread by moving or stagnant floodwaters. 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. Conditions can be exacerbated by obstructions, which prevent normal flow through the waterway, such as fallen trees.

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 or no vegetative ground cover. The county has sloping terrain, especially near the mountains, which can contribute to more severe floods as runoff reaches receiving water

bodies more rapidly over steep terrain. Also, urbanization typically results in the replacement of vegetative ground cover with asphalt and concrete, increasing the volume of surface runoff and storm water, particularly in areas with poorly planned storm water drainage systems.

In Central Pennsylvania, there are seasonal differences in how floods are caused. In the winter and early spring (February to April), major flooding has occurred 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 from runoff of intense rainfall on frozen ground, and local flooding has been exacerbated by ice jams in streams and creeks.

Summer floods have occurred 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 events.

The most severe flooding in Central Pennsylvania has been associated with the Susquehanna River Basin, which drains directly into the Chesapeake Bay and is the largest river basin on the U.S. Atlantic Coast. Franklin County lies within the Potomac River Basin and Lower Susquehanna River Basin, which means that it is subject to heavy precipitation events that may occur outside of the county in the upper reaches of the Basin. Tropical Storm Agnes in 1972 created the worst flooding conditions on record for Franklin County.

Floods are naturally occurring events that benefit riparian systems which have not been disrupted by human actions. Such benefits include groundwater recharge and the introduction of nutrient rich sediment, which improves soil fertility. However, the destruction of riparian buffers, changes to land-use and land cover throughout a watershed, and introduction of chemical or biological contaminants which often accompany human presence cause environmental harm when floods occur. Hazardous material facilities are potential sources of contamination during flood events. Other environmental impacts of flooding include: water-borne diseases, suffocation of tree species non-tolerant to excess water, heavy siltation, damage or loss of crops, and drowning of both humans and animals.

The NFIP identifies Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties. The following definition of RL and SRL properties from the Hazard Mitigation Assistance (HMA) Unified Guidance from July 2013 reflects changes made in the Biggert-Waters Flood Insurance Reform Act of 2012:

A **Repetitive Loss (RL)** property is a structure, as defined for the HMA program, covered by a contract for flood insurance made available under the NFIP that:

- (a) Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25% of the market value of the structure at the time of each such flood event; and
- (b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage. (Please note: Homes are eligible for Increased Cost of Compliance (ICC) coverage after first loss, however cost for ICC is part of all policies.

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A **Repetitive Loss (RL)** property is also defined by FEMA, as it relates to the NFIP program, as an NFIP-insured structure that has had at least 2 paid flood losses of more than \$1,000 each in any 10-year period since 1978.

A **Severe Repetitive Loss** property is a structure that:

- (a) Is covered under a contract for flood insurance made available under the NFIP; and
- (b) Has incurred flood related damage:
 - (i) For which 4 or more separate claims payments have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or
 - (ii) For which at least 2 separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Table 4.3.7.2.1 below contains the numbers of Repetitive Loss (RL) properties per municipality in Franklin County as reported by FEMA on 12/29/2017. Franklin County has no Severe Repetitive Loss properties at this time.

Municipality	2-4 Family		ASSMD Condo		Non-residential		Other Residential		Single Family		Total	
	Total	Mit.	Total	Mit.	Total	Mit.	Total	Mit.	Total	Mit.	Total	Mit.
Antrim Township	0	0	0	0	0	0	0	0	1	0	1	0
Chambersburg Borough	0	0	0	0	0	0	0	0	0	0	0	0
Fannett Township	0	0	0	0	0	0	0	0	0	0	0	0
Greencastle Borough	0	0	0	0	0	0	0	0	0	0	0	0
Greene Township	0	0	0	0	0	0	0	0	4	0	4	0
Guilford Township	0	0	0	0	0	0	0	0	0	0	0	0
Hamilton Township	0	0	0	0	0	0	0	0	0	0	0	0
Letterkenny Township	0	0	0	0	0	0	0	0	0	0	0	0
Lurgan Township	0	0	0	0	0	0	0	0	0	0	0	0
Mercersburg Borough	0	0	0	0	0	0	0	0	0	0	0	0
Metal Township	0	0	0	0	0	0	0	0	0	0	0	0
Mont Alto Borough	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery Township	0	0	0	0	0	0	0	0	0	0	0	0
Orrstown Borough	0	0	0	0	0	0	0	0	0	0	0	0
Peters Township	0	0	0	0	0	0	0	0	0	0	0	0
Quincy Township	0	0	0	0	0	0	0	0	0	0	0	0
Shippensburg Borough	0	0	0	0	0	0	0	0	0	0	0	0
Southampton Township	0	0	0	0	0	0	0	0	1	0	1	0
St Thomas Township	0	0	0	0	0	0	0	0	0	0	0	0
Warren Township	0	0	0	0	0	0	0	0	0	0	0	0
Washington Township	0	0	0	0	0	0	0	0	0	0	0	0
Waynesboro Borough	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	7	0	7	0

Table 4.3.9.2.1: Repetitive Loss Properties per Municipality (June 2023)

Floods are the most common and costly natural catastrophe in the United States. In terms of economic disruption property damage, and loss of life, floods are “nature’s number-one

disaster.” For that reason, flood insurance is almost never available under industry-standard homeowner’s and renter’s policies. The best way for citizen to protect their property against flood losses is to purchase flood insurance through the NFIP. Congress established the NFIP in 1968 to help control the growing cost of federal disaster relief. The NFIP is administered by FEMA, part of the U.S. Department of Homeland Security. The NFIP offers federally-backed flood insurance in communities that adopt and enforce effective floodplain management ordinances to reduce future flood losses.

Since 1983, the chief means of providing flood insurance coverage has been a cooperative venture of FEMA and private insurance industry known as the Write Your Own (WYO) Program. This partnership allows qualified property and casualty insurance companies to “write” (that is, issue) and service the NFIP’s Standard Flood Insurance Policy (SFIP) under their own names.

At one point, nearly 90 WYO insurance companies issued and serviced the SFIP under their own names. More than 4.4 million federal flood insurance policies are in force. These policies represent \$650 billion in flood insurance coverage for homeowners, renters, and business owners throughout the United States and its territories. As of 2016, the number of WYO insurance companies decreased to 79.

In 2012, the U.S. Congress passed the Biggert-Waters Flood Insurance Reform Act. This act was intended to change the way that the NFIP is run including insurance policy rate increases to reflect true risk and changes in how the Flood Insurance Rate Map (FIRM) updates impact policy holders.

In March of 2014, President Obama signed the Homeowner Flood Insurance Affordability Act (HFIAA) of 2014 into law. This law repealed and modified certain provisions of the Biggert-Waters Flood Insurance Reform Act and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented.

As a result of the changes, in April 1, 2015, every new or renewed NFIP policy includes an annual surcharge required by the HFIAA. The surcharge amount depends on the use of your insured building and the type of policy insuring the building, regardless of its flood zone or date of construction.

The NFIP provides flood insurance to individuals in communities that are members of the program. Membership in the program is contingent on the community adopting and enforcing floodplain management and development regulations. The NFIP is based on the voluntary participation of communities of all sizes. In the context of this program, a “community” is a political entity, whether an incorporated city, town, township, borough, or village, or an unincorporated area of a county or parish, that has legal authority to adopt and enforce floodplain management ordinances for the area under its jurisdiction.

National Flood Insurance is available only in communities that apply for participation in the NFIP and agree to implement prescribed flood mitigation measures. Newly participating

communities are admitted to the NFIP's Emergency Program. Most of these communities quickly earn "promotion" to the Regular Program.

The Emergency Program is the initial phase of a community's participation in the NFIP. In return for the local government's agreeing to adopt basic floodplain management standards, the NFIP allows local property owners to buy modest amounts of flood insurance coverage.

In return for agreeing to adopt more comprehensive floodplain management measures, an Emergency Program community can be "promoted" to Regular Program. Local policyholders immediately become eligible to buy greater amounts of flood insurance coverage.

The minimum floodplain management requirements include:

- Review and permit all development in the SFHA;
- Elevate new and substantially improved residential structures above the Base Flood Elevation;
- Elevate or dry flood proof new and substantially improved non-residential structures; Limit development in floodways;
- Locate or construct all public utilities and facilities so as to minimize or eliminate flood damage;
- Anchor foundation or structure to resist floatation, collapse, or lateral movement.

In addition, Regular Program communities are eligible to participate in the NFIP's Community Rating System (CRS). Under the CRS, policyholders can receive premium discounts of 5 to 45% as their cities and towns adopt more comprehensive flood mitigation measures.

Table **4.3.9.2.2** lists the Franklin County municipalities participating in the NFIP along with the date of the initial FIRM and the current effective map date. Note that all municipalities in the county, except Orrstown Borough, participate in the NFIP program and are using the most current flood map data at the time this plan was updated in 2018. Shippensburg Borough, being a split municipality, reports NFIP compliance through Cumberland County.

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Community Identification Number	Municipality	Initial Flood Hazard boundary Map	Initial FIRM Identified	Current Effective Map Date
421233	Antrim Township	9/20/1974	4/24/1981	1/18/2012
420469	Chambersburg Borough	12/21/1973	7/17/1978	1/18/2012
422424	Fannett Township	2/7/1975	10/29/1982	1/18/2012
420470	Greencastle Borough	9/10/1976	1/18/2012	1/18/2012
421649	Greene Township	12/6/1974	11/2/1990	1/18/2012
421650	Guilford Township	1/3/1975	6/18/1990	1/18/2012
421651	Hamilton Township	9/6/1974	6/18/1990	1/18/2012
422425	Letterkenny Township	12/20/1974	9/17/1982	1/18/2012
421652	Lurgan Township	11/1/1974	9/1/1978	1/18/2012
420471	Mercersburg Borough	4/23/1976	3/1/1986	1/18/2012
421653	Metal Township	1/24/1975	9/1/1986	1/18/2012
420472	Mont Alto Borough	7/26/1974	7/16/1990	1/18/2012
422426	Montgomery Township	12/13/1974	8/1/1986	1/18/2012
421654	Peters Township	9/13/1974	9/1/1986	1/18/2012
421655	Quincy Township	12/27/2014	7/16/1990	1/18/2012
421657	Southampton Township	5/31/1974	5/15/1986	1/18/2012
421656	St Thomas Township	9/13/1974	7/16/1990	1/18/2012
422427	Warren Township	1/24/1975	9/1/1986	1/18/2012
421658	Washington Township	9/8/1974	6/3/1986	1/18/2012
420473	Waynesboro Borough	12/3/1976	11/1/1985	1/18/2012

Table 4.3.9.2.2: Franklin County Municipal Participation in the National Flood Insurance Program

4.3.9.3 Past Occurrence

Franklin County has a history of flooding events. Flash flooding is the most common type of flooding that occurs in the county. **Table 4.3.9.3.1** lists flood event information from 1996 to 2022 obtained from the NCDC/NCEI databases. According to NCDC/NCEI and Franklin County EMA records, the storms listed for May 2019 are the last recorded Flash Flooding events (**Figure 4.3.9.3.2**) in Franklin County as of this 2023 plan update.

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Location	Date	Time	Type	Rain	Death	Injuries	Property Damage	Crop Damage
Yeakle Hill	06/12/2014	1640	Flood/Heavy Rain		0	0	\$0	\$0
Yeakle Hill	05/16/2014	0720	Flood/Heavy Rain	4.0"	0	0	\$0	\$0
Yeakle Hill	10/10/2013	2200	Flood/Heavy Rain	10.0"	0	0	\$0	\$0
Yeakle Hill	10/29/2012	1700	Flood/Heavy Rain	8.0"	0	0	\$0	\$0
Upper Strasburg	03/13/2010	1600	Flood/Heavy Rain/Snow Melt	4.0"	0	0	\$0	\$0
Caledonia Park	01/25/2010	0730	Flood/Heavy Rain	4.0"	0	0	\$0	\$0
Sylvan	05/12/2008	0200	Flood/Heavy Rain		0	0	\$0	\$0
Sylvan	04/26/2008	2200	Flood/Heavy Rain		0	0	\$0	\$0
Countywide	03/28/2005	2130	Flood		0	0	\$0	\$0
Countywide	09/28/2004	1200	Flood		0	0	\$0	\$0
Countywide	09/17/2004	1500	Flood		0	0	\$0	\$0
Countywide	02/06/2004	1700	Flood		0	0	\$0	\$0
Countywide	12/11/2003	0541	Flood		0	0	\$0	\$0
Countywide	01/19/1996	0900	Flood		0	0	\$0	\$0
Totals					0	0	\$0	\$0

Table 4.3.9.3.1: Flood Events in Franklin County (1996-2022)

Table 4.3.9.3.2 contains information on Flash Flood events in the county between 1996 and 2022.

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Location	Date	Time	Type	Rain	Death	Injuries	Property Damage	Crop Damage
Greencastle	05/19/2019	1800	Flash Flood		0	0	\$10K	\$0
Mercersburg	05/19/2019	1800	Flash Flood		0	0	\$0	\$0
Shimpstown	07/28/2017	2215	Flash Flood		0	0	\$0	\$0
Mainsville	06/08/2015	1700	Flash Flood	4.0"	0	0	\$0	\$0
Yeakle Mill	06/12/2014	1503	Flash Flood		0	0	\$0	\$0
Sylvan	09/27/2011	1300	Flash Flood		0	0	\$0	\$0
Greencastle	09/09/2011	1600	Flash Flood	8.0"	0	0	\$0	\$0
Guilford Springs	05/26/2011	1835	Flash Flood		0	0	\$0	\$0
Weltys	04/28/2011	0400	Flash Flood		0	0	\$0	\$0
Amberson	04/16/2011	1800	Flash Flood		0	0	\$0	\$0
Mercersburg	05/23/2010	0300	Flash Flood		0	0	\$25K	\$0
Grindstone Hill	07/23/2009	1622	Flash Flood	6.0"	0	0	\$50K	\$0
New Franklin	06/10/2009	2113	Flash Flood		0	0	\$0	\$0
Waynesboro	06/01/2007	2100	Flash Flood		0	0	\$0	\$0
Shippensburg	05/10/2007	2000	Flash Flood	3.0"	0	0	\$0	\$0
Countywide	06/27/2006	1700	Flash Flood		0	0	\$0	\$0
Greencastle	06/26/2006	0630	Flash Flood		0	0	\$0	\$0
Greencastle	06/25/2006	1200	Flash Flood		0	0	\$0	\$0
Greencastle	07/16/2005	2030	Flash Flood		0	0	\$0	\$0
Waynesboro	09/01/2003	2100	Flash Flood		0	0	\$0	\$0
Greencastle	06/03/2003	2100	Flash Flood		0	0	\$0	\$0
St Thomas	06/22/2001	1945	Flash Flood		0	0	\$0	\$0
Chambersburg	06/21/2001	2330	Flash Flood		0	0	\$0	\$0
Greencastle	07/28/2000	1830	Flash Flood		0	0	\$0	\$0
South Portion	09/08/1998	1730	Flash Flood	3.0"	0	0	\$0	\$0
Quincy	06/23/1998	1730	Flash Flood		0	0	\$0	\$0
Countywide	04/19/1998	1900	Flash Flood		0	0	\$0	\$0
Countywide	03/20/1998	2330	Flash Flood		0	0	\$0	\$0
Countywide	01/08/1998	1300	Flash Flood		0	0	\$0	\$0
Countywide	11/07/1997	1900	Flash Flood		0	0	\$0	\$0
East Portion	09/11/1997	0050	Flash Flood		0	0	\$0	\$0
Greencastle	06/18/1997	1845	Flash Flood		0	0	\$0	\$0
Southeast	12/01/1996	2300	Flash Flood		0	0	\$0	\$0
St Thomas	10/19/1996	1000	Flash Flood		0	0	\$0	\$0
Northern	09/13/1996	0400	Flash Flood		0	0	\$0	\$0
Upper Strasburg	09/06/1996	1730	Flash Flood		0	0	\$0	\$0
Countywide	07/19/1996	0800	Flash Flood		0	0	\$0	\$0
Greencastle	07/08/1996	1800	Flash Flood	3.5"	0	0	\$0	\$0
St Thomas	06/20/1996	2000	Flash Flood		0	0	\$0	\$0
St Thomas	06/18/1996	2000	Flash Flood	12.0"	1	0	\$1,000K	\$0
St Thomas	06/11/1996	2200	Flash Flood	4.7"	0	0	\$500K	\$0
Countywide	01/19/1996	0900	Flash Flood		0	0	\$0	\$0
Totals					1	0	\$1,585K	\$0

Table 4.3.9.3.2: Franklin County Flash Flood Events (1996-2022)

There are no known significant flood events in Franklin County which can be attributed directly to an ice jam.

4.3.9.4 Future Occurrence

In Franklin County, flooding occurs commonly and can occur during any season of the year. Therefore, the future occurrence of floods in Franklin County can be considered ***highly likely*** as defined by the Risk Factor Methodology in **Section 4.4**.

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. The NFIP uses historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year.

The NFIP recognizes the 1%-annual-chance flood, also known as the base flood, as the standard for identifying properties subject to federal flood insurance purchase requirements. A 1%-annual-chance flood is a flood which has a 1% chance of occurring over a given year. The DFIRMs are used to identify areas subject to the 1- and 0.2%-annual-chance flooding. Areas subject to 2% and 10% annual chance events are not shown on maps; however, water surface elevations associated with these events are included in the flood source profiles contained with the Flood Insurance Study Report.

Table 4.3.9.4.1 shows a range of flood recurrence intervals and associated probabilities of occurrence. Although the information is from 2001, it is still considered the best available information on this topic.

Recurrence Interval	Chance of Occurrence in Any Given Year (%)
10 year	10
50 year	2
100 year	1
500 year	0.2

Table 4.3.9.4.1: Recurrence Intervals and Probabilities⁵⁴

Social Equity

Socially vulnerable populations would likely be impacted by flooding within the county, especially the elderly and our residents with disabilities, in the case of an event requiring evacuation. Low-income communities could also be impacted by flooding events since they may not always have access to resources to help with flood recovery.

⁵⁴ USGS

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would make it more likely for the county to have an increased risk for Flooding. This increased risk would result in increased intensity and duration across the entire county.

4.3.9.5 Vulnerability Assessment

Franklin County is vulnerable to flooding that causes loss of lives, property damage, and road closures. For purposes of assessing vulnerability, the county focused on community assets that are located in the 1%-annual-chance floodplain. While greater and smaller floods are possible, information about the extent and depths for this floodplain is available for all municipalities countywide, thus providing a consistent basis for analysis. Flood vulnerability maps for each local municipality showing the FEMA-designated 1%-annual-chance flood hazard area, critical facilities, and transportation routes are included in **Appendix G** of this document.

Table 4.3.9.5.1 lists all the critical facilities and private/commercial structures that fall within the 1%-annual chance floodplain, by municipality. It should be noted that the values of the buildings in the floodplain were taken from the tax assessment database (base year 1961). The values were multiplied by a factor of 7.63 to get the estimated current year value. This factor is given to the county by the state and is based off of sales in the previous year. Additionally, the costs only reflect land and structure value of the property. It does not include content loss, functionality loss, or displacement costs. Furthermore, there are some properties in the database that reflect a \$0 assessment due to their taxable status. Therefore, the value numbers below are very conservative and actual loss values could be substantially higher.

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Municipality	Total Number of Critical Facilities in Municipality	Number of Critical Facilities in 1% Floodplain	Value of Critical Facilities in 1% Floodplain (1961)	Estimated (2022) Value of Critical Facilities in 1% Floodplain	Number of Private/Commercial Buildings in 1% Floodplain	Value of Private/Commercial Buildings in 1% Floodplain	Estimated (2022) Value of Private/Commercial Buildings in 1% Floodplain
Antrim Township	93	2	\$2,590	\$27,273	241	\$5,021,230	\$52,873,552
Chambersburg Borough	107	12	\$8,404,750	\$88,502,018	262	\$10,597,000	\$111,586,410
Fannett Township	31	2	\$23,540	\$247,876	93	\$590,520	\$6,218,176
Greencastle Borough	25	0	\$0	\$0	0	\$0	\$0
Greene Township	130	9	\$155,650	\$1,638,995	748	\$9,087,070	\$95,686,847
Guilford Township	108	4	\$23,420	\$246,613	181	\$6,053,580	\$63,744,197
Hamilton Township	51	2	\$6,190	\$65,181	70	\$820,170	\$8,636,390
Letterkenny Township	29	1	\$32,720	\$344,542	78	\$19,727,110	\$207,726,468
Lurgan Township	24	2	\$35,260	\$371,288	38	\$466,400	\$4,700,592
Mercersburg Borough	16	0	\$0	\$0	35	\$212,950	\$2,242,364
Metal Township	21	1	\$4,600	\$48,438	73	\$548,800	\$5,778,864
Mont Alto Borough	7	2	\$42,310	\$445,524	71	\$390,650	\$4,113,545
Montgomery Township	31	2	\$0	\$0	117	\$2,000,960	\$21,070,109
Orrstown Borough	1	0	\$0	\$0	0	\$0	\$0
Peters Township	34	2	\$7,400	\$77,922	145	\$5,876,970	\$30,998,401
Quincy Township	53	7	\$41,960	\$441,839	240	\$6,539,220	\$30,732,801
Shippensburg Borough	6	0	\$0	\$0	0	\$0	\$0
Southampton Township	45	1	\$24,040	\$253,141	120	\$1,947,050	\$20,502,437
St Thomas Township	32	2	\$2,300	\$24,219	112	\$1,548,300	\$16,303,599
Warren Township	4	0	\$0	\$0	22	\$229,610	\$2,417,793
Washington Township	58	7	\$451,670	\$4,756,085	279	\$3,988,640	\$42,000,379
Waynesboro Borough	55	0	\$0	\$0	11	\$314,980	\$3,316,739
Total	961	62	\$9,258,400	\$97,490,954	2946	\$75,994,390	\$730, 649,663
Total Estimated (2022) Value of Structures in 1% Floodplain							\$828,140,617

Table 4.3.9.5.1: Franklin County Critical Facilities in the 1% Floodplain (2022)

Figure 4.3.9.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Flood, Flash Flood, and Ice Jam hazard. 2 of 22 municipalities rated this threat as Catastrophic or Major. Additionally, 8 of the remaining 18 municipalities rank this as a Moderate threat. This was the ranked as the number 12 highest threat in the county (Moderate) and will require some attention during the Mitigation Strategy in **Section 6**.

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	Flood/Flash Flood/Ice Jam Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic		3.0 - 4.0
											Major		2.5 - 2.9
											Moderate		2.0 - 2.4
											Minor		1.5 - 1.9
Insignificant		1.0 - 1.4											
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	3	20%	1	10%	3	10%	2.2	10.12%	0.2226
Chambersburg Borough	1	30%	2	30%	1	20%	4	10%	3	10%	1.8	14.05%	0.2529
Fannett Township	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	1.59%	0.0191
Greencastle Borough	2	30%	2	30%	2	20%	4	10%	3	10%	2.3	2.73%	0.0628
Greene Township	2	30%	1	30%	1	20%	4	10%	3	10%	1.8	11.82%	0.2128
Guilford Township	3	30%	1	30%	3	20%	4	10%	3	10%	2.5	9.38%	0.2345
Hamilton Township	1	30%	2	30%	2	20%	2	10%	3	10%	1.8	7.29%	0.1312
Letterkenny Township	2	30%	1	30%	2	20%	1	10%	3	10%	1.7	1.58%	0.0269
Lurgan Township	2	30%	1	30%	1	20%	3	10%	3	10%	1.7	1.42%	0.0241
Mercersburg Borough	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	0.97%	0.0116
Metal Township	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	1.13%	0.0136
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	1.01%	0.0121
Montgomery Township	4	30%	2	30%	4	20%	2	10%	3	10%	3.1	3.68%	0.1141
Orstown Borough	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	0.14%	0.0017
Peters Township	3	30%	1	30%	1	20%	4	10%	3	10%	2.1	2.86%	0.0601
Quincy Township	1	30%	1	30%	2	20%	2	10%	3	10%	1.5	3.41%	0.0512
Shippensburg Borough	2	30%	2	30%	2	20%	2	10%	3	10%	2.1	0.75%	0.0158
Southampton Township	1	30%	1	30%	3	20%	4	10%	3	10%	1.9	5.49%	0.1043
St Thomas Township	2	30%	2	30%	2	20%	3	10%	3	10%	2.2	3.79%	0.0834
Warren Township	3	30%	1	30%	2	20%	2	10%	3	10%	2.1	0.21%	0.0044
Washington Township	2	30%	2	30%	2	20%	4	10%	3	10%	2.3	9.55%	0.2197
Waynesboro Borough	1	30%	2	30%	2	20%	4	10%	3	10%	2.0	7.02%	0.1404
Municipal Weighted Average Risk Factor (RF)													2.019

Figure 4.3.9.5.1: Municipal Flood, Flash Flood, and Ice Jam Threat Vulnerability Self-Assessment

4.3.9.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a flood, flash flood or ice jam event are shown below. There is potential for significant impact to one of the lifelines (Safety & Security), and possible impacts to all of the remaining six lifelines.



Figure 4.3.9.6.1: Flood, Flash Flood, and Ice Jam Community Lifeline Impacts

4.3.10 Hailstorm

Hail forms inside a thunderstorm where there are strong updrafts of warm air and downdrafts of cold water. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. As the frozen droplet begins to fall, it may thaw as it moves into warmer air toward the bottom of the thunderstorm. If the updraft is strong enough it will move the hailstone back into the cloud where it once again collides with water and hail and grows. This process may be repeated several times. With each trip above and below the freezing level, the frozen droplet adds another layer of ice. In all cases, when the hailstone can no longer be supported by the updraft it falls to the earth. The stronger the updraft, the larger the hailstones that can be produced by the thunderstorm⁵⁵. The National Weather Service (NWS) defines hail as: showery precipitation in the form of irregular pellets or balls of ice more than 5 millimeters in diameter, falling from a cumulonimbus cloud⁵⁶. **Figure 4.3.10.1** below illustrates the process of hail formation.

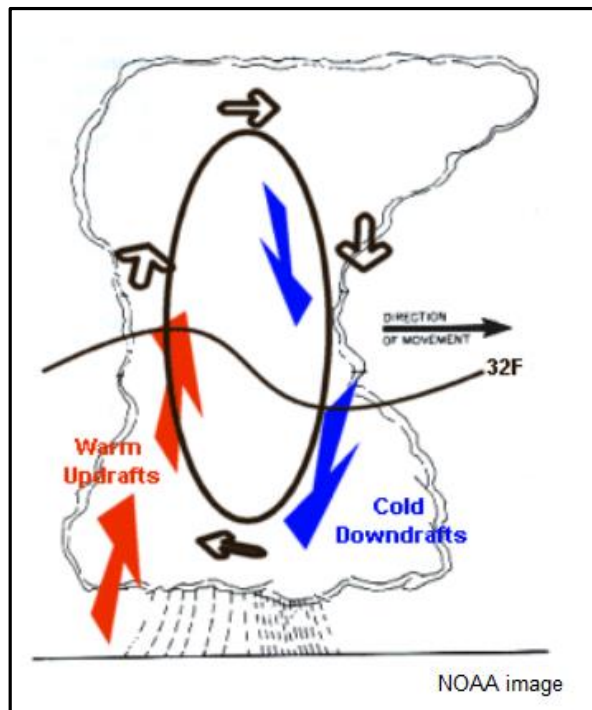


Figure 4.3.10.1: Hail Formation

The size of hailstones is a direct function of the size and severity of the thunderstorm. The higher the temperatures at the earth's surface, the greater the strength of the updrafts, and the greater the amount of time hailstones are suspended, giving them more time to increase in size. See **Table 4.3.10.1** below for common hail stone sizes.

⁵⁵ NOAA/NWS

⁵⁶ NOAA/NWS

Size	Diameter (in.)	Size	Diameter (in.)
BB	<0.25	Ping-Pong Ball	1.50
Pea	0.25	Golf Ball	1.75
Marble	0.50	Hen Egg	2.00
Dime	0.70	Tennis Ball	2.50
Penny	0.75	Baseball	2.75
Nickel	0.88	Teacup	3.00
Quarter	1.00	Grapefruit	4.00
Half Dollar	1.25	Softball	4.50

Table 4.3.10.1: NOAA Hail Stone Sizes⁵⁷

4.3.10.1 Location and Extent

Figure 4.3.10.1.1 below illustrates the frequency of hail events tracked across the continental United States from 1955 through 2002. One can see from these maps that Franklin County falls into the area where between 50 and 150 hail events per decade per square nautical mile were recorded in this time span (yellow circle added to highlight Franklin County). Less than 10 large hail events per decade per square nautical mile were reported during that same time (yellow circle added to highlight Franklin County). According to FEMA’s National Risk Index, most of the county is at low risk for hail, but a portion southwestern Franklin County is classified as relatively low. This area includes Mercersburg Borough, Montgomery Township, Peters Township and Warren Township. Two other areas classified as relatively low for hail are eastern Antrim Township and western Guilford Township.

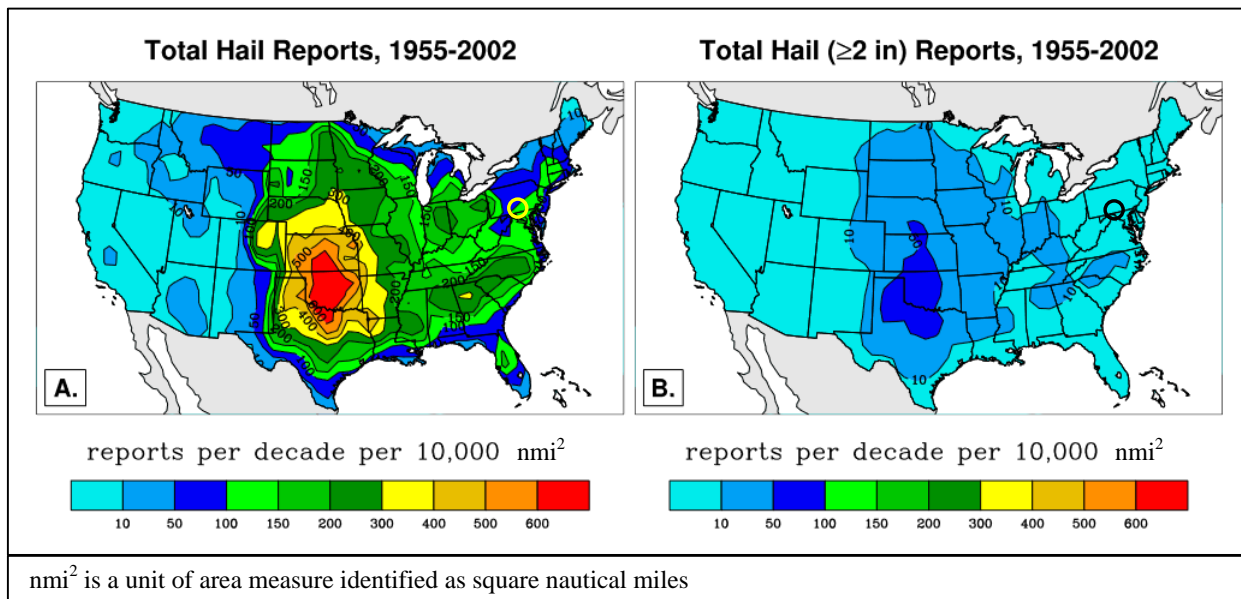


Figure 4.3.10.1.1: NOAA Geographic Distribution of Hail⁵⁸

⁵⁷ NOAA, 2023

4.3.10.2 Range of Magnitude

Hail damage to crops is estimated at \$1.3 billion annually in the US. Additionally, property damage is estimated at \$1 billion annually⁵⁹. Hail occurs most frequently in states within the southern and central plains. However, because hail accompanies thunderstorms, hail damage is possible throughout the entire US⁶⁰. Damage to crops, roofs, windows, heating/cooling units, and vehicles are typically the most significant impacts of hail storms.

4.3.10.3 Past Occurrence

Franklin County has experienced 14 recorded hail events on 10 separate days since 2013⁶¹.

Table 4.3.10.3.1 below lists these events with the largest size of hail observed on those days at each location reported.

Location	Municipality	Date	Time (hrs)	Hail Size (in)
Marion	Guilford	7/12/2022	1405	1.00
Upper Strasburg	Letterkenny Township	5/15/2022	1350	1.25
Good	Quincy Township	8/1/2020	2207	1.00
Tomstown	Quincy Township	8/1/2020	2213	1.00
Fort Loudon	Peters Township	6/4/2020	1452	0.88
Middleburg	Antrim Township	5/9/2019	1419	1.00
Greencastle	Greencastle Borough	5/9/2019	1528	0.88
Greencastle	Greencastle Borough	5/9/2019	1530	1.00
Mont Alto	Quincy Township	5/9/2019	1600	1.00
Greencastle	Greencastle Borough	8/17/2018	1536	1.25
Pinola	Southampton	7/27/2018	1550	0.88
Middleburg	Antrim Township	8/4/2015	0130	1.00
Metal	Metal Township	8/7/2013	1815	1.00
Yeakle Mill	Warren Township	5/22/2013	1652	0.88

Table 4.3.10.3.1: Recorded Hail Events in Franklin County (2013-2022)

From the figure above, one can see that Franklin County has experienced multiple event days and multiple locations during the previous 10 years, but it has also experienced some years with no events. There is no indication that this trend will change.

⁵⁸ NOAA, 2004

⁵⁹ Illinois State Water Survey

⁶⁰ NOAA/NWS/NCEP/SPC

⁶¹ NOAA/NCEI

4.3.10.4 Future Occurrence

It is not possible to predict formation of a hail storm with more than a few days' lead time. However, past occurrences indicate that hail storm events in Franklin County will occur approximately 3 times per year on average, and typically between the months of April and August. **Figure 4.3.10.4.1** below shows a community's relative risk for hail when compared to the rest of the United States. FEMA National Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Hail is classified as Very Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Very Low as compared to other communities in the United States. Socially vulnerable populations could be impacted by hail, but the people who will be most impacted by hail are our farmers. All farms in the county would be at risk to experience negative effects on crop yields and pasture productivity. A large storm could result in huge financial losses across the county. Those at greatest physical risk would be those that are unable to seek shelter during a hailstorm, such as those experiencing homelessness, people who work outdoors or those that are walking or cycling. In extreme situations, hail may cause damage to home roofs or cars, and those people with limited economic means or lacking insurance coverage to address damage could be most affected by a hail event.

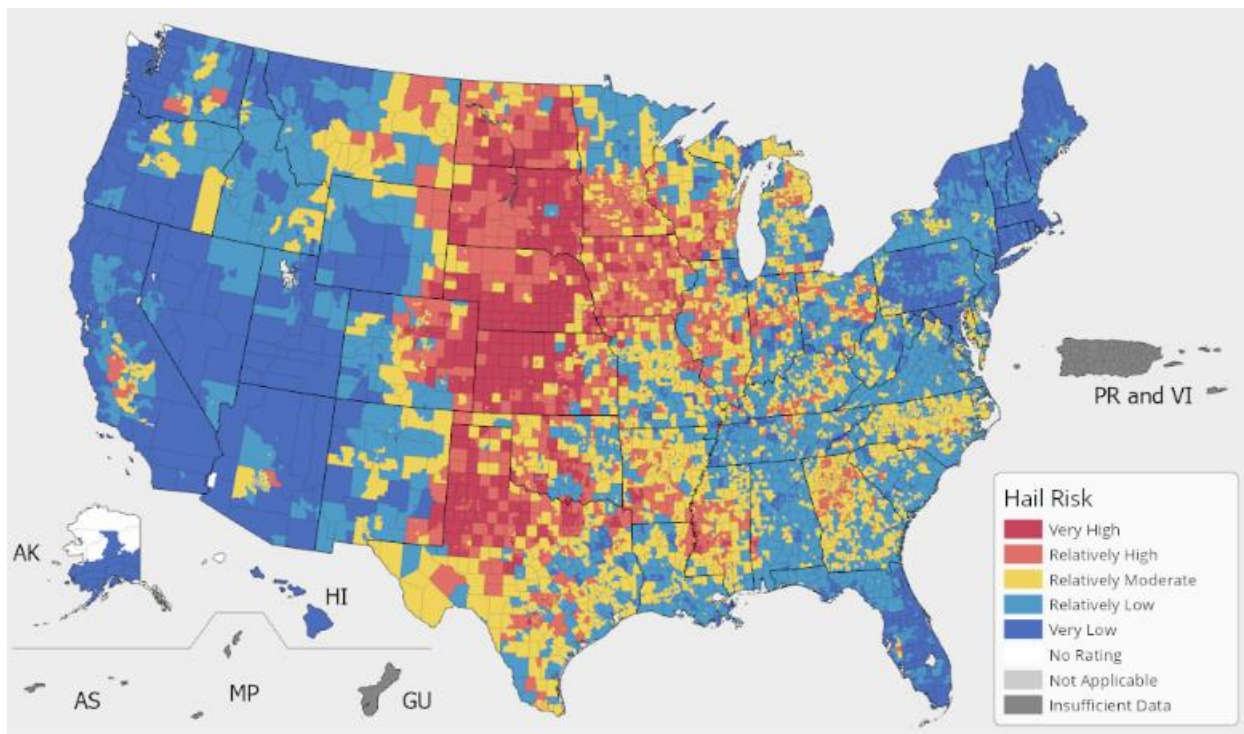


Figure 4.3.10.4.1: Hail Risk Index⁶²

Nationwide as well as county-specific historical data shows that Franklin County is at a relatively low risk of hail storms as compared to the mid-west, but they will occur. Future occurrences of hail storms can be considered *likely* as defined by the Risk Factor Methodology probability criteria (See **Section 4.4**).

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would also make it more likely for the county to have an increased risk for storms that contain hail. This increased risk would result in increased storm intensity and duration across the entire county.

4.3.10.5 Vulnerability Assessment

The entire county, including all critical infrastructure, is vulnerable to the effects of hail, as the storm cells that produce this hazard can develop over any part of the region. The area of damage due to these storms is relatively small because a single storm does not cause widespread devastation, but a storm may cause significant damage with a focused area. Refer to **Table 2.4.5**, for the specific number of critical facilities in the municipalities subject to hail hazards.

Figure 4.3.10.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Hailstorm hazard. One can see that 12 of 22 municipalities rated this threat as either a Major or Moderate event. This is considered a Moderate threat ranked as the number 8 threat overall for Franklin County and will garner a heightened level of attention during the Mitigation Strategy in **Section 6**.

⁶²FEMA, 2023

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	<h3 style="text-align: center;">Hailstorm Hazard Threat Risk Assessment</h3>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	1	30%	4	20%	4	10%	1	10%	2.2	10.12%	0.2226
Chambersburg Borough	2	30%	3	30%	4	20%	4	10%	1	10%	2.8	14.05%	0.3934
Fannett Township	3	30%	1	30%	2	20%	3	10%	1	10%	2.0	1.59%	0.0318
Greencastle Borough	3	30%	3	30%	3	20%	2	10%	1	10%	2.7	2.73%	0.0737
Greene Township	4	30%	1	30%	4	20%	4	10%	1	10%	2.8	11.82%	0.3310
Guilford Township	3	30%	1	30%	3	20%	4	10%	1	10%	2.3	9.38%	0.2157
Hamilton Township	2	30%	1	30%	4	20%	2	10%	1	10%	2.0	7.29%	0.1458
Letterkenny Township	2	30%	1	30%	3	20%	2	10%	1	10%	1.8	1.58%	0.0284
Lurgan Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.42%	0.0156
Mercersburg Borough	2	30%	1	30%	4	20%	4	10%	1	10%	2.2	0.97%	0.0213
Metal Township	1	30%	1	30%	1	20%	3	10%	1	10%	1.2	1.13%	0.0136
Mont Alto Borough	1	30%	1	30%	3	20%	2	10%	1	10%	1.5	1.01%	0.0152
Montgomery Township	2	30%	1	30%	4	20%	4	10%	1	10%	2.2	3.68%	0.0810
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	3.41%	0.0341
Shippensburg Borough	2	30%	1	30%	1	20%	3	10%	1	10%	1.5	0.75%	0.0113
Southampton Township	1	30%	1	30%	2	20%	4	10%	1	10%	1.5	5.49%	0.0824
St Thomas Township	3	30%	1	30%	2	20%	4	10%	1	10%	2.1	3.79%	0.0796
Warren Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	0.21%	0.0048
Washington Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	9.55%	0.1242
Waynesboro Borough	1	30%	2	30%	4	20%	4	10%	1	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													2.127

Figure 4.3.10.5.1: Municipal Hailstorm Threat Vulnerability Self-Assessment

Hail can cause serious damage to homes, automobiles, aircraft, livestock, crops, and infrastructure. Areas of the county with large amounts of farmland and high agricultural yields are more likely to be the areas impacted the most by a severe hail event. As noted in **Section 2.1**, Franklin County is ranked number 4 in the state for agricultural production, with more than 242,600 acres of crops, so any impact to normal crop yields will have a major economic impact to the county. Of particular concern to Franklin County are corn, peaches, barley, and soybean crops⁶³, which can be damaged to the extent of total loss, especially if an event occurs later in the growing season.

The only mitigation measure available for farmers to preclude losses due to hail damage is crop insurance. We have created a mitigation action to work with the Penn State Agricultural Extension to look into crop insurance saturation rates in the county to determine the availability of insurance and any cost prohibitive factors that may be present.

⁶³ USDA, 2017

4.3.10.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a hail event are shown below. There is potential for possible impacts to six of the seven lifelines.

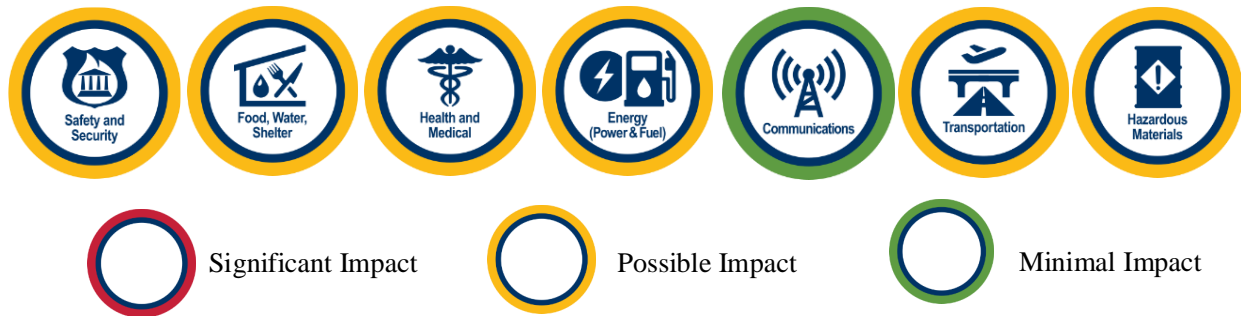


Figure 4.3.10.6.1: Hailstorm Community Lifeline Impacts

4.3.11 Hurricane, Tropical Storm, and Nor'easter

Tropical cyclones which impact Pennsylvania develop within the tropical or sub-tropical waters of the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Those storms with maximum sustained wind speeds below 39 miles per hour are classified as tropical depressions. Cyclones with speeds between 39 and 74 miles per hour are classed as tropical storms. When sustained wind speeds reach 75 miles per hour, these storms are classified as hurricanes. Hurricanes are further classified using the Saffir-Simpson Scale, which is based on wind speeds (See **Figure 4.3.11.1**). It is not uncommon for high winds, flooding, and tornadoes to develop in conjunction with tropical weather systems.

Saffir-Simpson Hurricane Scale		
Category	Wind Speed (mph)	Storm Surge (ft)
5	≥ 156	More than 18
4	131-155	13-18
3	111-130	9-12
2	96-110	6-8
1	74-95	4-5
Additional Classifications		
Tropical Storm	39-73	0-3
Tropical Depression	0-38	0

Figure 4.3.11.1: Saffir-Simpson Hurricane Scale

Nor'easters are extra-tropical storms which typically develop from low pressure systems in the Atlantic Ocean north of North Carolina. They are especially prevalent during the Winter months. "Extra-tropical storms" is a term used to describe storms that have lost their tropical characteristics. For example, Hurricane Sandy was considered an extra-tropical storm when it

reached Franklin County in 2012. While the extra-tropical designation indicates a change in the weather pattern, the storm is still capable of gathering energy and producing hurricane force winds, thunderstorms, hail, and tornadoes.

4.3.11.1 Location and Extent

While Franklin County is located approximately 170 statutory miles from the Atlantic Coast, tropical storms can track inland causing heavy rainfall and strong winds. These storms are regional events that can impact very large areas, hundreds to thousands of miles across, over the life of the storm. Therefore, all communities within Franklin County are equally subject to the impacts of hurricanes, tropical storms, and Nor'easters that track through or near the county. Areas in Franklin County that are subject to flooding, wind, and winter storm damage are particularly vulnerable.

4.3.11.2 Range of Magnitude

Intense precipitation and wind resulting in flood (see **Section 4.3.9**) and wind damage (see **Section 4.3.22**) are the most common impacts associated with coastal storm systems in Pennsylvania. Nor'easters develop as extra-tropical cyclonic weather systems over the Atlantic Ocean and are capable of producing winds equivalent to hurricane or tropical storm force; precipitation from these storms may also come in the form of heavy snow or ice (see **Section 4.3.27**).

A correlation between the wind speed of these storms and the expected damage they can cause is illustrated in **Figure 4.3.11.2.1** below.

Category	Wind Speed (mph)	Description of Damages
1	74-95	MINIMAL: Damage is limited primarily to shrubbery and trees, unanchored mobile homes and signs. No significant structural damage.
2	96-110	MODERATE: Some trees toppled, some roof coverings are damaged and major damage occurs to mobile homes. Some roofing material, door and window damage.
3	111-130	EXTENSIVE: Some structural damage to small residences and utility buildings with minor amount of curtain wall failures. Mobile homes are destroyed. Large trees toppled. Terrain may be flooded well inland.
4	131-155	EXTREME: Extensive damage to roofs, windows and doors, roof systems on small buildings completely fail. More extensive curtain wall failures. Terrain may be flooded well inland.
5	≥ 156	CATASTROPHIC: Complete failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Massive evacuation of residential areas may be required.

Figure 4.3.11.2.1: Saffir-Simpson Scale and Associated Damages

4.3.11.3 Past Occurrence

The National Hurricane Center maintains records of all coastal storms occurring in the United States since the 1850s. **Table 4.3.11.3.1** lists all the storms that passed through or directly impacted Franklin County.

Event	Date	Outcome	US Damages
Hurricane Sandy	October 2012	Presidential Emergency Declaration	\$65,000,000,000
Tropical Storm Lee	September 2011	Presidential Emergency Declaration	\$1,600,000,000
Hurricane Irene	August 2011	Gubernatorial Proclamation of Emergency	\$13,500,000,000
Tropical Depression Ernesto	September 2006	Gubernatorial Proclamation of Emergency	\$500,000,000
Hurricane Ivan	September 2004	Presidential Disaster Declaration	\$20,500,000,000
Tropical Storm Isabel	September 2003	No Declaration covering Franklin County	\$5,500,000,000
Tropical Storm Agnes	June 1972	Presidential Disaster Declaration	\$2,100,000,000

Table 4.3.11.3.1: Tropical Systems that Impacted Franklin County (1972-2022) ^{64, 65, 66, 67, 68}

4.3.11.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for a Hurricane using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Losses for a Hurricane is classified as Relatively Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Low as compared to other communities in the United States. Socially vulnerable populations would likely be impacted by hurricanes within the county, especially the elderly and our residents with disabilities, in the case of an event requiring evacuation. Low-income communities would also be affected since they may not always have access to resources to help with wind damage and/or flood recovery.

Climate Change

With ocean and atmospheric temperatures predicted to gradually rise, it is likely that Franklin County will be more affected by hurricanes. This increased risk would result in an increase in

⁶⁴ National Hurricane Center, 2023

⁶⁵ National Hurricane Center, 2006

⁶⁶ New York Daily News

⁶⁷ Masters, Jeff, 2011

⁶⁸ Insurance Information Institute

the intensity across the entire county since warmer temperatures would result in the potential for higher amounts of moisture within the hurricanes.

Although hurricanes and tropical storms can cause flood events consistent with 1% and 2%-annual chance frequency, their probability of occurrence is measured relative to wind speed. NOAA Hurricane Research Division published the map in **Figure 4.3.11.4.1** showing the probability of a named storm striking Pennsylvania. This figure does not provide information on the intensity of the storm, but does indicate that Pennsylvania, including Franklin County, has between a 6-12 % chance of being hit by a named storm between June and November of any given year. This translates as a probability of occurrence of *possible*, as defined by the Risk Factor Methodology probability criteria (see **Section 4.4**).

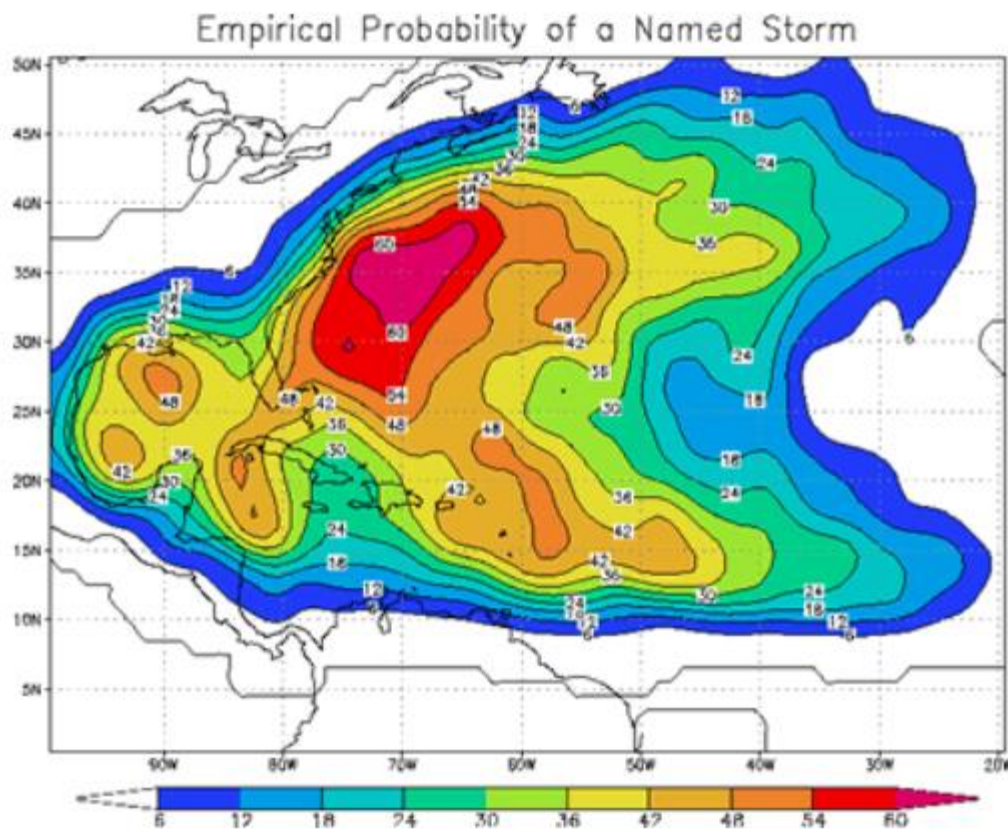


Figure 4.3.11.4.1: Probability of Named Storm Hitting the Continental United States⁶⁹

4.3.11.5 Vulnerability Assessment

Based on all the information available, every community in Franklin County is equally vulnerable to the direct impacts of a Hurricane, Tropical Storm, or Nor'easter. These storms are not frequent events for Franklin County, but the possible damages to life and property from one of these events raises the risk factors significantly for our communities.

⁶⁹ NOAA/Hurricane Research Division

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Figure 4.3.11.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Hurricane/Tropical Storm/Nor'easter hazard. One can see that 15 of 22 municipalities rated this threat as either a Major or Moderate event. This is a Major threat ranked number 4 overall for Franklin County and will garner significant attention during the Mitigation Strategy in **Section 6**.


	Hurricane/Tropical Storm/Nor'easter Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	4	20%	4	10%	4	10%	2.2	10.12%	0.2226
Chambersburg Borough	2	30%	2	30%	3	20%	3	10%	4	10%	2.5	14.05%	0.3513
Fannett Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.59%	0.0207
Greencastle Borough	3	30%	3	30%	3	20%	1	10%	4	10%	2.9	2.73%	0.0792
Greene Township	2	30%	1	30%	4	20%	4	10%	4	10%	2.5	11.82%	0.2955
Guilford Township	2	30%	2	30%	4	20%	4	10%	4	10%	2.8	9.38%	0.2626
Hamilton Township	2	30%	1	30%	4	20%	2	10%	4	10%	2.3	7.29%	0.1677
Letterkenny Township	2	30%	2	30%	4	20%	1	10%	4	10%	2.5	1.58%	0.0395
Lurgan Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.42%	0.0185
Mercersburg Borough	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	0.97%	0.0213
Metal Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.13%	0.0147
Mont Alto Borough	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	1.01%	0.0152
Montgomery Township	3	30%	2	30%	4	20%	1	10%	4	10%	2.8	3.68%	0.1030
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	2.86%	0.0543
Quincy Township	2	30%	2	30%	2	20%	1	10%	4	10%	2.1	3.41%	0.0716
Shippensburg Borough	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	0.75%	0.0165
Southampton Township	1	30%	1	30%	3	20%	1	10%	4	10%	1.7	5.49%	0.0933
St Thomas Township	3	30%	2	30%	2	20%	1	10%	4	10%	2.4	3.79%	0.0910
Warren Township	2	30%	2	30%	2	20%	2	10%	4	10%	2.2	0.21%	0.0046
Washington Township	3	30%	2	30%	2	20%	1	10%	4	10%	2.4	9.55%	0.2292
Waynesboro Borough	1	30%	2	30%	4	20%	1	10%	4	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													2.329

Figure 4.3.11.5.1: Municipal Hurricane/Tropical Storm/Nor'easter Threat Vulnerability Self-Assessment

A vulnerability assessment for hurricane and tropical storm focuses on the impacts of flooding and severe wind. Therefore, the specific impacts of flood related events are addressed in **Section 4.3.11**, and impacts to wind damage are addressed in **Section 4.3.22**. The county is also vulnerable to severe winter weather impacts caused by Nor'easters which are detailed in **Section 4.3.27**.

4.3.11.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a hurricane/tropical storm/nor'easter event are shown below. There is potential for significant impact to one of the lifelines (Energy), and possible impacts to all of the remaining six lifelines.



Figure 4.3.11.6.1: Hurricane, Tropical Storm, & Nor'easter Community Lifeline Impacts

4.3.12 Invasive Species

The National Resources Conservation Service (NRCS) defines invasive species to be those that are non-native to an area and tend to spread to a degree that causes harm to the environment, local species, or human interests. These problem species have popped up in Pennsylvania over the years, primarily through travel and commerce that displaces them from their native ecosystem. If enough individuals of a species are present to form a breeding population, they can become an invasive species. This has come about from people using exotic plants as decorations, releasing hazardous pets to the wild when they can no longer care for them, and pests that hitch rides in imported foods. Once a new species is introduced, it can become very difficult to get rid of, or even to control. Local plants and animals get choked out by foreign competitors, forests get eaten away by pests, and croplands and pastures become less productive. We must control these species and the effects they cause, and prevent future invasive threats from occurring if we wish to preserve Pennsylvania's local beauty, wildlife, and productivity⁷⁰.

Invasive species threats are generally divided into two main subsets:

- **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.
- **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.

⁷⁰ USDA/NRCS

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

- Contamination of internationally traded products
- Hull fouling
- Ship ballast water release
- 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
- Hobby trading or specimen trading

4.3.12.1 Location and Extent

Invasive Animals and Insects:

Spotted Lanternfly:

The Spotted Lanternfly is an inch-long black, red-and-white-spotted insect native to southeastern Asia (see **Figure 4.3.12.1.1**). An invasive species in South Korea, it has attacked 25 plant species there that also grow in Pennsylvania.

According to Pennsylvania Secretary of Agriculture, this invasive insect threatens to destroy \$18 billion worth of agricultural commodities like apples, grapes, and hardwoods inflicting a devastating impact on the livelihoods of producers and businesses.

The Pennsylvania Department of Agriculture states the quarantine is now in effect for 45 of 67 counties in Pennsylvania, including Franklin County and surrounding counties (see **Figure 4.3.12.1.2** below for quarantine areas with confirmed presence). Anyone who finds the insects or egg masses outside quarantined areas should report sightings to 1-888-422-3359 or at: extension.psu.edu/have-you-seen-a-spotted-lanternfly. You may also call the Invasive Species Report Line at 1-866-253-7189. Please provide details, including the location of the sighting, and your contact information. To help control and prevent the spread of the Spotted Lanternfly, residents can: 1) physically destroy the insects or their egg masses at any life stage; 2) remove Tree of Heaven host trees; or 3) via pesticide applications. For more information about the Spotted Lanternfly, including photos and quarantine details, visit the PA Department of Agriculture.



Figure 4.3.12.1.1: Adult Spotted Lanternfly

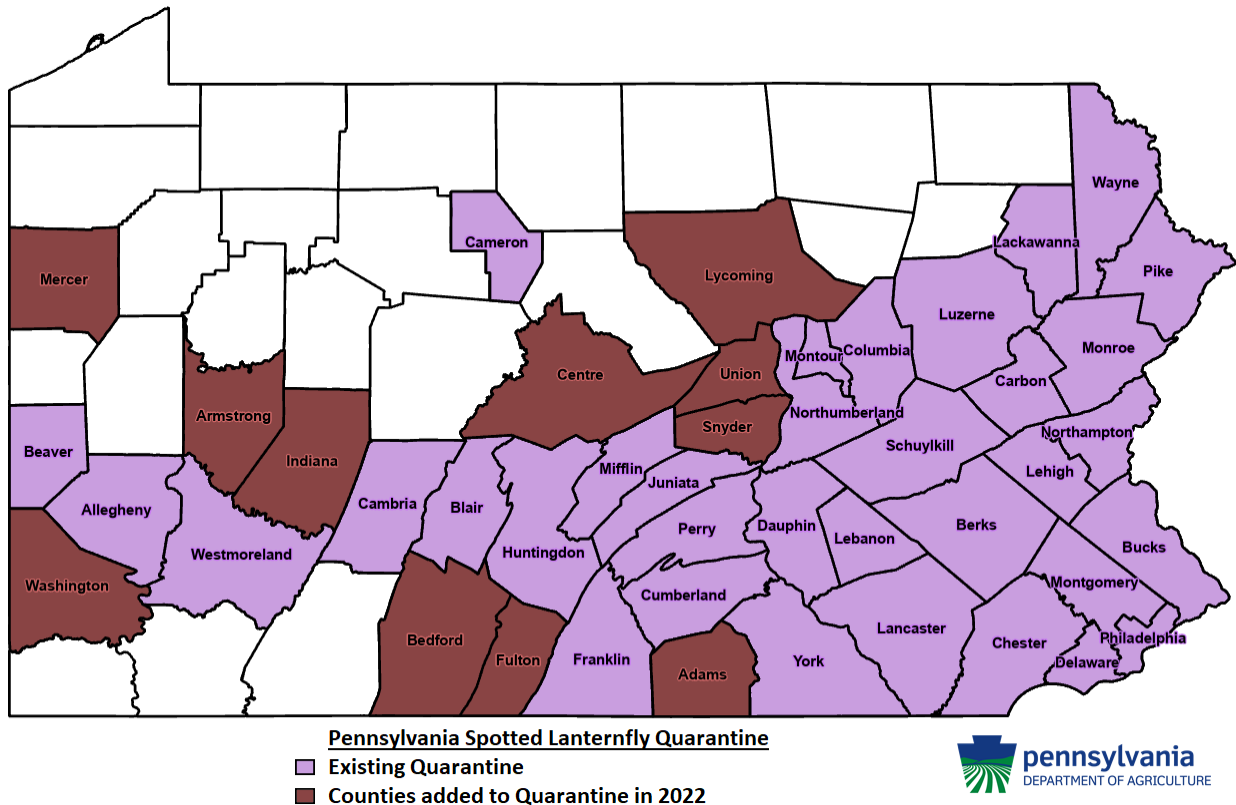


Figure 4.3.12.1.2: Areas in PA under quarantine for Spotted Lanternfly (2022)

Emerald Ash Borer:

Currently on the USDA's National Invasive Species interest list is the Emerald Ash Borer (*Agilus Planipennis* Fairmaire). This invasive species is a half-inch long metallic green beetle originally from Asia that can be found in nearly every county of the commonwealth (see **Figure 4.3.12.1.3**). It was first identified in North America during 2002 and in western Pennsylvania during 2007. This insect was confirmed in Franklin County in 2010. The larval stage of this

beetle is harmful, feeding exclusively on ash trees under the bark and killing them within 3 to 5 years after infestation.

Signs and symptoms of an emerald ash borer (EAB) infestation include:

- Upper crown dieback
- Epicormic branching
- Bark splits
- Bark flaking
- Tissue damage resulting from woodpecker predation
- D-shaped adult beetle exit holes in the bark
- S-shaped larval feeding galleries just below the bark

All native North American ash species, ash cultivars, and the white fringe tree are susceptible to emerald ash borer. Emerald ash borer is a serious threat to the 323 million ash trees in the forests of Pennsylvania, including:

- Pumpkin ash – an endangered species.
- Ash seed orchards managed by DCNR's Bureau of Forestry.
- White ash, green ash, black ash, blue ash, and the white fringe tree (a species in the same taxonomic family as ash).

Without active management, it is predicted that EAB will severely decimate populations of ash trees in the state. Since 2013, there has been a 20% decline in ash tree species in the state. If the Emerald Ash Borer spreads to the Commonwealth's 323 million ash trees, with the high mortality rate associated with the ash borer, Pennsylvania's hardwood forests would be devastated. This would have a serious impact on Pennsylvania's logging activities and its many state parks and game lands. The economic impact could be serious, stretching from logging to tourism to other production activities dependent on Pennsylvania lumber. A 2018 Department of Agriculture report estimated that more than 65,000 Pennsylvanians have been employed in forest product industries, and Pennsylvania is the nation's leading producer of hardwood lumber. The economic impact of this industry is estimated at \$25 billion, a significant potential loss should a hardwood-living invasive species take root in Pennsylvania⁷¹.



Figure 4.3.12.1.3: Emerald Ash Borer

⁷¹ PA Hardwoods Development Council, 2020

PENNSYLVANIA CONFIRMED EMERALD ASH BORER PROGRAM DETECTIONS 2007-2019

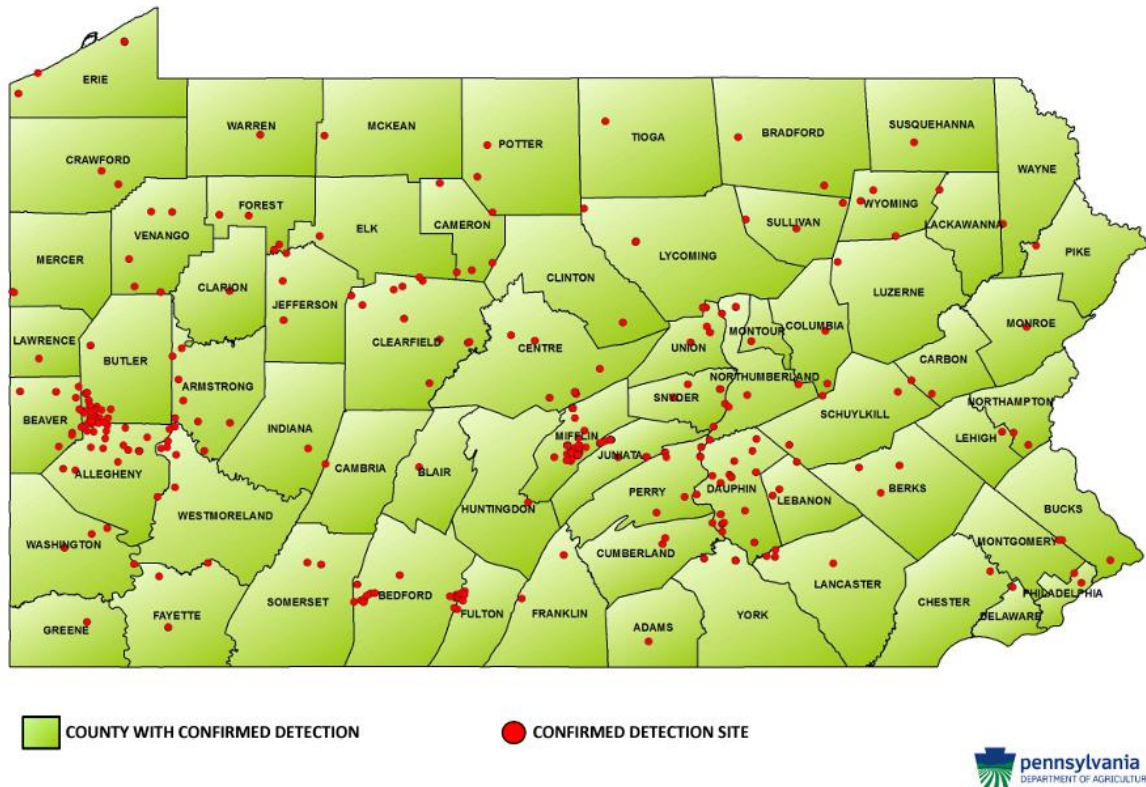


Figure 4.3.12.1.4: PA Emerald Ash Borer Proliferation

Reptiles:

According to the Governor's Invasive Species Council of Pennsylvania (PISC), there are no known invasive amphibian species and only two invasive reptiles. The red-eared slider (*Trachemys scripta elegans*) (Figure 4.3.12.1.5) and the yellow-bellied slider (*Trachemys scripta scripta*) (Figure 4.3.12.1.6) turtles have established breeding populations in the commonwealth, particularly in the southeastern and southcentral counties. Both of these invasive turtle species are aggressive competitors for food, basking sites, and breeding habitat and represent significant threats to many native Pennsylvania turtle species including the red-bellied turtle (*Pseudemys rubriventris*) that is state listed as threatened. The rapid spread of both slider species is attributed to the intentional release of captive turtles that were kept as pets.



Figure 4.3.12.1.5: Red-eared Slider Turtle



Figure 4.3.12.1.6: Yellow-bellied Slider Turtle

Invasive Pathogens:

There are a number of reportable diseases documented in Pennsylvania either currently or in the recent past that pose significant environmental and economic threats and may be detrimental to public health and safety. At a minimum, more than 189 reportable or notifiable diseases in Pennsylvania are non-native and also highly invasive by their very nature. **Table 4.3.12.1.1** below contains examples of Animal and Human Pathogens with invasive characteristics that are of concern in the World, the Nation, or in the Commonwealth.

Viruses	Bacterial Diseases	Prions
Avian Influenza	Botulism	Chronic Wasting Disease
Smallpox	Plague	Bovine Spongiform Encephalopathy
West Nile Virus	Samonellosis	
Foot and Mouth Disease	Brucellosis	
	Anthrax	
	Glanders	
	Q Fever	

Table 4.3.12.1.1: Invasive Pathogens

West Nile Virus:

West Nile fever is a case of mild disease in people, characterized by flu-like symptoms. West Nile fever typically lasts only a few days and does not appear to cause any long-term health effects. More severe disease due to a person being infected with this virus can be “West Nile encephalitis,” West Nile meningitis or West Nile meningoencephalitis. Encephalitis refers to an inflammation of the brain, meningitis is an inflammation of the membrane around the brain and the spinal cord, and meningoencephalitis refers to inflammation of the brain and the membrane surrounding it.

The principle route of human infection with West Nile virus is through the bite of an infected mosquito. Additional routes of infection have become apparent during the 2002 West Nile epidemic. It is important to note that these other methods of transmission represent a very small proportion of cases. Other methods of transmission include blood transfusion, organ transplantation, mother-to-child (ingestion of breast milk and transplacental), and occupational.

In 2000, West Nile virus appeared for the first time in Pennsylvania in birds, mosquitoes and a horse. To combat the spread of West Nile virus, which is transmitted by mosquitoes, Pennsylvania has developed a comprehensive network. This network, which covers 40 counties, includes trapping mosquitoes; collecting dead birds; and monitoring horses, people, and in past years sentinel chickens.

There are about 60 different species of mosquitoes in Pennsylvania. While most do not transmit West Nile virus, several mosquito species have been found to transmit the virus.

Mosquitoes lay their eggs in stagnant water around the home. Weeds, tall grass, shrubbery and discarded tires also provide an outdoor home for adult mosquitoes. By eliminating places for mosquitoes to breed, we can go a long way to prevent West Nile virus.

Mosquitoes breed in standing water. Even a small bucket that has stagnant water in it for seven days can become home to up to 1,000 mosquitoes. Here are some easy tips to eliminate standing water:

- Dispose of tin cans, plastic containers, ceramic pots or similar water holding containers that have accumulated on your property. Do not overlook containers that have become overgrown by aquatic vegetation.
- Pay special attention to discarded tires that may have accumulated on your property.
- Drill holes in the bottom of recycling containers that are left out of doors. Drainage holes that are located on the container sides collect enough water for mosquitoes to breed in.
- Clean clogged roof gutters on an annual basis, particularly if the leaves from surrounding trees have a tendency to plug up the drains. Roof gutters are easily overlooked but can produce millions of mosquitoes each season.
- Turn over plastic wading pools when not in use. A wading pool becomes a mosquito producer if it is not used on a regular basis.

- Turn over wheelbarrows and do not allow water to stagnate in birdbaths. Both provide breeding habitat for domestic mosquitoes.
- Aerate ornamental pools or stock them with fish. Water gardens are fashionable but become major mosquito producers if they are allowed to stagnate. Clean and chlorinate swimming pools that are not being used. A swimming pool that is left untended by a family that goes on vacation for a month can produce enough mosquitoes to result in neighborhood-wide complaints. Be aware that mosquitoes may even breed in the water that collects on swimming pool covers.

It is not necessary to limit any outdoor activities, unless local officials advise you otherwise. However, you can and should try to reduce your risk of being bitten by mosquitoes. In addition to reducing stagnant water in your yard, make sure all windows and doors have screens, and that all screens are in good repair. If West Nile Virus is found in your area:

- Take normal steps to prevent insect bites.
- Wear shoes, socks, long pants and a long-sleeved shirt when outdoors for long periods of time, or when mosquitoes are most active.
- Consider the use of mosquito repellent, according to directions, when it is necessary to be outdoors. Wash all treated skin and clothing when returning indoors.

West Nile Virus continues to be a threat that is monitored heavily in Franklin County (see **Figure 4.3.12.1.7** below). According to Pennsylvania's West Nile Control Program, there were a reported 86 positive samples collected in 2022. There was also one confirmed human case of West Nile Virus in 2022 in Franklin County.

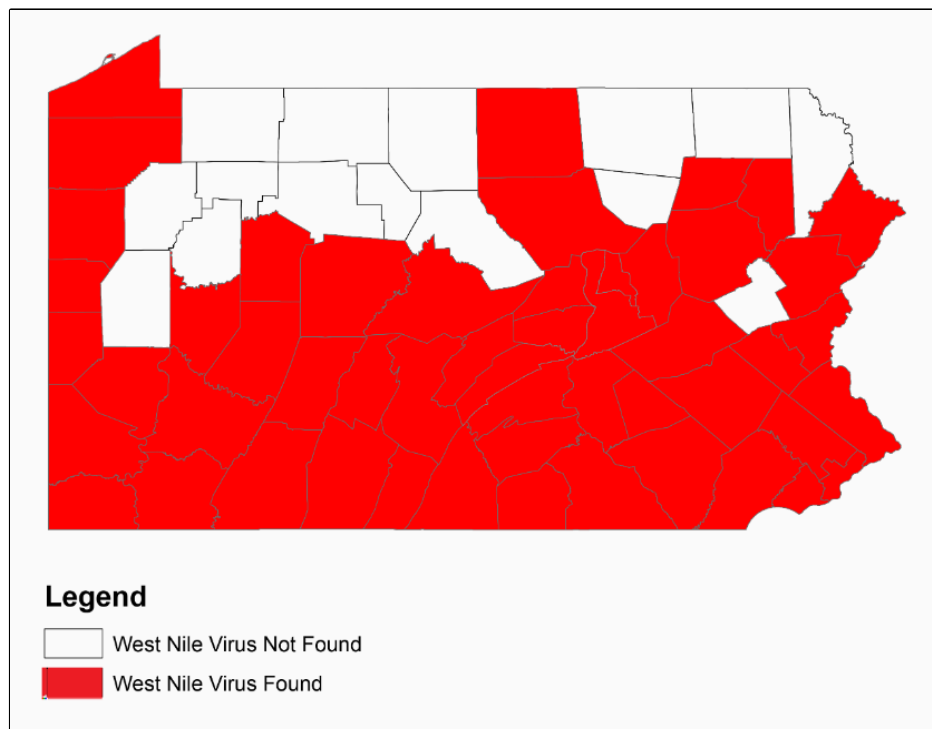


Figure 4.3.12.1.7: Proliferation of West Nile Virus in PA (2022)

Chronic Wasting Disease:

Chronic wasting disease (CWD) affects the brain and nervous system of infected cervids (deer, elk, and moose), eventually resulting in death (see **Figure 4.3.12.1.8** below).



Figure 4.3.12.1.8: Symptoms of Chronic Wasting Disease

Following the detection of CWD in both captive and free-ranging deer in Pennsylvania, an executive order was issued by the Game Commission to establish Disease Management Areas (DMAs). Within DMAs, rehabilitation of cervids (deer, elk, and moose); the use or possession of cervid urine-based attractants in an outdoor setting; the removal of high-risk cervid parts; and the feeding of wild free-ranging cervids are prohibited. Increased testing continues in these areas to determine the distribution of the disease. Newly confirmed cases alter the boundaries of DMAs as the Game Commission continues to manage the disease and minimize its effect on free ranging cervids⁷².

In Pennsylvania, CWD has been detected in these DMAs: DMA 1 on a captive deer farm in Adams County during 2012 (DMA 1 has since been eliminated); DMA 2 in multiple free-ranging deer in Bedford, Blair, Cambria, and Fulton counties since 2012, and captive deer farms in Bedford, Franklin, and Fulton counties during 2017; and DMA 3 in two captive deer farms in Jefferson County during 2014 and a free-ranging deer in Clearfield County during 2017. In addition, CWD has been detected in wild or captive deer and/or elk in many other states and provinces. Since then, the number of deer testing positive for CWD has risen and the area in which it is found has been expanded to include 7 DMA's as of 2022 (see **Figure 4.3.12.1.9** below).

⁷² Pennsylvania Game Commission

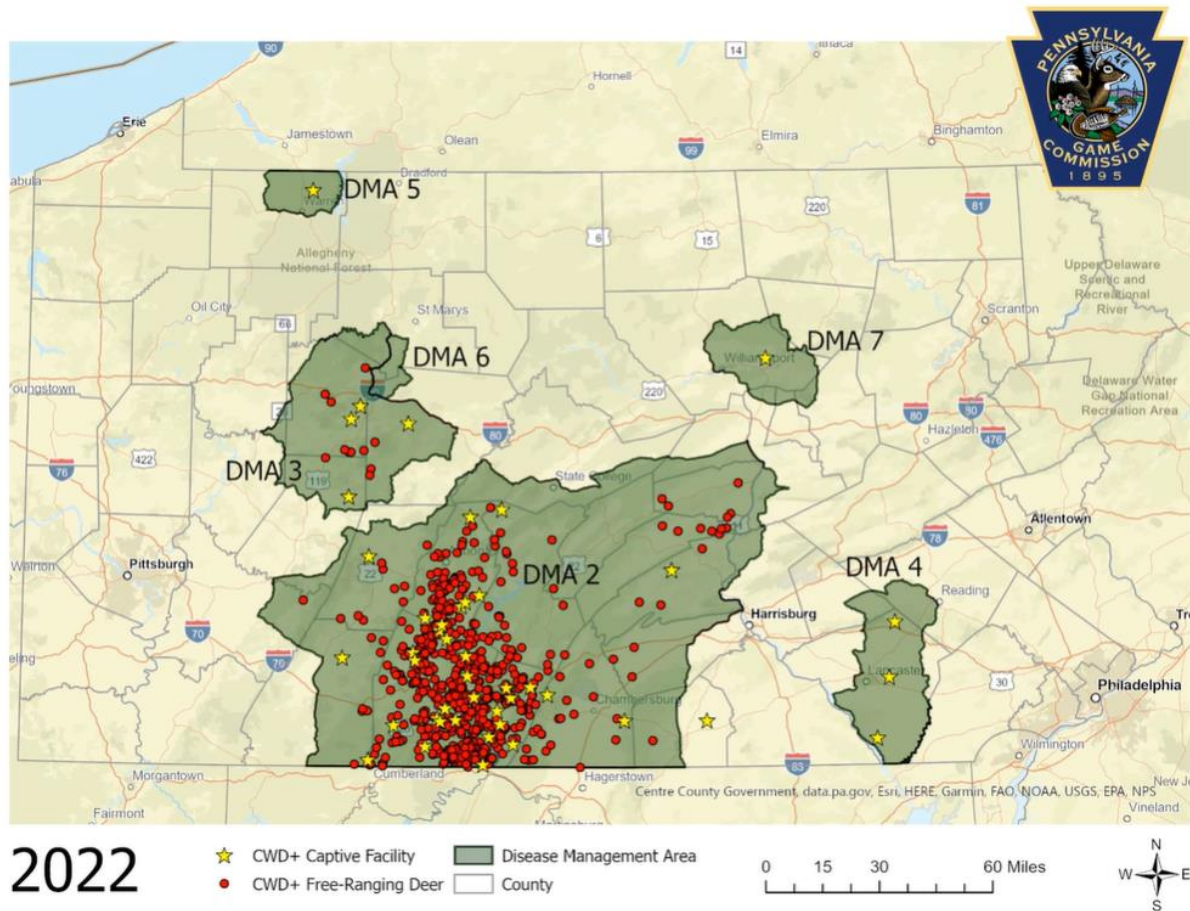


Figure 4.3.12.1.9: Chronic Wasting Disease Positives and Designated Disease Management Areas

Franklin County is located in Disease Management Area (DMA) 2. It is unlawful to remove any carcass suspected of CWD out of the DMA unless it is being taken to an approved processing location. As of the fall 2017, those locations are listed for Franklin County in **Table 4.3.12.1.2** below:

County	Approved Processing Centers
Franklin	Little C's Custom Butchering, 18303 Dry Run Rd, Spring Run, PA 17262, 717-349-7500
Franklin	Michael Diller, 12497 Gearhart Rd, Greencastle, PA 17225, 301-800-4690
Franklin	Mountain Man Custom Butchering, 10125 Mountain Rd., Orrstown, PA 17244, 717-532-7295
Franklin	Stitely's Meat & Deer Processing, 3647 Haulman Rd., Chambersburg, PA, 717-264-3341

Table 4.3.12.1.2: Approved Processing Centers in Franklin County (DMA 2)

A list of DMA 2 high-risk parts dumpsters and deer head collection bins for FREE testing are listed in **Table 4.2.12.1.3** below:

Type	County	Location
Head Collection Only	Franklin	Chambersburg Waste Water Plant, 725 Hollywell Ave., Chambersburg, PA 17201
Dumpster & Head Collection	Franklin	State Game Lands 124, 3703 Little Cove Rd., Mercersburg, PA 17236

Table 4.3.12.1.3: Drop Locations for CWD Testing Franklin County

More information on Chronic Wasting Disease and hunter services in Pennsylvania can be found in the CWD interactive map at: <http://bit.ly/PGC-CWDMap>

Lyme Disease:

According to the PA Lyme Resource Network, Lyme Disease is a bacterial infection transmitted to humans primarily through the bites of infected deer ticks (see **Figure 4.3.12.1.9** below). It is the fastest growing vector-borne infectious disease in the United States according to the Centers for Disease Control and Prevention. The CDC recently raised the number of estimated new cases of Lyme disease each year from 30,000 to 476,000. Some experts say the figure is far higher.

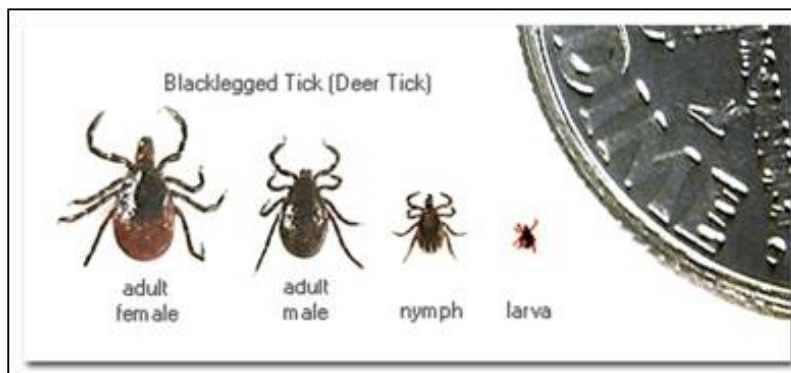


Figure 4.3.12.1.10: Illustration of a Deer Tick

Lyme disease is transmitted mostly by the nymphal deer tick. At this stage, the ticks are the size of a period at the end of a sentence. Many people are not aware when they've been bitten by a tick and may not make a connection when they begin to experience symptoms, which can be weeks, months, or even years after a tick bite. There are published cases of Lyme bacteria entering the human bloodstream within the hour of a bite, and some infections (Powassan Virus) can be transmitted in minutes or hours. This does not happen in every case. The longer the tick is attached, the greater the probability of disease transmission.

Initial symptoms may occur within a day or a week, and often people think they just have a flu or virus. Symptoms include fever, headache, general achiness, swollen glands, fatigue and a

possible rash. But some patients may present with only neurological symptoms (headache, sleep disruption, memory or concentration problems). The rash is seen in fewer than half of diagnosed cases. It is typically a bulls eye rash (see **Figure 4.3.12.1.11 below**), but it may also present in other forms like a round or oval reddish rash. If the bulls-eye rash is seen, it is a definitive diagnosis of Lyme disease and treatment should begin immediately. “Summer flus” are highly unusual – and healthcare practitioners are informed to consider Lyme and Tick-borne diseases when patients experience a “Summer flu-like illness”.

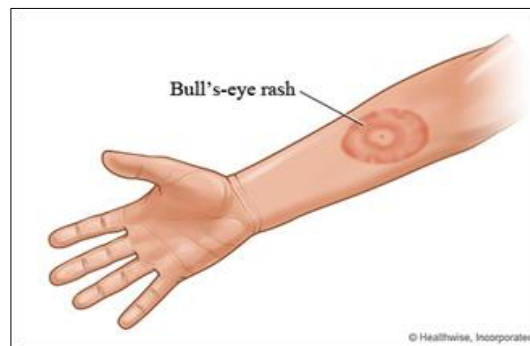


Figure 4.3.12.1.11: Bullseye Rash Symptom of Lyme’s Disease

If the initial infection goes undiagnosed and untreated, the infection can progress disseminating throughout the body affecting any organ. In the heart, the bacteria may cause heart block or palpitations. Recent reports of sudden cardiac death due to Lyme carditis highlight the importance of prompt diagnosis and treatment of Lyme disease. When the bacteria affect the digestive system, patients may experience nausea, acid reflux, irritable bowel syndrome, poor digestion or diarrhea. Endocrine disturbances such as hypothyroidism or menstrual irregularities are common. In the brain, Lyme disease may cause learning disabilities, memory impairment, headaches, sleep disturbances, and concentration problems often presenting like attention deficit disorder (ADD). There may also be joint swelling and pain, muscle soreness, twitching and cramps. Some experience light and sound sensitivity. Most patients with Lyme also have fatigue, which can be quite debilitating.

Over the last 5 years PA ranked number 1 for reported cases in the U.S. The PA Department of Health reports that there were 3,334 confirmed and probable cases of Lyme Disease in 2020, which is a significant decrease from the 8,998 cases reported in 2019. Experts believe the actual number of cases is about least 10 times higher than the number reported. In 2020, the PA Department of Health published a study showing Lyme Disease risk exists in all 67 counties in PA⁷³. Franklin County had less than 5 reported cases of Lyme Disease in 2020. **Figure 4.3.12.1.12** shows the incidence of Lyme Disease per county in PA from 2017-2021 and **Figure 4.3.12.1.13** shows the incidence of Lyme Disease per region in PA from 1980-2021.

⁷³ PADOH, 2022

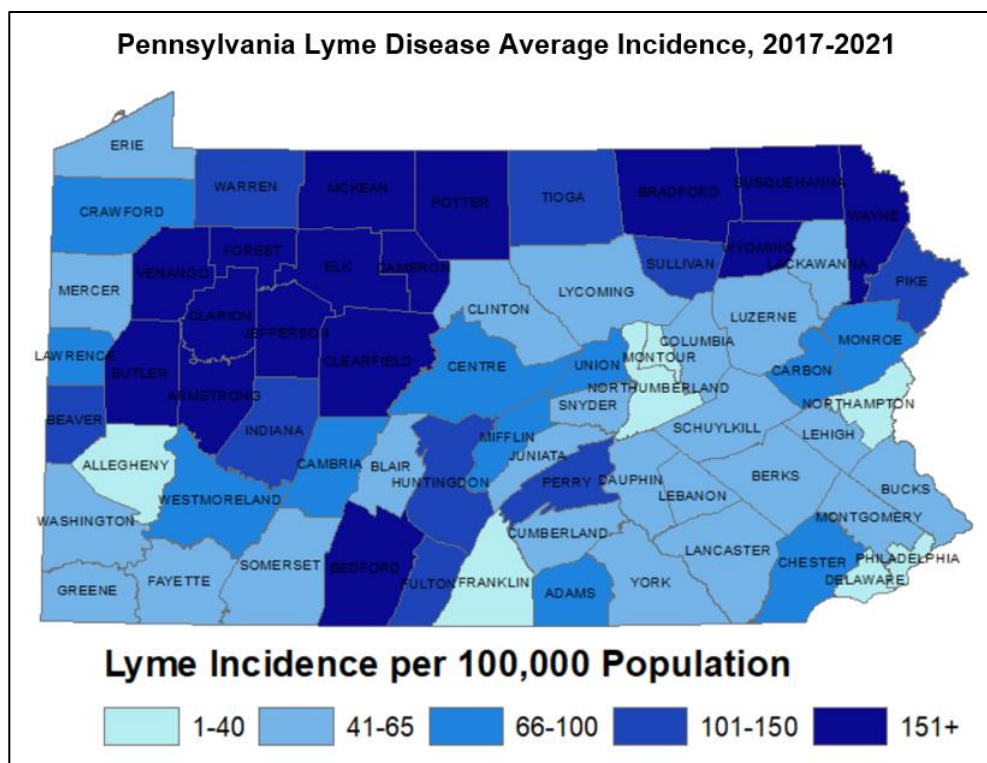


Figure 4.3.12.1.12: Lyme Disease Incidence by County – 2017-2021⁷⁴

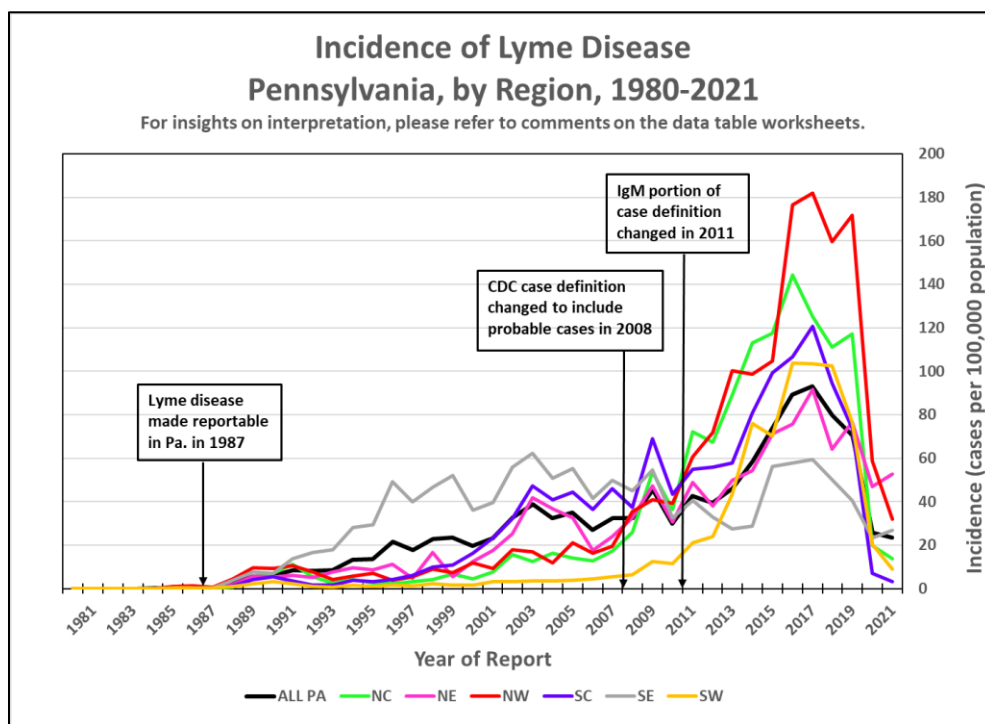


Figure 4.3.12.1.13: Lyme Disease per Region in PA (1980-2021)⁷⁵

⁷⁴ PADOH, 2023

⁷⁵ PADOH, 2023

Figure 4.3.12.1.14 below is a chart that represents the number of confirmed Lyme Disease cases in Franklin County from 2000 through 2020.

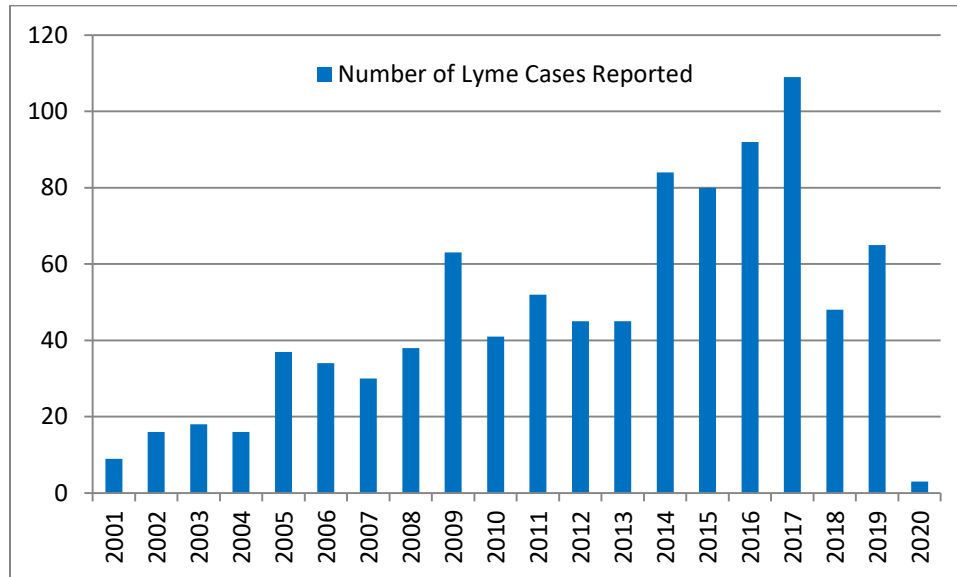


Figure 4.3.12.1.14: Franklin County Lyme Disease Cases (2001-2020)⁷⁶

From 2001 - 2020, there were a total of 925 confirmed cases of Lyme Disease in Franklin County. However, the data from the CDC only represents confirmed cases, the actual quantity of Lyme Disease cases may be far greater. Based on this information, we estimate the real number of cases of Lyme Disease in Franklin County to be closer to **9,250**.

Invasive Plants

Invasive plants can include:

- Trees
- Shrubs
- Vines
- Grasses
- Flowers

A review of the USDA, National Agriculture Library⁷⁷ with respect to Franklin County revealed 24 plant species that have been documented as present in the county. These species are illustrated in **Figures 4.3.12.1.15 to 4.3.12.1.38**.

⁷⁶ CDC, 2023

⁷⁷ USDA

Franklin County Hazard Mitigation Plan - 2023

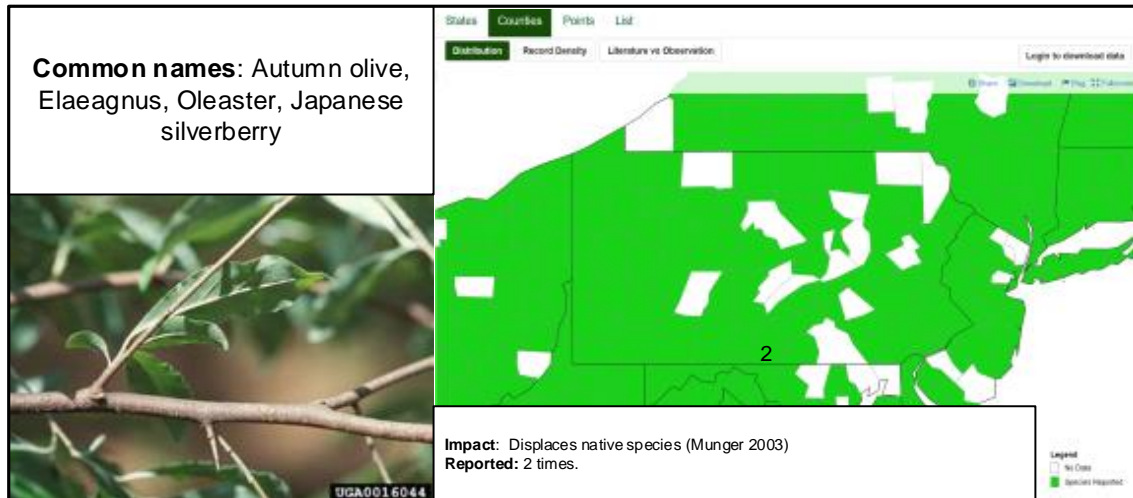


Figure 4.3.12.1.15: Autumn Olive



Figure 4.3.12.1.16: Canadian Thistle

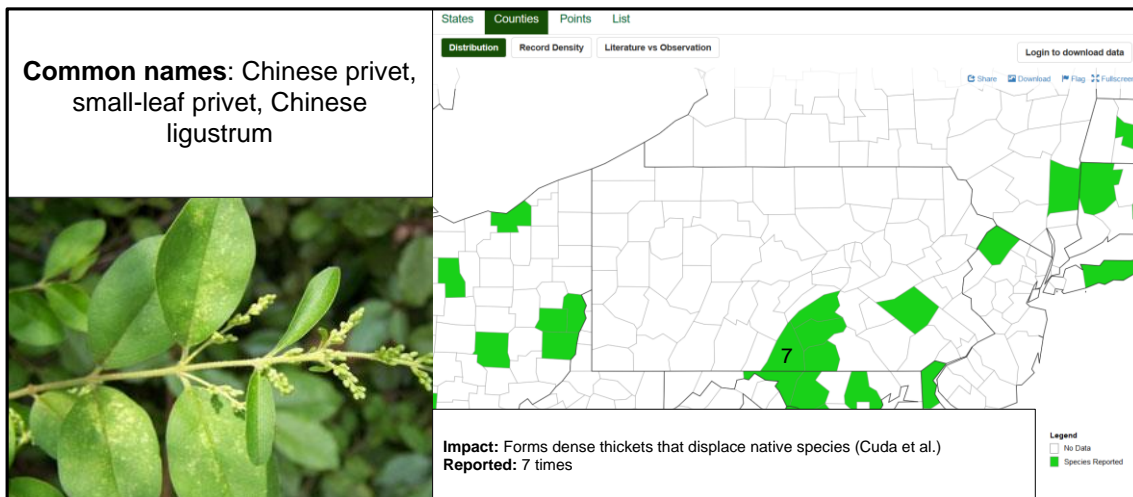


Figure 4.3.12.1.17: Chinese Privet

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Figure 4.3.12.1.18: Common Teasel

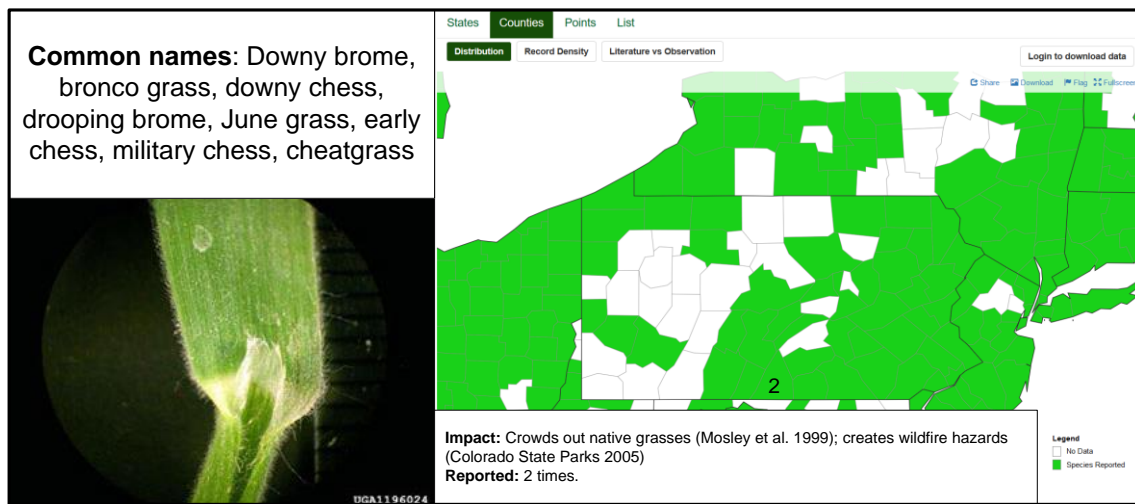


Figure 4.3.12.1.19: Downy Brome

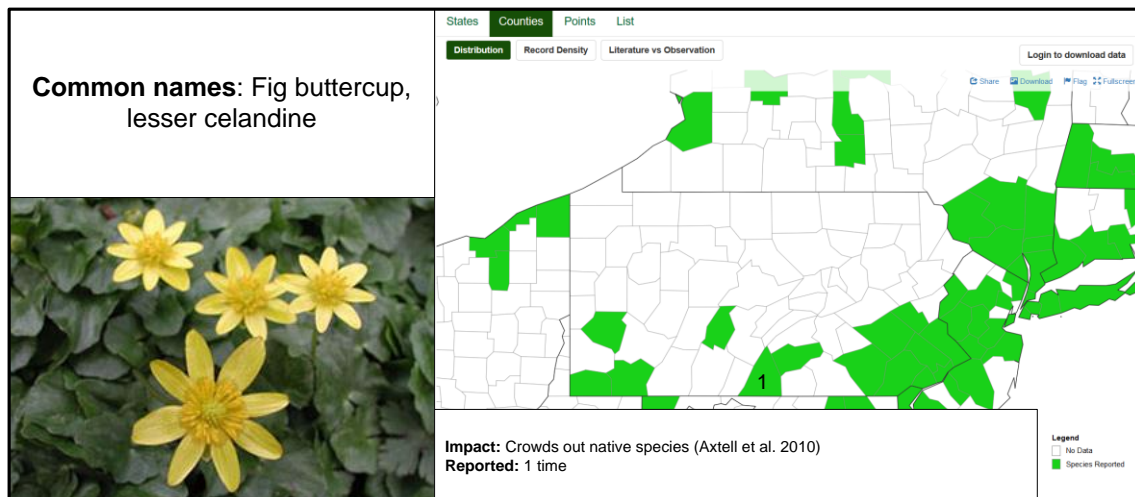


Figure 4.3.12.1.20: Fig Buttercup

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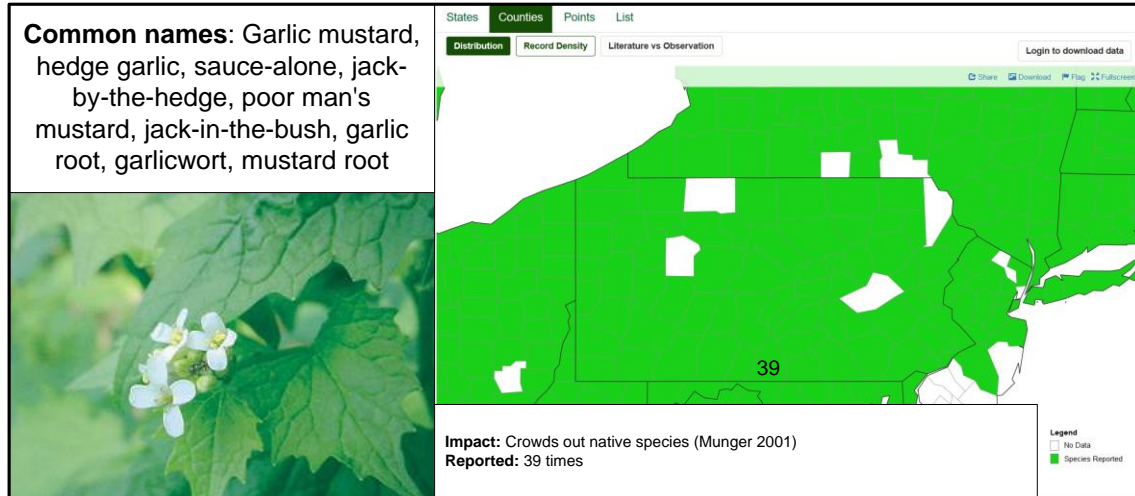


Figure 4.3.12.1.21: Garlic Mustard

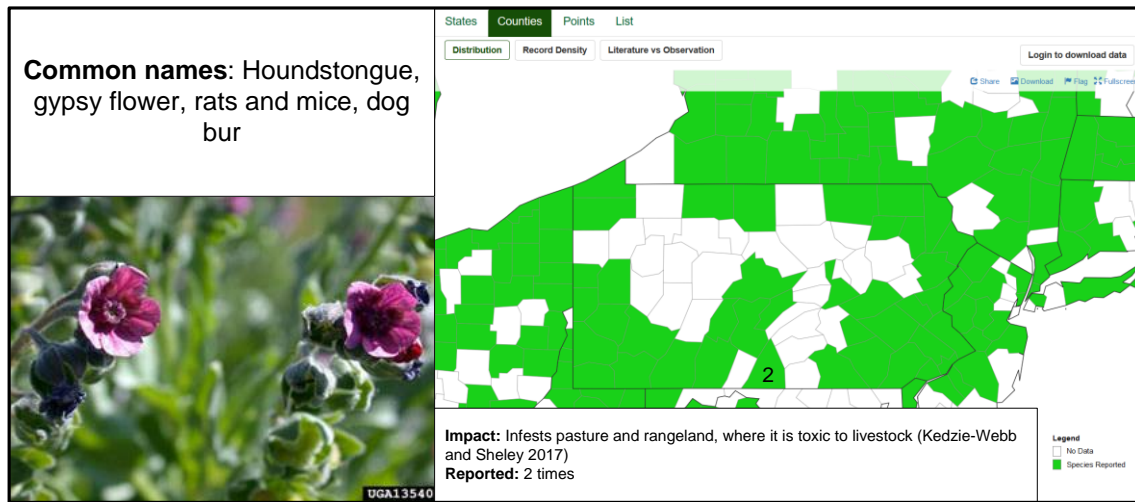


Figure 4.3.12.1.22: Houndstongue

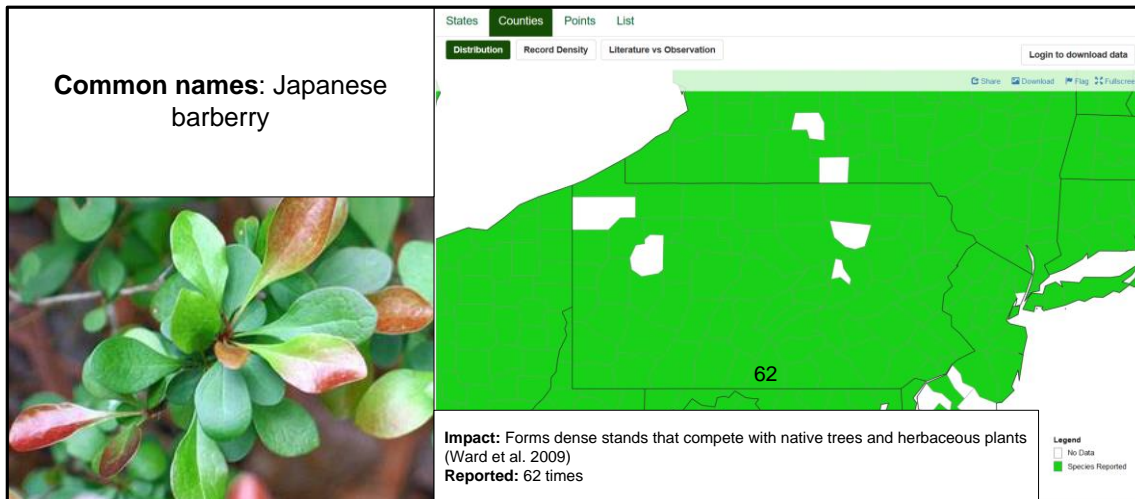


Figure 4.3.12.1.23: Japanese Barberry

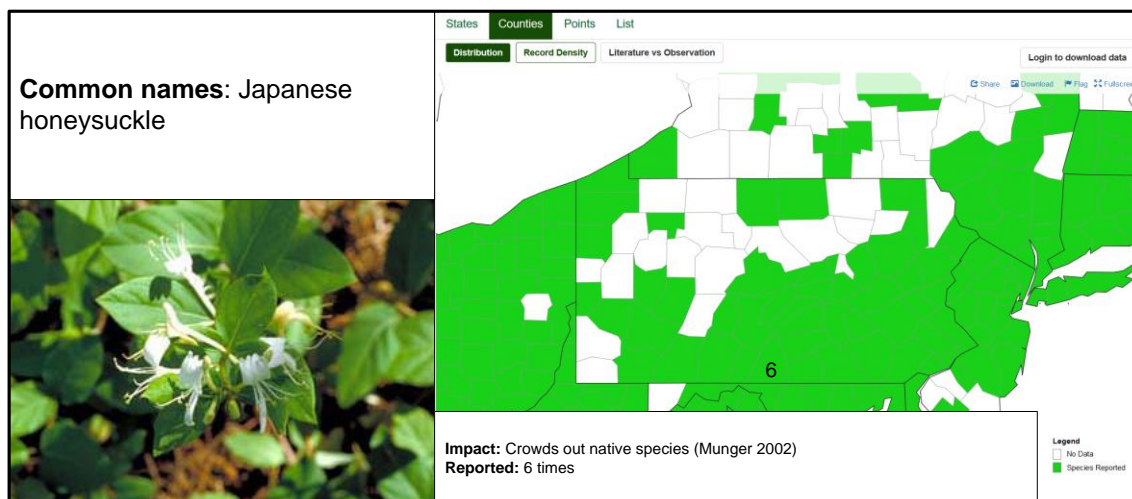


Figure 4.3.12.1.24: Japanese Honeysuckle

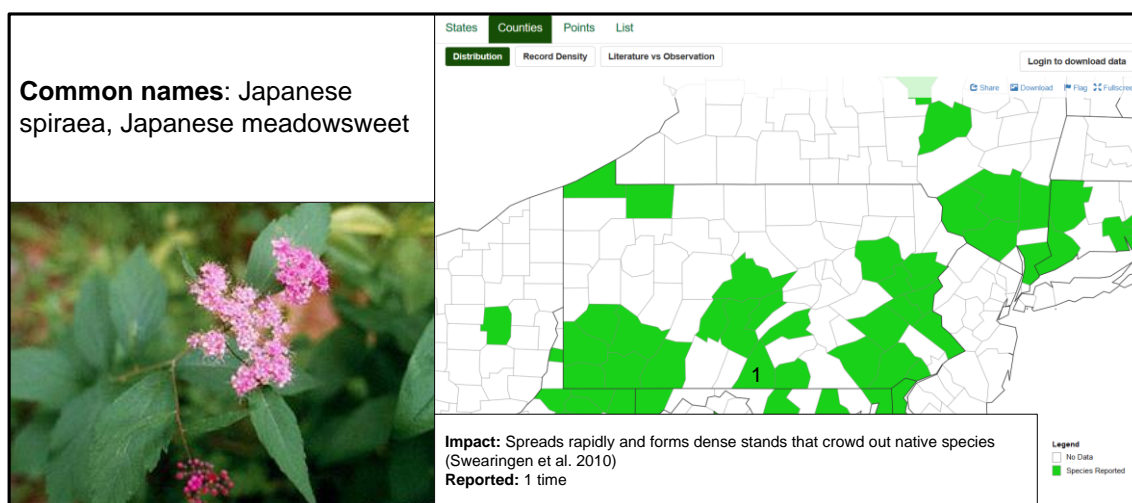


Figure 4.3.12.1.25: Japanese Spiraea

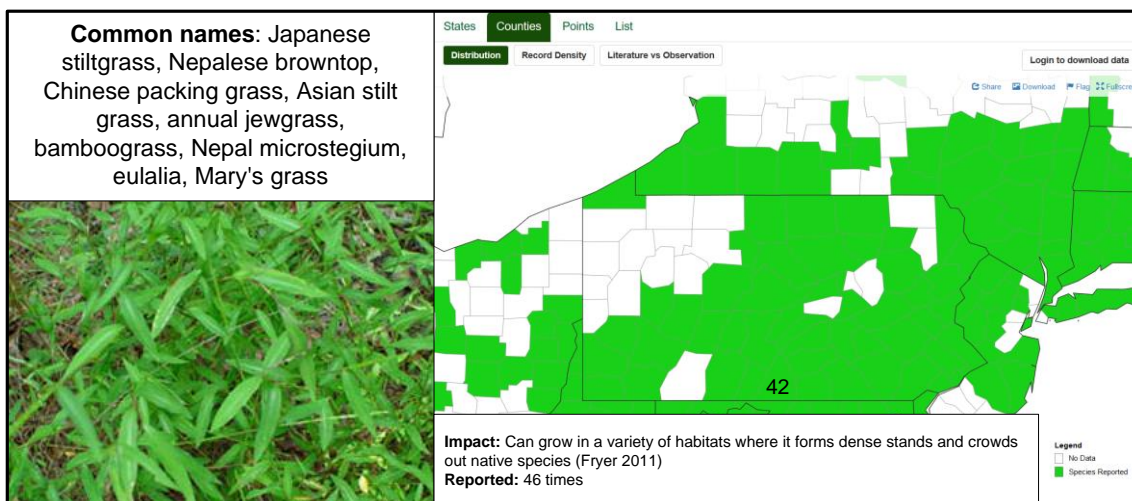


Figure 4.3.12.1.26: Japanese Stiltgrass

Franklin County Hazard Mitigation Plan - 2023

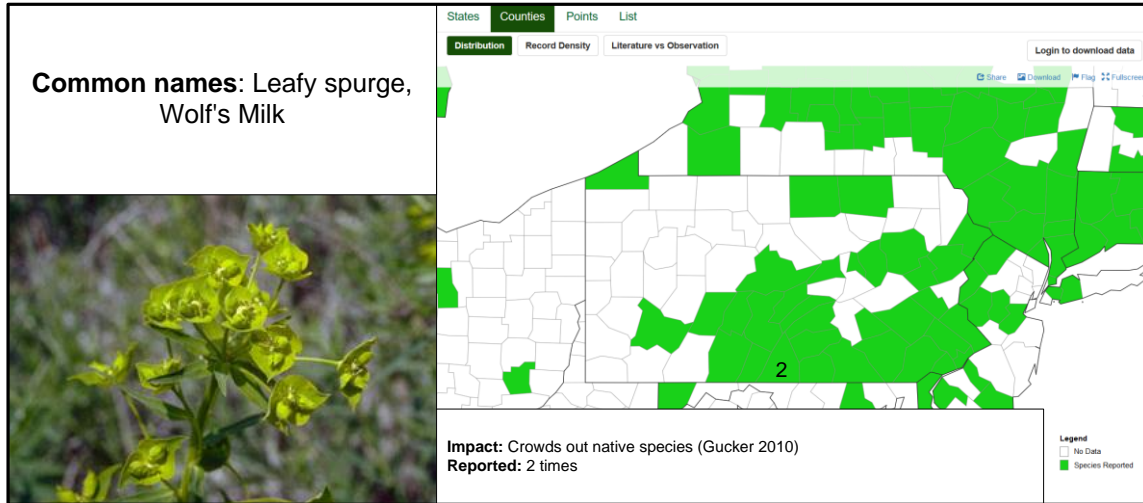


Figure 4.3.12.1.27: Leafy Spurge

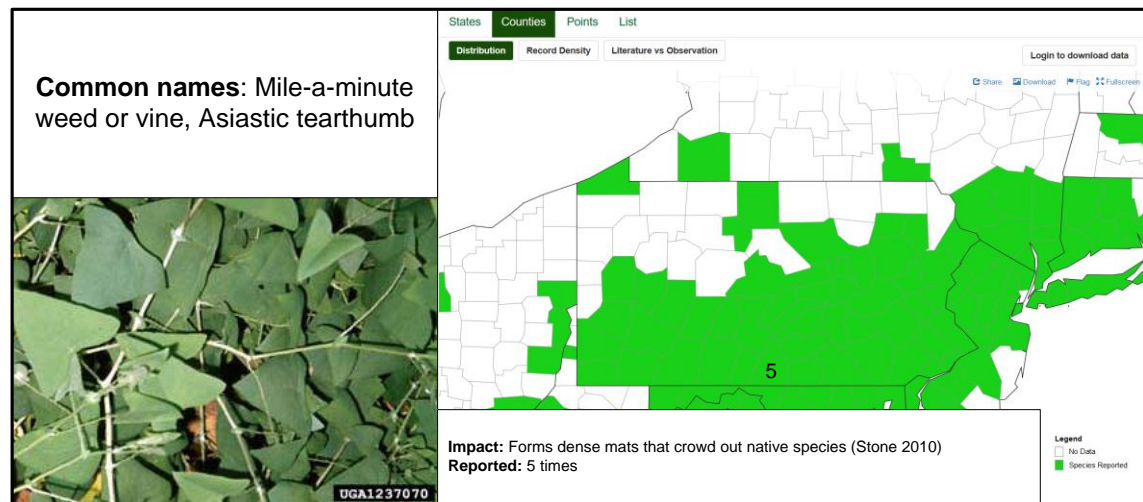


Figure 4.3.12.1.28: Mile-A-Minute Weed

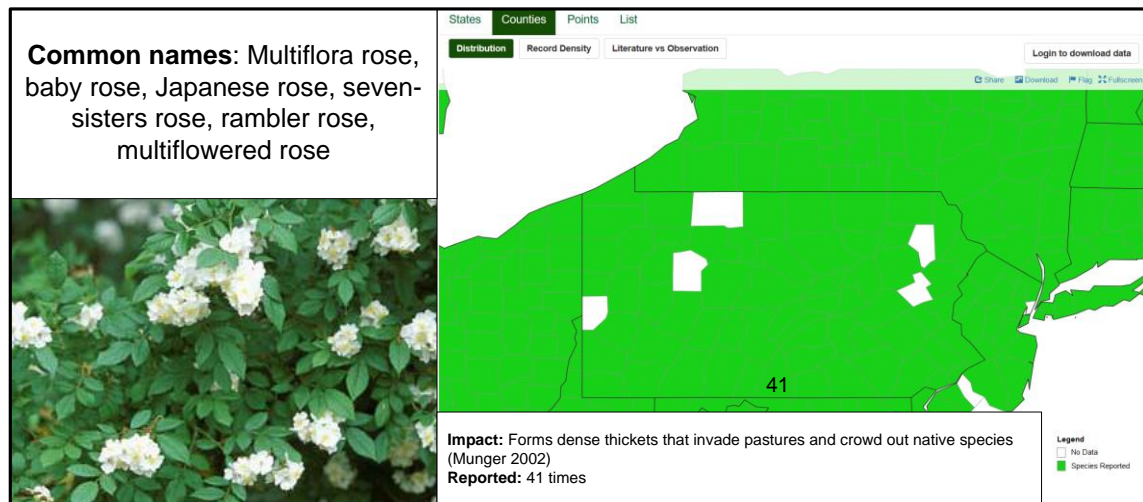


Figure 4.3.12.1.29: Multiflora Rose

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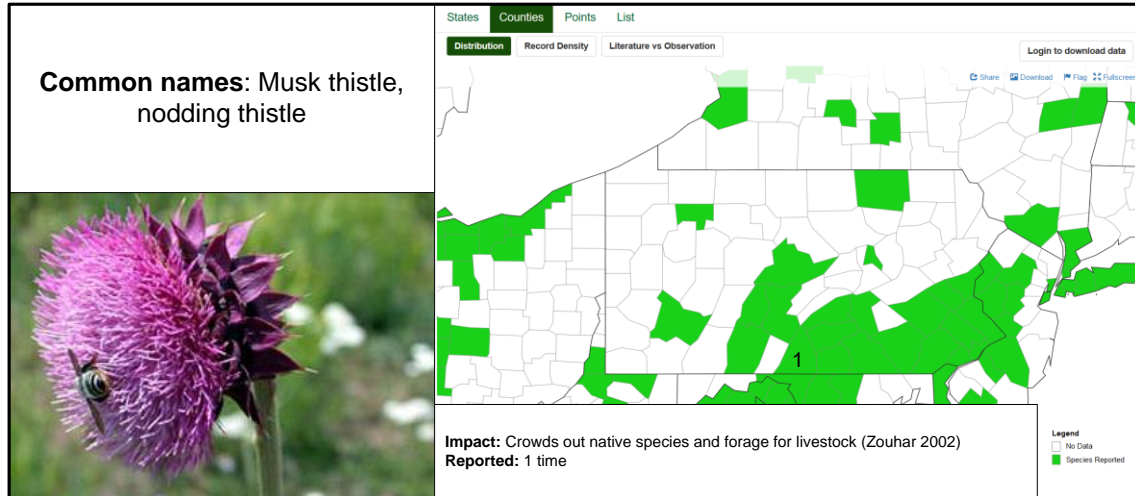


Figure 4.3.12.1.30: Musk Thistle



Figure 4.3.12.1.31: Oriental Bittersweet

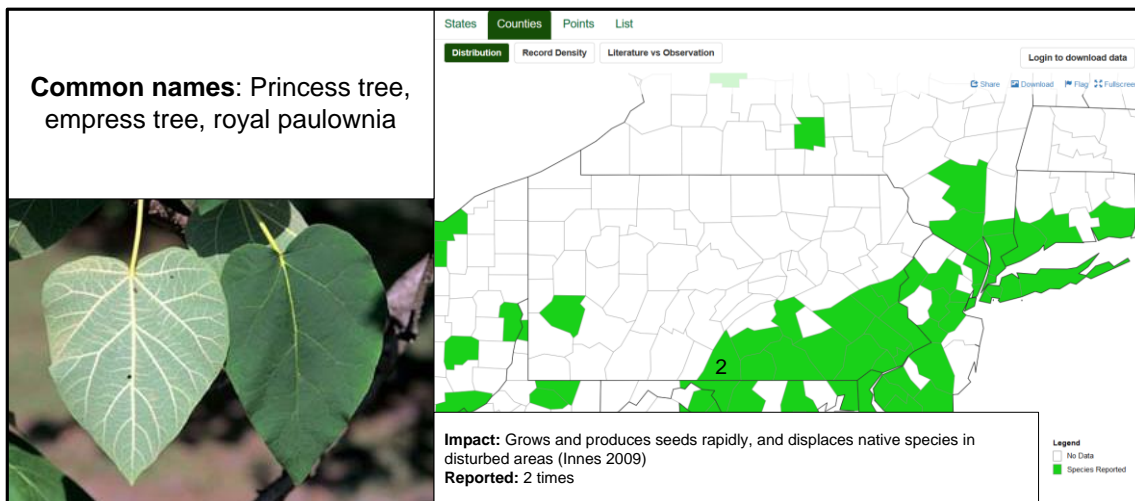


Figure 4.3.12.1.32: Princess Tree

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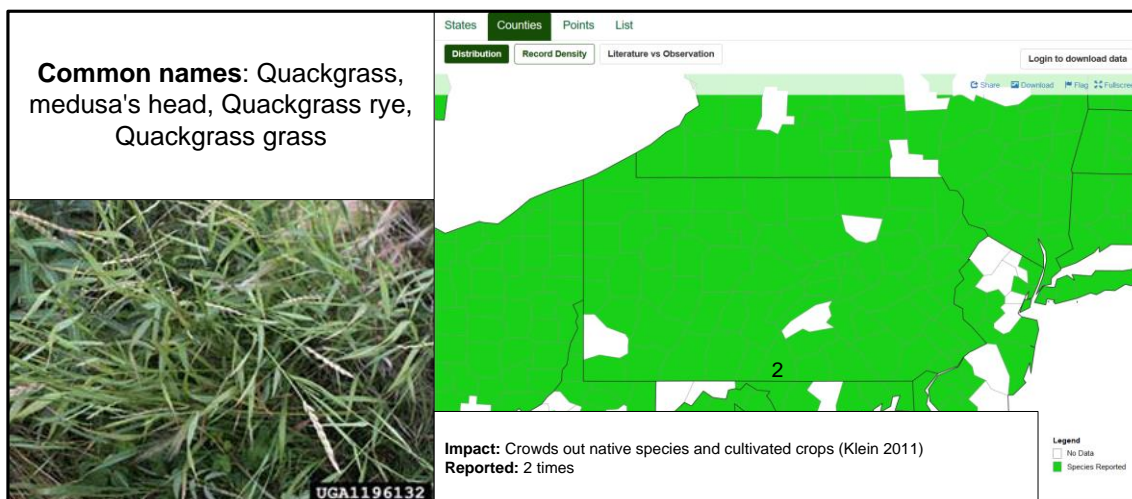


Figure 4.3.12.1.33: Quackgrass



Figure 4.3.12.1.34: St. Johnswort

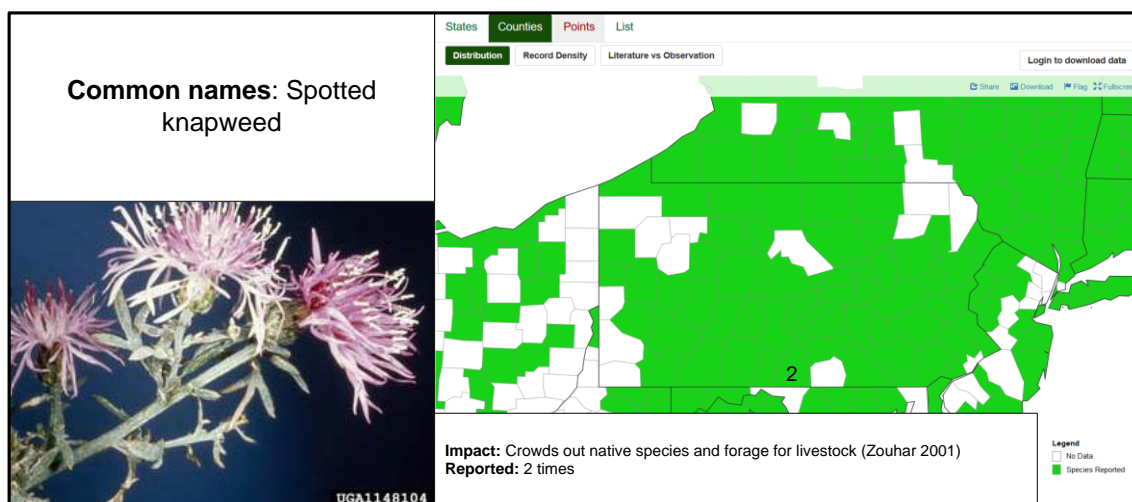


Figure 4.3.12.1.35: Spotted Knapweed

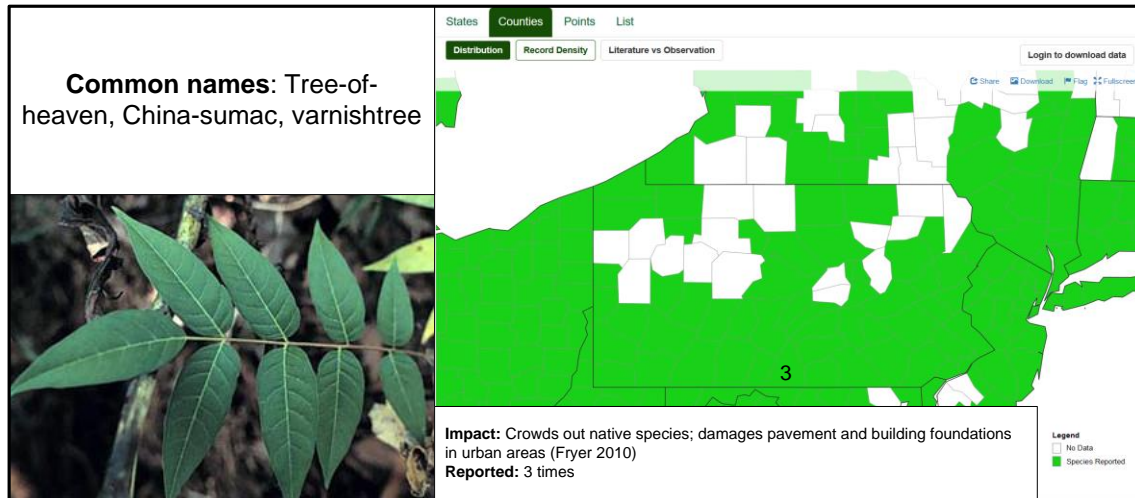


Figure 4.3.12.1.36: Tree-of-Heaven

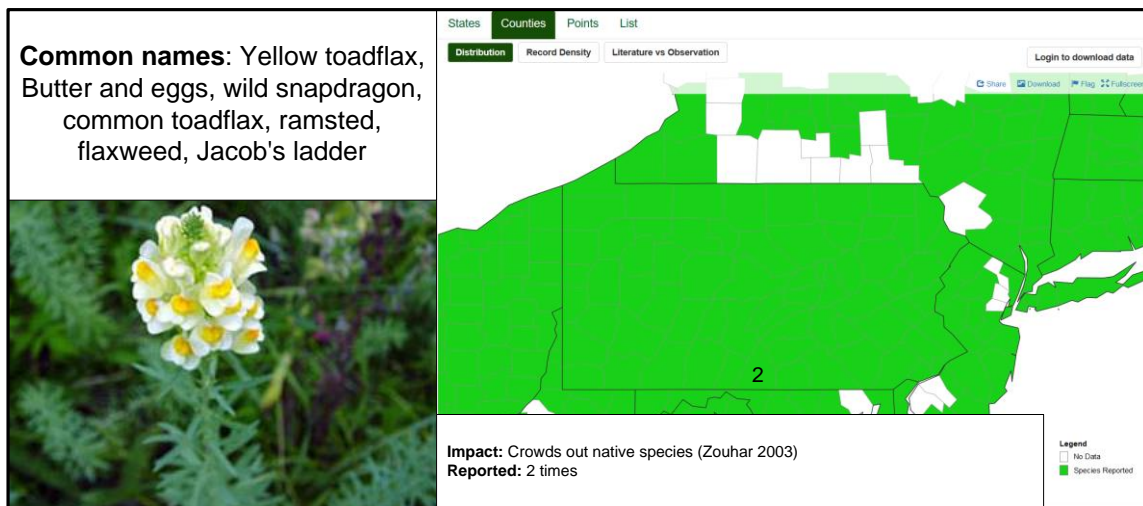


Figure 4.3.12.1.37: Yellow Toadflax

Additionally, the Penn State University Agricultural Extension of Franklin County identified an additional plant that is invasive and dangerous to livestock and humans, Poison Hemlock (see **Figure 4.3.12.1.38**). This biennial plant grows along roadsides, fallow areas, fence rows, pastures, and creeks. Poison hemlock is toxic and can be fatal to humans, pets, and all classes of livestock if ingested in relatively small quantities (less than 1% of body weight). Poison Hemlock is aggressively spreading in many regions of Pennsylvania including Franklin County.



Figure 4.3.12.1.38: Poison Hemlock

It should be noted, the reported number of observations of each of these plants species can seem extremely low, so low as to not raise concern. However, as few as one observed instance of an invasive species in an area is enough to raise concerns, as not all events or observations are reported, partially due to the perceptions of the observers. A person may not see these as foreign species and discount them as simple weeds or wild flowers.

4.3.12.2 Range of Magnitude

The magnitude of invasive species threats ranges from nuisance to a widespread killer. Some invasive species like the Brown Marmorated Stink Bugs are a danger to fruits, orchards, and vegetables, but do not harm humans. Other invasive species can cause significant changes in the composition of Pennsylvania ecosystems. For example, the Emerald Ash Borer has a 99% mortality rate for any ash tree it infects. Didymo, an aggressive form of algae, can clog waterways and smother native aquatic plants and animals. Still more invasive species can cause widespread illness or death in humans; one species of particular concern with this magnitude is Anthrax, considered by the Centers for Disease Control and Prevention (CDC) to be a Category A agent that may pose a significant, widespread threat to public health.

The magnitude of an invasive species threat is generally amplified when the ecosystem or host species is already stressed, such as in times of drought. The already weakened state of the native ecosystem causes it to more easily succumb to an infestation.

4.3.12.3 Past Occurrence

Invasive species have been entering the Commonwealth since the arrival of early European settlers, but not all occurrences have required government action. The first invasive species outbreak requiring state attention occurred in 1862 when legislation was enacted to provide for the destruction of and to prevent the spread of Canada Thistle, Johnson Grass, and Marijuana. Since then, there have been 26 acts and quarantines enacted to prevent the spread of invasive species.

The Pennsylvania Invasive Species Council (PISC) has begun tackling human and animal pathogens, aquatics, insects, mammals, plant pathogens, and vascular plants through management programs between the PA Fish and Boat Commission, the Game Commission, the Department of Agriculture, and DCNR. Notably, the PISC lists management programs for feral swine, kudzu, giant hogweed, mile-a-minute, emerald ash borer, plum pox virus, zebra and quagga mussels, and viral hemorrhagic septicemia under its “completed actions.” This does not mean that these threats have been eliminated; rather, it indicates that there is an active management plan in place to reduce future occurrences.

4.3.12.4 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. Expanded global trade has created opportunities for many organisms to be transported to and establish themselves in new countries and regions. In 2021 alone, Pennsylvania imported over \$98 billion in goods from abroad, including agricultural, forestry, and fisheries goods that commonly carry unknown pests⁷⁸. 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.

In order to combat the increase in future occurrences, the PISC, which is a collaboration of state agencies, public organizations, and federal agencies released an update to the Invasive Species Management Plan in 2017. This plan outlines the Commonwealth’s goals for the management of the spread of nonnative invasive species as well as creates a framework for responding to threats through research, action, and public outreach and communication. More information on the Management Plan can be found online at www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry. Individual management plans by PISC member agencies and organizations will also help to reduce the number and/or magnitude of invasive species threats in the future.

An area of great concern is the near exponential rise in confirmed Lyme Disease cases in Franklin County. This rise may be due to better detection and awareness programs or it could be an indication of the proliferation of the Deer Tick that carries the disease. Better education on the host organism and protection measures could help stem this growth, but serious consideration needs to occur on eradication measures for the host or this hazard could reach epidemic proportions.

Social Equity

Socially vulnerable populations could be affected by an increase in invasive species. Produce pricing and availability could be affected and those with limited economic resources may be

⁷⁸ U.S. Census, 2010

affected. That same population may also experience issues affording care for medical issues caused by the pathogens brought in by invasive species.

Climate Change

With average temperatures and precipitation predicted to continue to rise, it is likely to increase the proliferation of invasive species, especially those that prefer the warmer and wetter conditions within the county. The affected locations would vary depending on the species and specific environmental and habitat conditions.

Because of the plethora of environments that harbor many of the invasive species, Franklin County will continue to be an area of high potential for such incidences. The probability of future Invasive Species incidents is considered *highly likely*, as defined by the Risk Factor probability criteria (**Section 4.4**).

4.3.12.5 Vulnerability Assessment

Invasive species threats do not generally impact buildings; instead, they impact landscapes, crops, and people (in the case of human-borne pathogens). Because of this wide array of invasive species present in Pennsylvania, most jurisdictions are vulnerable to some kind of invasive species threat.

The spread of pathogens is not a commonly considered an invasive species threat, but there is one pathogen that is raising concerns for the citizens of Franklin County and that is Lyme Disease. Detection and awareness programs are still being developed, but the accurate number of actual cases is believed to be a factor of 10 more than what is being reported. Until a more accurate detection program can be put in place, it will be hard to implement prevention programs that will be effective to control the spread of this pathogen. The exponential rise in Lyme Disease cases in Franklin County will eventually start to impact the economy by burdening health and medical resources. This will especially be true for those patients that have not been properly diagnosed, but are impacted by the chronic and debilitating symptoms. Add to that the costs of missed work or increased cases of medical disability and you can start to realize the scope of the impact this hazard can bring to the county.

The invasive species on the Pennsylvania Department of Agriculture's list of most significant threats are the ones that attack crops and trees. As a result, the most vulnerable jurisdictions are those with the Commonwealth's highest concentration of agricultural production, as well as the highest concentration of the timber and logging industry. In Pennsylvania, losses will vary from jurisdiction to jurisdiction depending on the aggressiveness of the invasive species of concern. Jurisdictional losses due to invasive species threats stem from three sources: lost revenue from diseased, damaged, or deceased crops, livestock, lumber, etc.; economic losses from the cost of eradication programs; and losses in the form of illness or death of humans. The total value of Pennsylvania's agricultural products is nearly \$8 billion; an invasive species that affects agricultural products and production can cause significant losses to the Commonwealth's economy.

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According to the 2017 County Business Patterns data collected for Pennsylvania, the agriculture, forestry, fishing, and hunting industry boasts an annual payroll of nearly \$117 million across the 534 establishments in Pennsylvania. Franklin County ranks number 4 in the state in total agricultural cash receipts (market value of all agricultural products = \$476,469,000).

Additionally, statewide Franklin County ranks number 2 in the production of milk, cattle, melons, and corn for silage and number 3 for fruit and berry production. See **Figure 2.1.7, Section 2**, for a map of Franklin County's Agricultural resources and land breakdown. Based on all the information available, every community in Franklin County is equally vulnerable to the direct impacts of Invasive Species.

Figure 4.3.12.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Invasive Species hazard. One can see that 10 of 22 municipalities rated this threat as either a Major or Moderate event. This is a Minor threat ranked number 16 overall for Franklin County. However, due to the potential impact to the agricultural industry in the county and the associated economic risks it could bring, there will still be considerable effort in the development of mitigation plans for this hazard in **Section 6**.


	Invasive Species Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	10.12%	0.2024
Chambersburg Borough	2	30%	3	30%	4	20%	1	10%	4	10%	2.8	14.05%	0.3934
Fannett Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.59%	0.0207
Greencastle Borough	2	30%	2	30%	2	20%	1	10%	4	10%	2.1	2.73%	0.0573
Greene Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	11.82%	0.2364
Guilford Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	9.38%	0.1876
Hamilton Township	2	30%	1	30%	2	20%	1	10%	4	10%	1.8	7.29%	0.1312
Letterkenny Township	4	30%	1	30%	3	20%	1	10%	4	10%	2.6	1.58%	0.0411
Lurgan Township	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	1.42%	0.0213
Mercersburg Borough	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	0.97%	0.0213
Metal Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.13%	0.0147
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.01%	0.0131
Montgomery Township	2	30%	1	30%	4	20%	1	10%	4	10%	2.2	3.68%	0.0810
Orstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	2.86%	0.0543
Quincy Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	3.41%	0.0443
Shippensburg Borough	2	30%	1	30%	1	20%	1	10%	4	10%	1.6	0.75%	0.0120
Southampton Township	1	30%	1	30%	1	20%	2	10%	4	10%	1.4	5.49%	0.0769
St Thomas Township	3	30%	1	30%	2	20%	2	10%	4	10%	2.2	3.79%	0.0834
Warren Township	3	30%	1	30%	2	20%	1	10%	4	10%	2.1	0.21%	0.0044
Washington Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	9.55%	0.1242
Waynesboro Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	7.02%	0.0913
Municipal Weighted Average Risk Factor (RF)													1.914

Figure 4.3.12.5.1: Municipal Invasive Species Threat Vulnerability Self-Assessment

There is a wide range of environmental impacts caused by invasive species. The aggressive nature of many invasive species can cause significant reductions in biodiversity by crowding out native species. This can affect the health of individual host organisms as well as the overall well-being of the effected ecosystem. Beyond causing human, animal, and plant harm, there are secondary impacts of invasive species that go beyond harm to host species and ecosystems, particular in the case of invasive species that attack forests. Pennsylvania’s forests prevent soil degradation and erosion, protect watersheds, stabilize slopes, and absorb carbon dioxide emissions. The key role of forests in the hydrologic system means that if forest land is wiped out, the effects of erosion and flooding will be amplified. There is also an impact on agricultural harvests like honey, potatoes, and stone fruits. As a county with strong agricultural population, invasive species remain a hazard for Franklin County’s economic livelihood.

4.3.12.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for invasive species are shown below. There is potential for significant impact to one of the lifelines (Food, Water, Shelter), and possible impacts to two of the remaining six lifelines.



Figure 4.3.12.6.1: Invasive Species Community Lifeline Integration

4.3.13 Landslide

A landslide is described in the Commonwealth of Pennsylvania 2018 State Hazard Mitigation Plan⁷⁹ as the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. There are several different types of landslides⁸⁰, including:

- **Rock Fall** - Abrupt, downward movements of rock or earth, or both, that detach from steep slopes or cliffs. The falling material usually strikes the lower slope at angles less than the angle of fall, causing bouncing. The falling mass may break on impact, may begin rolling on steeper slopes, and may continue until the terrain flattens.
- **Rock Topple** - The forward rotation out of a slope of a mass of soil or rock around a point or axis below the center of gravity of the displaced mass. Toppling is sometimes

⁷⁹ PEMA, 2018

⁸⁰ Highland, L. M., and Bobrowsky, 2008

driven by gravity exerted by the weight of material upslope from the displaced mass. Sometimes toppling is due to water or ice in cracks in the mass. Topples can consist of rock, debris (coarse material), or earth materials (fine-grained material). Topples can be complex and composite.

- **Rotational Landslide** - A landslide on which the surface of rupture is curved upward (spoon-shaped) and the slide movement is more or less rotational about an axis that is parallel to the contour of the slope. The displaced mass may, under certain circumstances, move as a relatively coherent mass along the rupture surface with little internal deformation. The head of the displaced material may move almost vertically downward, and the upper surface of the displaced material may tilt backwards toward the scarp. If the slide is rotational and has several parallel curved planes of movement, it is called a slump.
- **Translational Landslide** - The mass in a translational landslide moves out, or down and outward, along a relatively planar surface with little rotational movement or backward tilting. This type of slide may progress over considerable distances if the surface of rupture is sufficiently inclined, in contrast to rotational slides, which tend to restore the slide equilibrium. The material in the slide may range from loose, unconsolidated soils to extensive slabs of rock, or both. Translational slides commonly fail along geologic discontinuities such as faults, joints, bedding surfaces, or the contact between rock and soil. In northern environments the slide may also move along the permafrost layer.
- **Lateral Spread** - Lateral spreads usually occur on very gentle slopes or essentially flat terrain, especially where a stronger upper layer of rock or soil undergoes extension and moves above an underlying softer, weaker layer. Such failures commonly are accompanied by some general subsidence into the weaker underlying unit. In rock spreads, solid ground extends and fractures, pulling away slowly from stable ground and moving over the weaker layer without necessarily forming a recognizable surface of rupture. The softer, weaker unit may, under certain conditions, squeeze upward into fractures that divide the extending layer into blocks. In earth spreads, the upper stable layer extends along a weaker underlying unit that has flowed following liquefaction or plastic deformation. If the weaker unit is relatively thick, the overriding fractured blocks may subside into it, translate, rotate, disintegrate, liquefy, or even flow.
- **Debris Flow** - A form of rapid mass movement in which loose soil, rock and sometimes organic matter combine with water to form a slurry that flows down slope. They have been informally and inappropriately called “mudslides” due to the large quantity of fine material that may be present in the flow. Occasionally, as a rotational or translational slide gains velocity and the internal mass loses cohesion or gains water, it may evolve into a debris flow. Dry flows can sometimes occur in cohesionless sand (sand flows). Debris flows can be deadly as they can be extremely rapid and may occur without any warning.

Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes through construction or erosion,

earthquakes, and changes in groundwater levels. 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 fires⁸¹. Human activities that contribute to slope failure include altering the natural slope gradient, increasing soil water content, and removing vegetation cover.

4.3.13.1 Location and Extent

According to the 2018 PA HMP, landslides have occurred in many parts of Pennsylvania but are most abundant and troublesome in much of the western and north-central portions of the state and adjacent states⁸². Rock falls and other slope failures can occur in areas of Franklin County with moderate to steep slopes. Areas experiencing erosion, decline in vegetation cover, and earthquakes are also susceptible to landslides. **Figure 4.3.13.1** shows areas of low, moderate, and high landslide susceptibility as identified by PA DCNR.

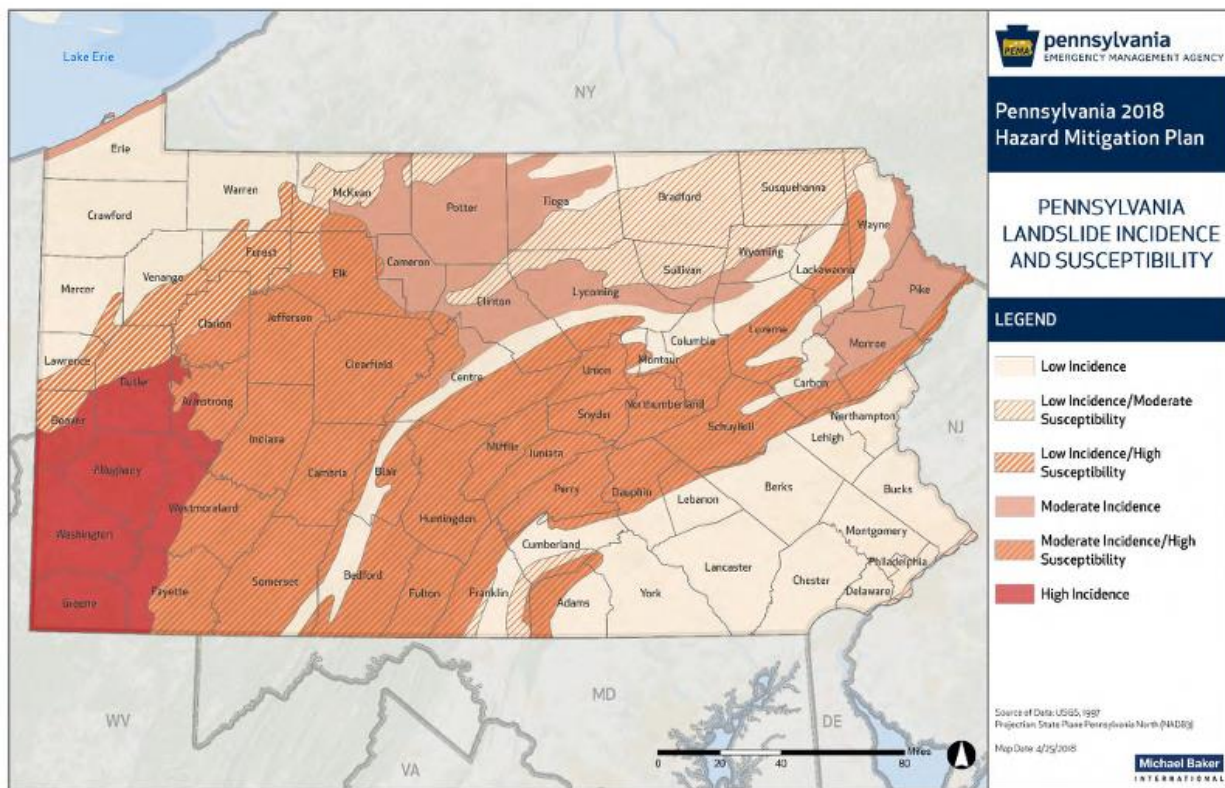


Figure 4.3.13.1: Landslide Susceptibility in Pennsylvania ⁸³

The particular areas of Franklin County that are susceptible to Landslides are depicted in tan/yellow on **Figure 4.3.13.2** below. As you can see all of Fannett, Metal, and Warren Townships are included as well as parts of Letterkenny, Lurgan, Hamilton, St Thomas, Peters, Montgomery, Southampton, Greene, Guilford, Quincy, and Washington Townships. The risk of

⁸¹ Delano, H. L., and Wilshusen, 2001

⁸² PEMA, 2018

⁸³ PEMA, 2018

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Landslides in Franklin County is generally low, but does include areas of high to moderate risk based on the local geology.

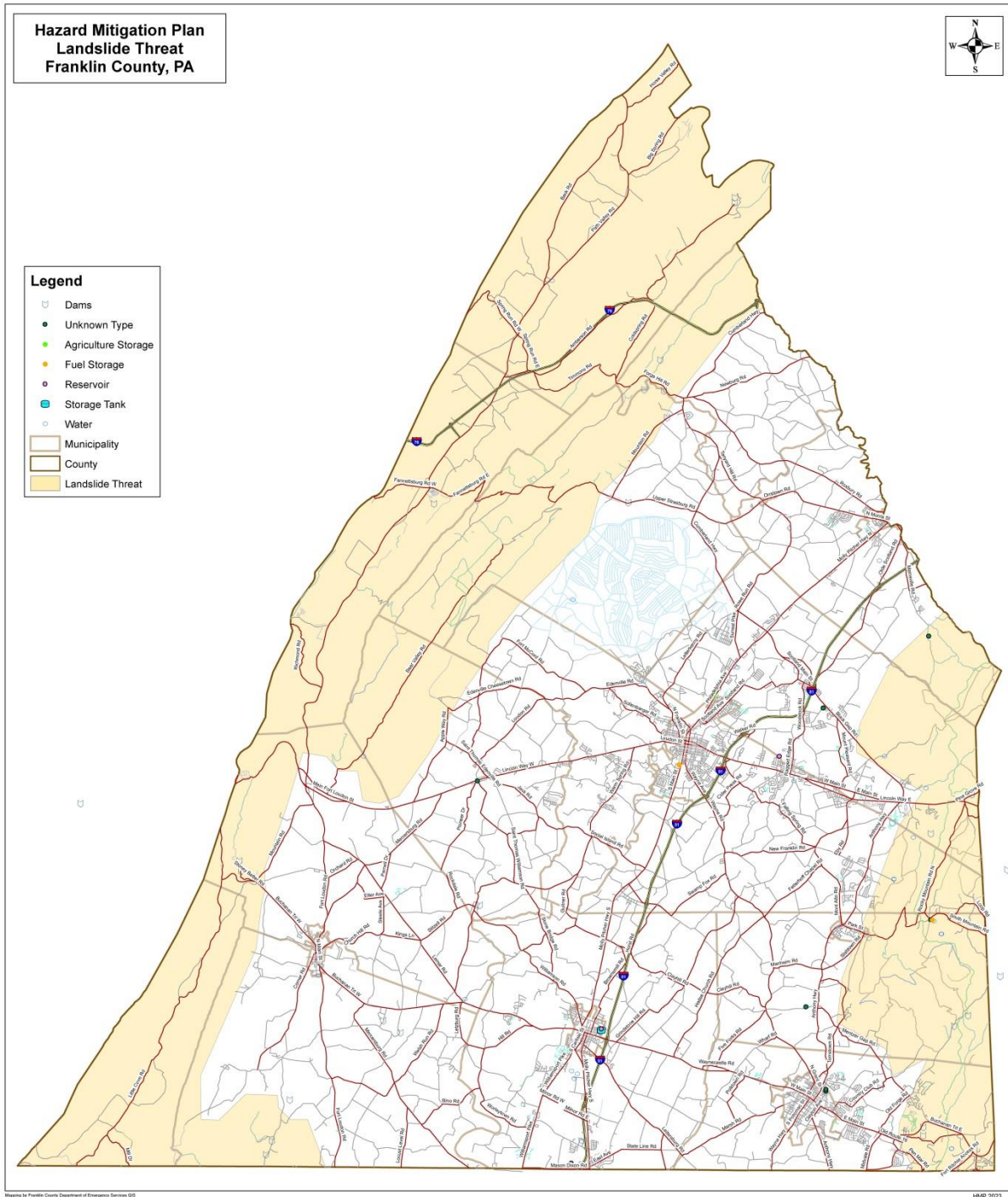


Figure 4.3.13.2: Areas of Landslide Susceptibility of Franklin County (Mar 2023)

4.3.13.2 Range of Magnitude

Landslides affect manmade structures whether they are directly on or near a landslide. Residential dwellings built on unstable slopes may experience partial damage to complete destruction as landslides destabilize or destroy foundations, walls, surrounding property, and above-ground and underground utilities. Landslides can affect residential areas either on a large regional basis (in which many dwellings are affected) or on an individual site basis (where only one structure or part of a structure is affected). Also, landslide damage to one individual property's lifelines (such as trunk sewer, water, or electrical lines and common-use roads) can affect the lifelines and access routes of other surrounding properties. Commercial structures are affected by landslides in much the same way residential structures are affected. In such a case, consequences may be great if the commercial structure is a common-use structure, such as a food market, which may experience an interruption in business due to landslide damage to the actual structure and/or damage to its access roadways⁸⁴.

Fortunately, deaths and injuries caused by landslides are rare in Pennsylvania, and most landslides in the State are moderate to slow moving, damaging things rather than people. Almost all of the known deaths caused by landslides have occurred when rock falls or other slides along highways have involved vehicles. Storm-induced debris flows are the only other type of landslide likely to cause death and injuries⁸⁵. As residential and recreational development increases on and near steep mountain slopes, the hazards from these events will also increase.

4.3.13.3 Past Occurrence

Pennsylvania has a long history of significant landslide activity, most of which is in the western and north central part of the state. This has resulted from a combination of humid temperature climate, locally steep and rugged topography, and great diversity in the erosion and weathering characteristics of relatively near surface sedimentary rocks. Human activities such as commercial, industrial, and residential developments, transportation, and mining often compound landslide problems.

A comprehensive inventory of landslide events across the entire Commonwealth is not available and the USGS does not maintain a formal inventory of landslides. Instead, the USGS Landslide Hazards Program collects data as events are reported to the agency.

There has been no significant reporting of landslides within Franklin County within the past 40 years. We have experienced several small rock slides impacting mountain roads, but nothing with any significant damage to life or property.

4.3.13.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for a Landslide using an equation that combines scores for Expected Annual Loss due to natural

⁸⁴ Highland, L. M., and Bobrowsky, 2008

⁸⁵ PEMA, 2018

hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Landslide is classified as Relatively Moderate, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Moderate as compared to other communities in the United States.

Mismanaged or intense development in steeply sloped areas could increase the frequency of landslides in Franklin County. Building and road construction are contributing factors to landslides, as they can often undermine or steepen otherwise stable soil.

Increased deforestation and soil disturbances caused by development on sloped areas would further increase these risks. As timbering and development of sloped land continue, the risks of significant landslides increase.

Social Equity

Socially vulnerable populations could be impacted by landslides, especially those with limited economic resources that would be affected and need to relocate in the event of a landslide.

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would make it more likely for the county to have an increased risk for Landslides. This increased risk would be more likely to affect the eastern and western ridgelines of the county, but could also occur on a smaller scale in other areas of the county with steep slopes.

4.3.13.5 Vulnerability Assessment

Communities in Franklin County have not been historically highly vulnerable to landslides. However, transportation roads flanked by high terrain and buildings constructed at the top or bottom of steep slopes should be considered vulnerable to this hazard. **Figure 4.3.13.5.1** lists the vulnerability self-assessments of each of the Franklin County municipalities for the Landslide hazard.

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	Landslide Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	10.12%	0.1316
Chambersburg Borough	2	30%	1	30%	1	20%	1	10%	1	10%	1.3	14.05%	0.1827
Fannett Township	2	30%	1	30%	1	20%	3	10%	1	10%	1.5	1.59%	0.0239
Greencastle Borough	1	30%	1	30%	2	20%	2	10%	1	10%	1.3	2.73%	0.0355
Greene Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	11.82%	0.1537
Guilford Township	1	30%	1	30%	2	20%	4	10%	1	10%	1.5	9.38%	0.1407
Hamilton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	7.29%	0.0948
Letterkenny Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.58%	0.0158
Lurgan Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.42%	0.0142
Mercersburg Borough	2	30%	2	30%	2	20%	4	10%	1	10%	2.1	0.97%	0.0204
Metal Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	1.13%	0.0147
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.01%	0.0101
Montgomery Township	1	30%	1	30%	2	20%	4	10%	1	10%	1.5	3.68%	0.0552
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	2.86%	0.0372
Quincy Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	3.41%	0.0375
Shippensburg Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.75%	0.0075
Southampton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	5.49%	0.0714
St Thomas Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	3.79%	0.0417
Warren Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	0.21%	0.0048
Washington Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	9.55%	0.1528
Waynesboro Borough	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	7.02%	0.0913
Municipal Weighted Average Risk Factor (RF)													1.339

Figure 4.3.13.5.1: Municipal Landslide Threat Vulnerability Self-Assessment

From the municipal self-assessment and the population at risk, it is obvious that the threat of this hazard is perceived to be very low for Franklin County. That does not mean that the hazard can be discounted, as Critical Facilities and Infrastructure can be impacted by this threat, raising the level of concern.

Table 4.3.13.5.1 illustrates the number of vulnerable critical structures and facilities by jurisdiction in Franklin County located in the “generally low to local areas of high to moderate” landslide susceptibility areas.

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Municipality	Total Number of Critical Facilities	Critical Facilities in Risk Areas
Antrim Township	110	0
Chambersburg Borough	185	0
Fannett Township	33	32
Greencastle Borough	32	0
Greene Township	135	24
Guilford Township	110	6
Hamilton Township	52	1
Letterkenny Township	29	13
Lurgan Township	24	10
Mercersburg Borough	18	0
Metal Township	21	21
Mont Alto Borough	7	2
Montgomery Township	31	4
Orrstown Borough	1	0
Peters Township	34	10
Quincy Township	54	20
Shippensburg Borough	6	0
Southampton Township	46	2
St Thomas Township	32	1
Warren Township	4	4
Washington Township	65	23
Waynesboro Borough	64	0
Totals	1093	173

Table 4.3.13.5.1: Critical Facilities within Landslide Local High/Moderate Risk Areas

There are several critical facilities that fall into the landslide threat areas of Franklin County. Impact to any one of these facilities could result in significant loss for those communities. However, based on available historical data and the municipal threat assessments (See **Figure 4.4.2.1**), the future occurrence of landslides can be considered *unlikely* as defined by the Risk Factor Methodology criteria (See **Section 4.4**). This threat should not be ignored, but it is understood that resources and mitigation objectives will likely be focused on those hazards that have a higher probability of occurrence.

4.3.13.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a landslide are shown below. There is potential for possible impacts to five of the seven lifelines and minimal impact to the remaining two.



Figure 4.3.13.6.1 Landslide Community Lifeline Integration

4.3.14 Lightning Strike

A lightning flash is the result of a transfer of significant charge between two charged objects. Lightning discharges can occur inter-cloud, cloud-to-cloud, cloud-to-air, and cloud-to-ground (see **Figure 4.3.14.1** below). Generally, cloud-to-ground (CG) lightning has the greatest immediate impact on our lives. A CG strike can kill, destroy equipment, start fires, and disturb power delivery systems.

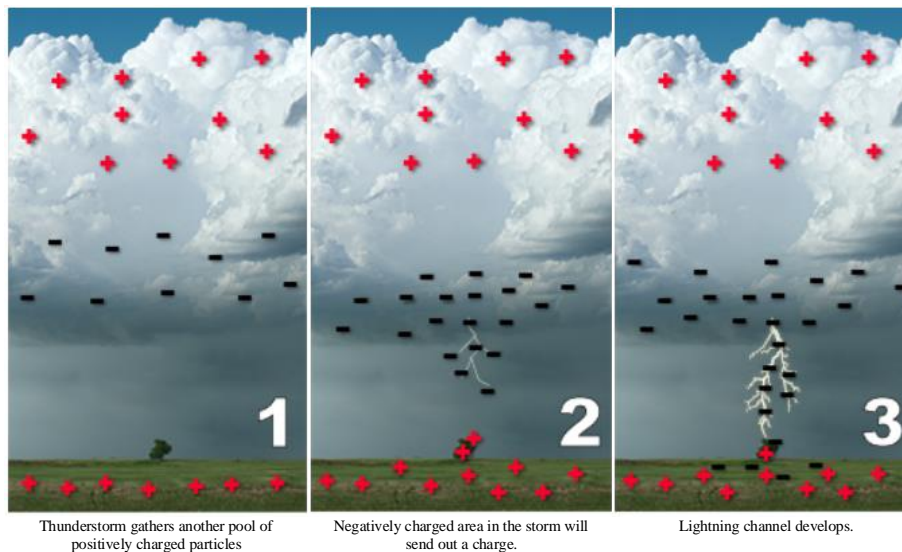


Figure 4.3.14.1: Formation of Lightning⁸⁶

⁸⁶ NOAA 2023

idea of how often lightning strikes occur in the county, a sampling of data from NOAA's Lightning Climatology tool was performed. See **Figure 4.3.14.3.1** below for a data sample.

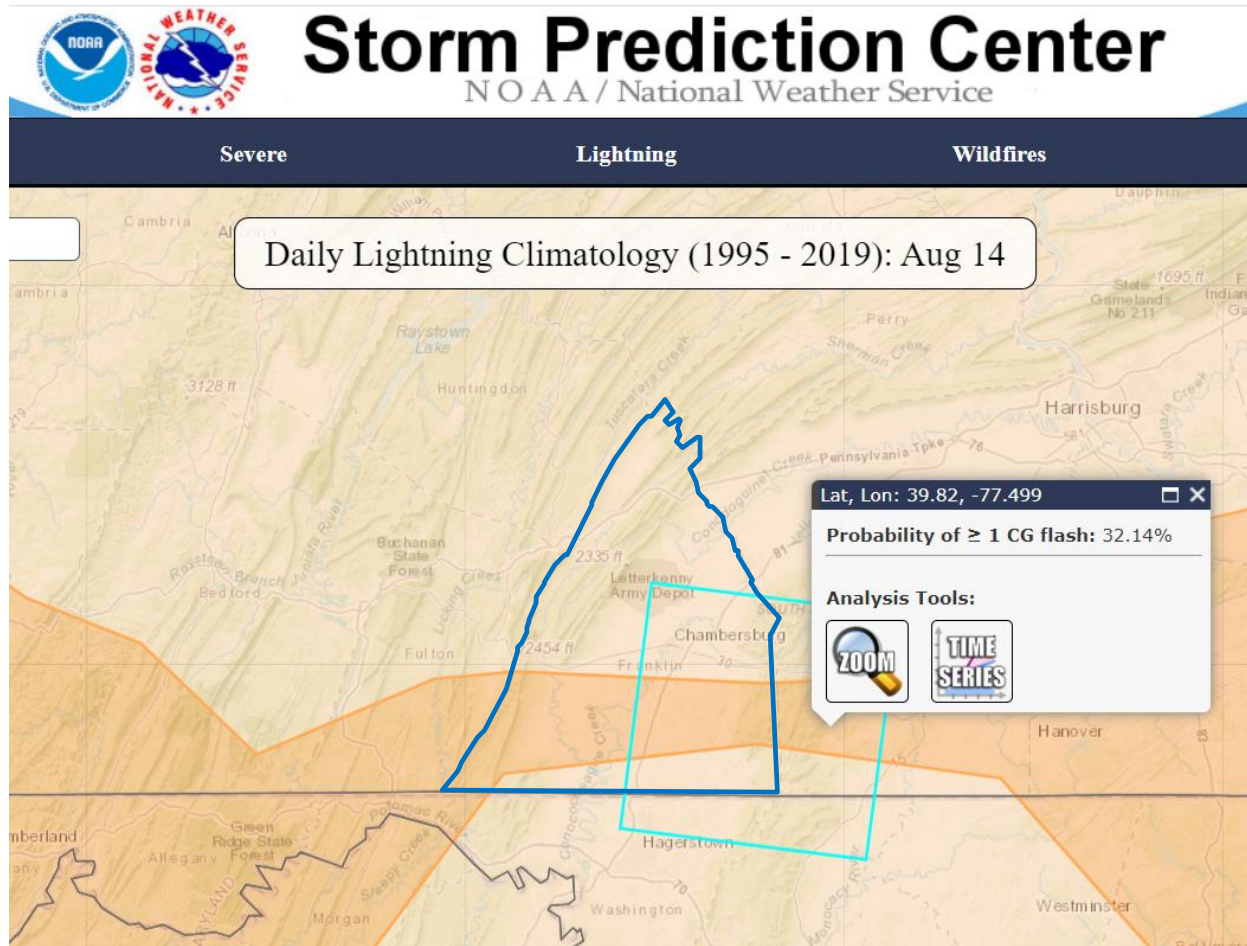


Figure 4.3.14.3.1: Sample Lightning Data from NOAA, Storm Prediction Center

In order to get a sense of the overall risk of lightning occurrences in our county, we selected a quadrant in the southeastern portion of the county to see what the probability was on a summer day in August. It is noted that the quadrant does overlap into Adams County, but the overall risk would be similar for the Franklin County portion. The analysis tool determined that the overall risk for the highlighted area on August 14th of any particular year is 32.14%. **Figure 4.3.14.3.2** below illustrates a time series of the annual overall risk of lightning for the highlighted quadrant from Figure 4.3.14.3.1 above.

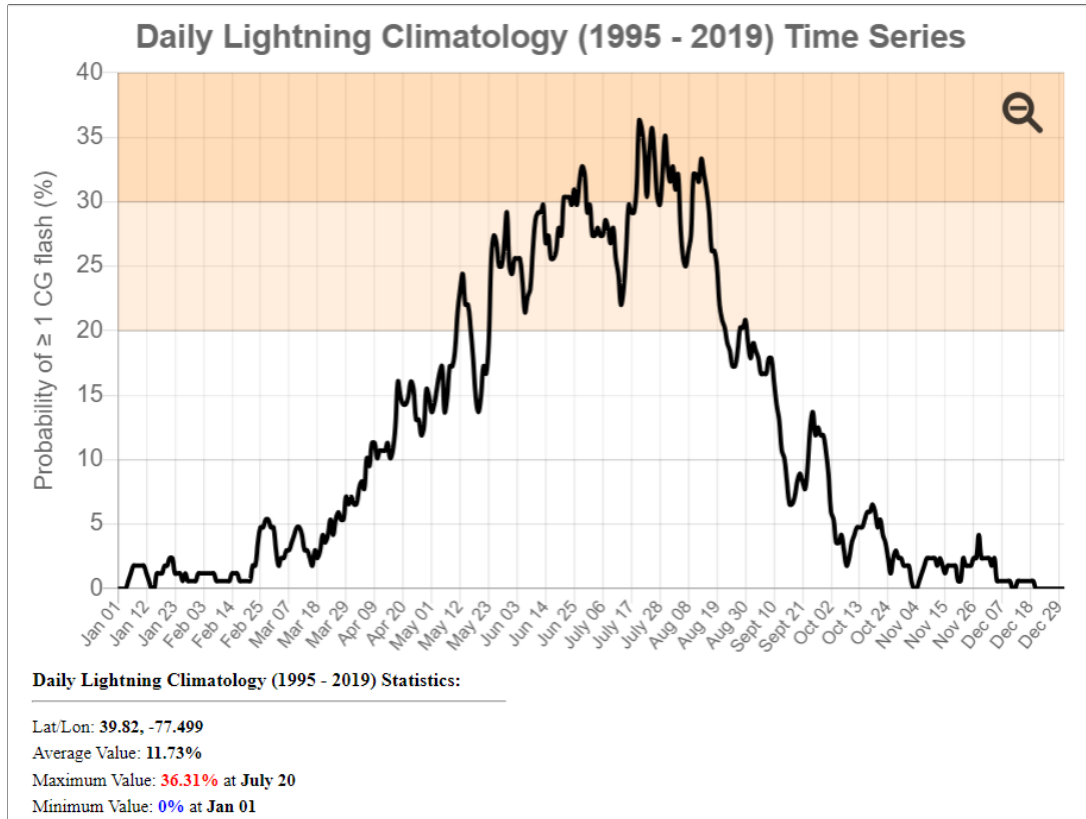


Figure 4.3.14.3.2: NOAA Annual Probability of Cloud to Ground Lightning Flashes

It is easily seen from the data above that Franklin County has a high probability of cloud to ground of lightning strikes every year. It is also clear that the heavy threat months are April through September, the summer months.

4.3.14.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for Lightning using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Lightning is classified as Relatively High, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively High as compared to other communities in the United States. Socially vulnerable populations could be impacted by hail, but the people who will be most impacted by hail are our those that are unable to seek shelter to avoid lightning, such as those experiencing homelessness, people who work outdoors or those that are walking or cycling. Structures may also be damaged by lightning, possibly creating financial hardship among those that may lack the financial resources to mitigate the damages.

Climate Change

Climate change could to increase the intensity and duration of lightning events within Franklin County. According to NOAA's Climate Mapping for Resilience and Adaptation, annual maximum high temperatures over five days are expected to increase 4.0 – 4.3 degrees by 2044. During that same time period, they predict between 19.7 and 22.3 more days annually with temperatures above 90 degrees and an additional 379.7 - 426.4 cooling degree days per year. With the expected increase in temperatures, the atmosphere will be more conducive to producing and sustaining storms capable of producing lightning.

Lightning can be expected with any severe storm event. While injuries or fatalities have not been documented in Franklin County, it is still a very real threat to our communities. The future occurrence of lightning strikes can be considered *likely* as defined by the Risk Factor Methodology Probability criteria (**Section 4.4**).

4.3.14.5 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable to the identified hazard area. For Lightning Strike events, all of Franklin County has been identified as the hazard area. Therefore, all critical facilities, population, and infrastructure as outlined in **Section 2, Tables 2.4.5** are vulnerable.

Figure 4.3.14.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Lightning Strike hazard. One can see that 7 of 22 municipalities rated this threat as either a Major or Moderate event. Additionally, 11 of the remaining 15 municipalities rated this as a Minor threat. This was ranked as the number 20 threat in Franklin County and is considered a Minor threat.

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	<h3 style="text-align: center;">Lightning Strike Hazard Threat Risk Assessment</h3>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	1	30%	2	20%	2	10%	1	10%	1.9	10.12%	0.1923
Chambersburg Borough	2	30%	2	30%	3	20%	3	10%	1	10%	2.2	14.05%	0.3091
Fannett Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	1.59%	0.0366
Greencastle Borough	3	30%	3	30%	2	20%	4	10%	1	10%	2.7	2.73%	0.0737
Greene Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	11.82%	0.1891
Guilford Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	9.38%	0.1501
Hamilton Township	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	7.29%	0.1312
Letterkenny Township	2	30%	1	30%	1	20%	3	10%	1	10%	1.5	1.58%	0.0237
Lurgan Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.42%	0.0156
Mercersburg Borough	3	30%	1	30%	4	20%	4	10%	1	10%	2.5	0.97%	0.0243
Metal Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	1.13%	0.0181
Mont Alto Borough	1	30%	1	30%	3	20%	3	10%	1	10%	1.6	1.01%	0.0162
Montgomery Township	3	30%	2	30%	4	20%	4	10%	1	10%	2.8	3.68%	0.1030
Orrstown Borough	2	30%	1	30%	1	20%	1	10%	1	10%	1.3	0.14%	0.0018
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	1	30%	1	20%	3	10%	1	10%	1.2	3.41%	0.0409
Shippensburg Borough	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	0.75%	0.0120
Southampton Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	5.49%	0.0878
St Thomas Township	3	30%	1	30%	1	20%	4	10%	1	10%	1.9	3.79%	0.0720
Warren Township	3	30%	1	30%	2	20%	4	10%	1	10%	2.1	0.21%	0.0044
Washington Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	9.55%	0.0955
Waynesboro Borough	4	30%	2	30%	1	20%	4	10%	1	10%	2.5	7.02%	0.1755
Municipal Weighted Average Risk Factor (RF)													1.819

Figure 4.3.14.5.1: Municipal Lightning Strike Threat Vulnerability Self-Assessment

Even though there is little to no historical data on casualties or damage due to lightning strike events in Franklin County, the sheer number of lightning strikes recorded in the ESDI data indicates that it is only a matter of time before one of these events results in fatalities and/or critical facility damage.

4.3.14.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for lightning are shown below. There is potential for significant impacts to one lifeline (Communications), possible impacts to one lifeline (Safety & Security) and minimal impacts expected for the remaining lifelines.



Figure 4.3.14.6.1 Lightning Community Lifeline Integration

4.3.15 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 food borne illnesses and/or interruptions in the food supply. Contamination may occur due to natural food borne illnesses and chemical, biological, radiological, or nuclear exposure.

Also according to the CDC, some pathogens are frequently transmitted by food contaminated by infected persons. The presence of any one of the following signs or symptoms in persons who handle food may indicate infection by a pathogen that could be transmitted to others through handling the food supply:

- diarrhea
- vomiting
- open skin sores
- boils
- fever
- dark urine
- jaundice

The failure of food-handlers to wash hands in certain situations (such as after using the toilet, handling raw meat, cleaning spills, or carrying garbage), wear clean disposable gloves, or use clean utensils is responsible for the food borne transmission of these pathogens. Non-food borne routes of transmission, such as from one person to another, are also major contributors in the spread of these pathogens. Some pathogens usually cause disease when food is intrinsically contaminated or cross contaminated during production, processing or transportation, but may also be contaminated when prepared by infected persons. Bacterial pathogens in this category often cause disease after bacteria have multiplied in food after it has been kept at improper temperatures permitting their multiplication to an infectious dose. Preventing food contact by persons who have an acute diarrheal illness will decrease the risk of transmitting these pathogens. The following list represents the types of pathogens that may be transmitted by an infected food handler:

- Astroviruses

- *Bacillus cereus*
- *Campylobacter jejuni*
- *Clostridium perfringens*
- *Cryptosporidium* species
- *Entamoeba histolytica*
- Enterohemorrhagic *E. coli*
- Enterotoxigenic *E. coli*
- *Giardia intestinalis*
- Hepatitis A virus
- Nontyphoidal *Salmonella*
- Noroviruses
- Rotaviruses
- *Salmonella* Typhi
- Sapoviruses
- *Shigella* species
- *Staphylococcus aureus*
- *Streptococcus pyogenes*
- *Taenia solium* - cysticercosis
- *Vibrio cholera*
- *Yersinia enterocolitica*

The FDA Food Safety Modernization Act (FSMA) final rule is aimed at preventing intentional adulteration from acts intended to cause wide-scale harm to public health, including acts of terrorism targeting the food supply. Such acts, while not likely to occur, could cause illness, death, economic disruption of the food supply absent mitigation strategies. Acts of intentional adulteration may take many forms, including acts of disgruntled employees or economically motivated adulteration. The goal of this rule is to prevent acts intended to cause wide-scale harm. Economic adulteration is addressed in the final preventive controls rules for human and animal foods⁸⁹.

Animal feed, pet food, and specialty pet food are all considered Commercial Feed under the Pennsylvania Commercial Feed Act, and are regulated through the inspection of Pennsylvania manufacturing and distribution (retail and wholesale) establishments for compliance with labeling, licensing and Current Good Manufacturing Practices (CGMPs). Samples of animal feed are collected and analyzed to ensure feed is not adulterated and meets label guarantees.

4.3.15.1 Location and Extent

Contamination occurrences can happen at any time and in any place in Pennsylvania and are sometimes regional or even national events. Franklin County ranks number 4 in the state in total agricultural cash receipts (market value of all agricultural products = \$476,469,000) with 1,581 farms totaling 269,530 acres across the county. Additionally, statewide Franklin County ranks number 2 in the production of milk, cattle, melons, and corn for silage and number 3 for fruit and

⁸⁹ USDHHS/FDA, 2017

berry production. Because of its high agriculture production, an incident of contamination must be considered. **Figure 2.1.7, Section 2**, shows a map of Franklin County's Agricultural Resources and land breakdown. **Figure 4.3.15.1.1** illustrates the diversity of livestock based on the percentage of farmland that is dedicated to crop production to support livestock in the county. **Figure 4.3.15.1.2** shows the value of livestock and food production of Franklin County that would be impacted by a mass food contamination scenario.

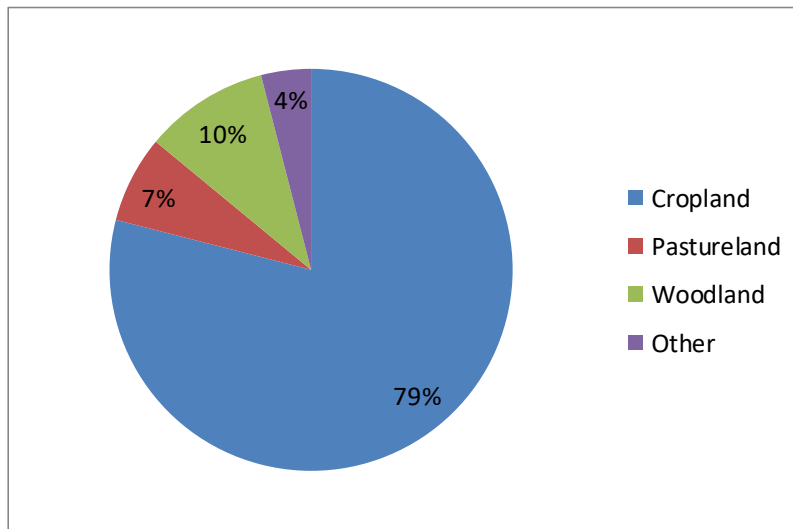


Figure 4.3.15.1.1: Land in Farms by Use in Franklin County (2017)

Franklin County Agricultural Commodity	Value	State Rank
Crops (all)	\$91,475,000	6
Grains, oilseeds, dry beans, dry peas	\$51,371,000	4
Vegetables, melons, potatoes, sweet potatoes	\$15,222,000	2
Fruits, tree nuts, berries	\$8,755,000	3
Nursery, greenhouse, floriculture, sod	\$2,572,000	26
Cultivated Christmas trees, short rotation woody crops	\$697,000	10
Other crops and hay	\$12,857,000	5
Livestock, poultry, and products (all)	\$384,994,000	2
Poultry and eggs	\$101,448,000	4
Cattle and calves	\$58,211,000	2
Milk from cows	\$190,341,000	2
Hogs and pigs	\$31,922,000	5
Sheep, goats, wool, mohair, milk	\$976,000	3
Horses, ponies, mules, burros, donkeys	Withheld	17
Aquaculture	Withheld	9
Other animals and animal products	\$830,000	7
Total Market Value of all Agricultural Products Sold	\$476,469,000	4

Figure 4.3.15.1.2: Total Agricultural Economic Value for Franklin County (2017)

In addition, a major concern of mass food and animal feed contamination hazards is that, in general, places only have a 3-day supply of food. The food supply chain is very vulnerable to

interruption, whether or not the product comes from Pennsylvania. An interruption in the food supply would be a major vulnerability for the health and survival of Pennsylvania communities.

4.3.15.2 Range of Magnitude

Like Invasive Species (**Section 4.3.10**), 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 an upset stomach to serious illness, hospitalization, and even death. For example, according to the CDC's 2011 food borne illness estimates, Norovirus is responsible for over 5 million illnesses each year but the number of deaths it causes is significantly lower (149 in 2011). 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.

According to the most recent ag census for Franklin County conducted by the USDA, **Table 4.3.15.2.1** shows the top crops and livestock numbers in Franklin County⁹⁰.

Top Crops	Acres
Forage (hay/haylage), all	72,452
Corn for Grain	40,821
Corn for Silage or greenchop	36,642
Soybeans for beans	27,000
Wheat for grain, all	9,536
Livestock Inventory	Number
Broilers/meat-type chickens	632,389
Cattle and calves	145,635
Goats	2,827
Hogs and Pigs	66,976
Horses and ponies	1,088
Layers	1,728,944
Pullets	587,666
Sheep and lambs	4,328
Turkeys	471,918

Table 4.3.15.2.1: Crop and Livestock Numbers for Franklin County (2017)

4.3.15.3 Past Occurrence

According to representatives from the 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. However, in the past 5 years, Pennsylvania has been involved in the following outbreak events:

⁹⁰ USDA, 2017

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Year	Product	Cause	Year	Product	Cause
2022	Ground Beed	E. coli	2019	Hard-Boiled Eggs	Listeria monocytogenes
2022	Unknown Food Source	E. coli	2019	Cut Fruit	Salmonella
2022	Ice Cream	Listeria monocytogenes	2019	Romaine Lettuce	E. coli
2021	Fresh Express Packaged Salads	Listeria monocytogenes	2019	Ground Bison	E. coli
2021	Dole Packaged Salads	Listeria monocytogenes	2019	Papayas	Salmonella
2021	Baby Spinach	E. coli	2019	Flour	E. coli
2021	Salami Sticks	Salmonella	2019	Deli-Sliced Meats & Cheeses	Listeria monocytogenes
2021	Seafod	Salmonella	2018	Romaine Lettuce	E. coli
2021	Onions	Salmonella	2018	Raw Chicken Products	Salmonella
2021	Prepackaged Salads	Salmonella	2018	Chicken	Salmonella
2021	Ground Turkey	Salmonella	2018	Raw Turkey Products	Salmonella
2020	Unknown Food Source	E. coli	2018	Crab Meat	Vibrio parahaemolyticus
2020	Leafy Greens	E. coli	2018	Cereal	Salmonella
2020	Wood Ear Mushrooms	Salmonella	2018	Shell Eggs	Salmonella
2020	Peaches	Salmonella	2018	Romaine Lettuce	E. coli
2020	Onions	Salmonella	2018	Frozen Shredded Coconut	Salmonella
2020	Bagged Salad Mix	Cyclospora			

Table 4.3.15.3.1 Pennsylvania Food and Animal Feed Contamination Events (2018-2022)⁹¹

This is not an exhaustive list of past occurrences but illustrates that Pennsylvanians have been sickened by contaminations in other states.

Since 2006, Pennsylvania has had at least 7 disease outbreaks linked to raw milk consumption, involving almost 200 persons. The outbreaks have been caused most commonly by campylobacter bacteria, with the remainder caused by salmonella.

In 2012, the largest food borne outbreak related to raw milk in the state occurred in Franklin County. The Pennsylvania Department of Health confirmed 78 cases of campylobacter bacteria were connected to unpasteurized milk sold in mid-January. Of the cases, 68 people were sickened in Pennsylvania, 5 in Maryland, 2 in New Jersey and 3 in West Virginia. At least 9 people were hospitalized⁹².

4.3.15.4 Future Occurrence

The CDC estimates that 1 in 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 considered *possible* as defined in **Section 4.4**.

Food safety depends on strong partnerships. The CDC, the U.S. Food and Drug Administration (FDA), and USDA's Food Safety and Inspection Service collaborate at the federal level to promote food safety. State and local health departments and food industries also play critical roles in all aspects of food safety. CDC provides the vital link between illness in people and the food safety systems of government agencies and food producers. The CDC takes action by:

⁹¹ CDC, 2023

⁹² Gleiter, Sue, 2012

- Tracking the occurrence of food borne illnesses.
- Managing the DNA fingerprinting network (PulseNet) for food borne illness-causing bacteria in all states to detect outbreaks.
- Facilitating and leading outbreak investigations.
- Monitoring antibiotic-resistant infections.
- Collaborating with state and local health departments to develop new and better methods to detect, investigate, respond to, and control outbreaks.
- Defining the public health burden of food borne illness.
- Attributing illnesses to specific foods and settings.
- Targeting prevention measures to meet food safety goals.
- Providing data and analyses to inform food safety action and policy.

Social Equity

Socially vulnerable groups could be affected by a Mass Food and Animal Feed Contamination Event, especially those with limited economic resources that may be unable to afford to seek medical treatment if they become ill.

Climate Change

Climate change is not likely to increase the incidence of a Mass Food and Animal Feed Contamination Event.

4.3.15.5 Vulnerability Assessment

Communities with large populations of the elderly and the very young are more vulnerable to this kind of an event as they are usually the most susceptible to food borne illnesses. The 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. The CDC estimates that infections of Salmonella alone create \$365 million in direct medical costs annually, some of which would certainly be experienced in Pennsylvania.

The physical plant and facilities of the Commonwealth are not likely to be damaged by a mass food or animal feed contamination event. However, high rates of absenteeism associated with a pandemic or an infectious disease will likely lead to significant economic costs in lost productivity and increased medical costs in nearly all state agencies. Additionally, the 106 agricultural critical facilities would face lost revenues depending on the type and magnitude of the contamination event.

As of November 2017, according to the PA Department of Agriculture, there are 14 licensed animal feed plants in Franklin County.

Figure 4.3.15.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Mass Food and Animal Feed Contamination hazard. One can see that only 1 of 22 municipalities rated this threat as either a Major event. Additionally, only 5 of the

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remaining 21 municipalities rated this as a Moderate threat. This was ranked as the number 24 threat in Franklin County and is considered a Minor threat.


	Mass Food and Animal Feed Contamination Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	3	30%	4	20%	4	10%	2	10%	2.9	10.12%	0.2935
Chambersburg Borough	1	30%	2	30%	2	20%	2	10%	2	10%	1.7	14.05%	0.2389
Fannett Township	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	1.59%	0.0207
Greencastle Borough	1	30%	1	30%	2	20%	2	10%	2	10%	1.4	2.73%	0.0382
Greene Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	11.82%	0.1418
Guilford Township	1	30%	2	30%	4	20%	2	10%	2	10%	2.1	9.38%	0.1970
Hamilton Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	7.29%	0.1021
Letterkenny Township	1	30%	2	30%	3	20%	4	10%	2	10%	2.1	1.58%	0.0332
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.0170
Mercersburg Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.97%	0.0107
Metal Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.13%	0.0124
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.01%	0.0111
Montgomery Township	2	30%	2	30%	2	20%	3	10%	2	10%	2.1	3.68%	0.0773
Orstown Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.14%	0.0015
Peters Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	2.86%	0.0400
Quincy Township	1	30%	2	30%	3	20%	1	10%	2	10%	1.8	3.41%	0.0614
Shippensburg Borough	1	30%	1	30%	2	20%	2	10%	2	10%	1.4	0.75%	0.0105
Southampton Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	5.49%	0.0604
St Thomas Township	3	30%	2	30%	2	20%	3	10%	2	10%	2.4	3.79%	0.0910
Warren Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	0.21%	0.0029
Washington Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	9.55%	0.1146
Waynesboro Borough	1	30%	3	30%	3	20%	2	10%	2	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													1.731

Figure 4.3.15.5.1: Municipal Mass Food/Animal Feed Contamination Threat Vulnerability Self-Assessment

The major identified environmental impact of mass food and animal feed contamination is, if there were to be a mass killing of animals, how to deal with the waste disposal of what could be a significant number of animals. If this waste disposal is not planned for, rotting carcasses could cause environmental degradation in the form of water pollution. They might also have a role in spreading infectious disease. Additionally, there are primary impacts to public health and to the agricultural economy in Pennsylvania. Should there be a mass food or animal feed contamination event, even if the event is not focused in Pennsylvania, the potential losses from fear-based cancellation of food orders could be devastating. This would also cause a surplus of animals on Pennsylvania farms that agricultural producers cannot feed but also cannot sell.

4.3.15.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a Mass Food/Animal Feed Contamination event are shown below. There is potential for significant impacts to one lifeline (Food, Water, Shelter), possible impacts to three lifelines (Safety & Security, Health & Medical, and Energy) and minimal impacts expected for the remaining lifelines.

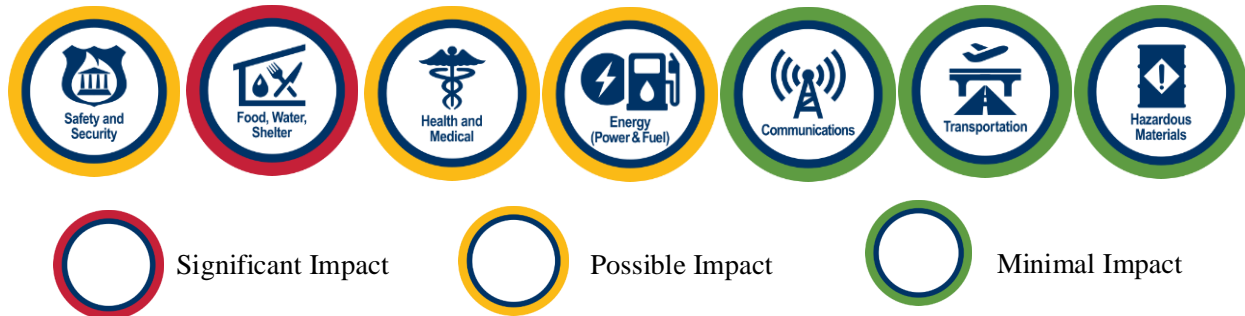


Figure 4.3.15.6.1: Mass Food/Animal Feed Contamination Community Lifeline Integration

4.3.16 Nuclear Incident

Nuclear accidents themselves are classified into 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.
- **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 (NRC) uses 4 classification levels for nuclear incidents⁹³:

- **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).

⁹³ Nuclear Regulatory Commission

- **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.
- **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 accident at the Three Mile Island Generating Station in March 1979 remains the nation's only nuclear incident at the *General Emergency level* and remains the worst nuclear incident on record in the Commonwealth and the nation. During this incident, equipment malfunctions, design-related problems, and worker errors led to a partial meltdown of the TMI Unit 2 reactor core.

4.3.16.1 Location and Extent

Through a Memorandum of Understanding (MOU), the Nuclear Regulatory Commission (NRC) and FEMA share federal oversight for nuclear/radiological emergency response planning matters for licensed nuclear power plants. Their mutual efforts will be directed toward more effective plans and related preparedness measures at and in the vicinity of nuclear reactors and fuel cycle facilities. The MOU between the agencies was signed on January 14, 1980, in response to the president's decision of December 7, 1979, stating that FEMA will coordinate all federal planning for the off-site impact of nuclear/radiological emergencies; take the lead for assessing off-site nuclear/radiological emergency response plans and preparedness; make findings and determinations as to the adequacy and capability of implementing off-site plans; and communicate those findings and determinations to the NRC. The NRC reviews those FEMA findings and determinations, in conjunction with the NRC's on-site findings, to determine the overall state of emergency preparedness.

A separate MOU, dated October 22, 1980, deals with NRC and FEMA cooperation and responsibilities in response to an actual or potential nuclear/radiological emergency. Operations Response Procedures have been developed that implement the provisions of the Incident Response MOU. These documents are intended to be consistent with the Federal Radiological Emergency Response Plan, which describes the relationships, roles, and responsibilities of federal agencies for responding to accidents involving peacetime nuclear/radiological emergencies.

Portions of Franklin County are within the Ingestion Exposure Pathway Emergency Planning Zone (EPZ) (within 50 miles) of the TMI facility in Dauphin County. The other 4 nuclear plants in Pennsylvania are more than 50 miles away from Franklin County; this distance exceeds the Plume-Exposure and Ingestion Exposure Pathway EPZs for nuclear emergencies, so these other facilities are considered a minimal threat to the County. **Figure 4.3.16.1.1** illustrates the location of the nuclear facilities in the Commonwealth and their associated ingestion areas.

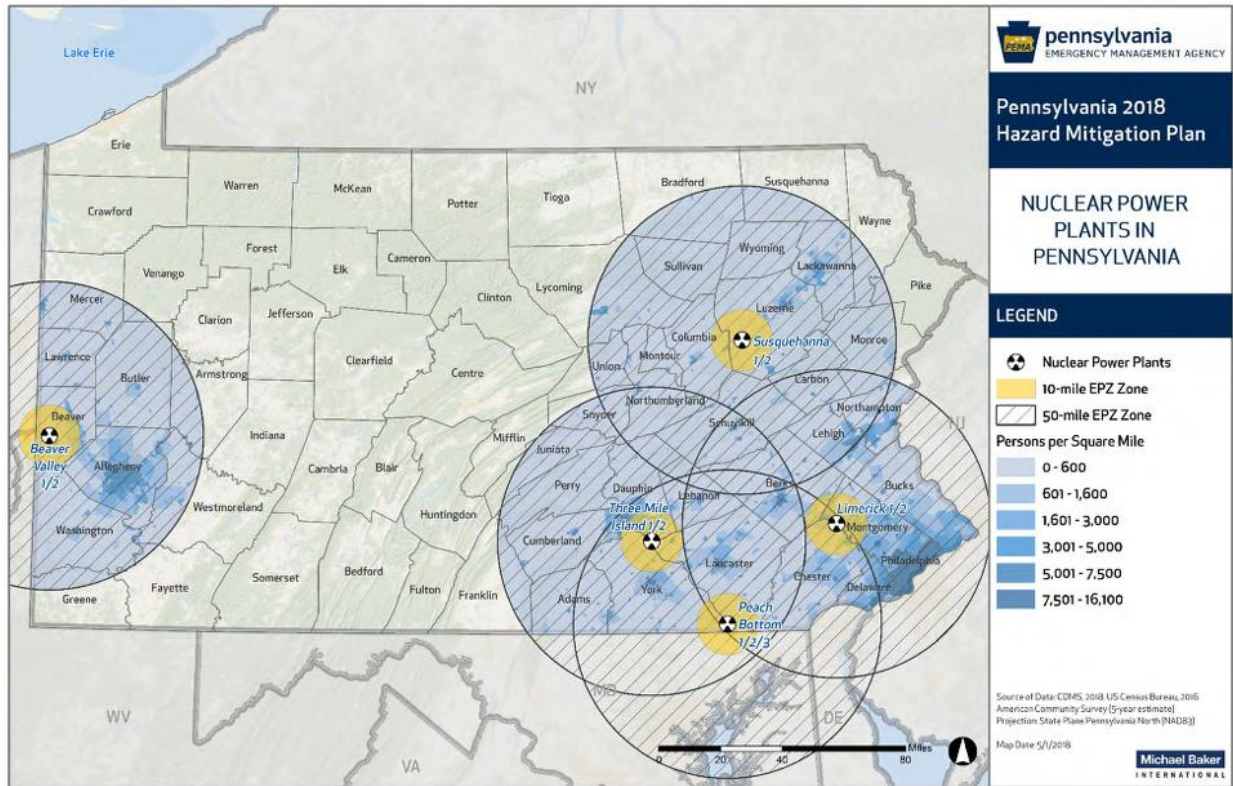


Figure 4.3.16.1.1: Pennsylvania Nuclear Power Plant Locations

The NRC encourages the use of Probabilistic Risk Assessments (PRAs) to estimate quantitatively the potential risk to public health and safety when considering the design, operations, and maintenance practices at nuclear power plants. PRAs typically focus on accidents that can severely damage the core and that may challenge containment. FEMA, PEMA, and county governments have formulated Radiological Emergency Response Plans (RERPs) to prepare for nuclear/radiological emergencies at the 5 nuclear power-generating facilities in the Commonwealth of Pennsylvania. These plans include the following:

- A Plume Exposure Pathway EPZ within a radius of 10 miles from each power plant.
- An Ingestion Exposure Pathway EPZ within a radius of 50 miles from each plant.

Plume Exposure Pathway refers to whole-body external exposure to gamma radiation from the 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.

The County RERPs, which are part of the County Emergency Operations Plan, also include the following:

- Preventive and emergency protective actions.
- Response levels and associated protective action guides (PAGs) for food.
- Recommended PAGs within an Ingestion Exposure Pathway EPZ.

- Information for farmers to assist in protection of their livestock and crops from radioactive contamination.

Nuclear facilities must notify the appropriate authorities in the event of an accident. The federally recognized classification levels are Unusual Event, Alert, Site Area Emergency, and General Emergency. After a nuclear/radiological incident, the main concern is the effect on the health of the population near the incident. External radiation, inhalation, and ingestion of radioactive isotopes can cause acute health effects (death, severe health impairment), chronic health effects (cancers), and psychological effects that can affect health. Additional considerations include the long-term effects to the environment and agriculture.

4.3.16.2 Range of Magnitude

TMI is the closest nuclear power plant to Franklin County; portions of the County lie within the Ingestion Exposure Pathway EPZ designated for nuclear/radiological emergencies. 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.

The worst-case radiological release event would be a major release of radioactive material from the Three Mile Island Nuclear Generating Station. This event would cause a great deal of fear for residents of south central Pennsylvania. In addition, as a support county, Franklin County would be impacted by large numbers of evacuees clogging the county's transportation networks. Finally, there is the potential for radioactive contamination to reach Franklin County, possibly necessitating the evacuation of portions of the county. Specific impacts depend on the extent of the spread of the contamination.

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 organizations⁹⁴. There are additional EALs that specifically deal with issues of security, such as threats of airborne attack, hostile action within the facility, or facility attack. These EALs ensure that appropriate notifications for the security threat are made in a timely manner. Each facility is also equipped with a public alerting system, which includes a number of sirens to alert the public located in the Plume Ingestion Pathway EPZ. This alerting system is activated by the counties of each specific EPZ. Emergency notifications and instructions are communicated to the public via the Emergency Alert System as activated by the PEMA Commonwealth Response Coordination Center (CRCC). State officials also have the capability to send emergency messages as text messages to mobile devices.

⁹⁴ Nuclear Regulatory Commission

4.3.16.3 Past Occurrence

Nuclear incidents rarely occur, but the incident at Three Mile Island is the worst fixed-nuclear facility accident in U.S. history. The resulting contamination and state of the reactor core led to the development of a 14-year cleanup and scientific effort. Additionally, the *President's Commission on the Accident at Three Mile Island* examined the costs of the accident, concluding, "The accident at Three Mile Island on March 28, 1979, generated considerable economic disturbance. Some of the impacts were short term, occurring during the first days of the accident. Many of the impacts were experienced by the local community; others will be felt at the regional and national levels." The report concluded: "It appears clear that the major costs of the TMI Unit 2 accident are associated with the emergency management replacement power and the plant refurbishment or replacement. The minimum cost estimate of nearly \$1 billion supports the argument that considerable additional resources can be cost effective if spent to guard against future accidents."

Despite the severity of the damage, no injuries due to radiation exposure occurred. However, numerous studies were conducted to determine the measurable health effects related to radiation and/or stress. More than a dozen epidemiological and stress related studies conducted to date have found no discernible direct health effects to the population in the vicinity of the plant. However, one study conducted by the DOH's Three Mile Island Health Research Program did find evidence of psychological stress⁹⁵.

The accident at Three Mile Island had a profound effect on the residents, emergency management community, government officials and nuclear industry, not only in Pennsylvania, but nationwide. There were minimal requirements for off-site emergency planning for nuclear power stations prior to this accident. Afterwards, comprehensive, coordinated, and exercised plans were developed for the state, counties, school districts, special facilities (hospitals, nursing homes and detention facilities) and municipalities to assure the safety of the population. Costs associated with an event at one of the Commonwealth's nuclear facilities, be it real or perceived, are significant. The mitigation efforts put in place immediately following the 1979 accident continue until today. The Commonwealth Nuclear/Radiological plan which is a successor of the original "Annex E" is a result of the Commonwealth's efforts to address the many components of mitigation planning. The comprehensive planning involved with the 5 nuclear facilities is an ongoing effort. Plans are reviewed and amended on an annual basis. Recent amendments to various planning documents and station procedures include the efforts to enhance station security measures and the means to bolster communications and response in the event of terrorist activities.

There have been no significant nuclear incidents at Three Mile Island since the last plan update.

4.3.16.4 Future Occurrence

Pennsylvania is home to the only nuclear power plant *General Emergency* in the nation. Since the Three Mile Island incident, nuclear power has become significantly safer and is one of the

⁹⁵ National Energy Institute, 2019

most heavily regulated industries in the nation. Despite the knowledge gained since then, there is still the potential for a similar accident to occur again at one of the 5 nuclear generating facilities in the Commonwealth. The Nuclear Energy Agency of the Organization for Economic Co-Operation and Development notes that studies estimate the chance of protective barriers failing in a modern nuclear facility at less than one in 100,000 per year⁹⁶. Nuclear incident occurrences may also occur as a result of intentional actions; these acts are addressed under **Section 4.3.18: Terrorism**.

Social Equity

Our socially vulnerable population could be affected in the event of nuclear incident, specifically any that would prompt an evacuation. The vulnerable people that would be most at risk would be those with disabilities and those who lack transportation.

Climate Change

As extreme weather events (floods, storms, extreme temperatures, and droughts) increase in prevalence, the entire power grid, including nuclear power plants, could be affected.

The probability of future nuclear incidents is *unlikely*, as defined by the Risk Factor probability criteria (**Section 4.4**). However, if an event were to occur, Franklin County would likely host displaced persons and the agricultural yield could be compromised because the county is at least partially in the 50-mile EPZ.

4.3.16.5 Vulnerability Assessment

Figure 4.3.16.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Nuclear Incident hazard. One can see that 5 of 22 municipalities rated this threat as either a Catastrophic or Major event. Of the remaining 17 municipalities, 5 rated Nuclear Incident as a Moderate threat. This was ranked as the number 11 threat in Franklin County and is considered overall to be a Moderate threat.

⁹⁶ World Nuclear Association, 2016

Franklin County Hazard Mitigation Plan - 2023


	Nuclear Incident Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	4	30%	4	20%	4	10%	4	10%	3.1	10.12%	0.3137
Chambersburg Borough	1	30%	2	30%	2	20%	1	10%	4	10%	1.8	14.05%	0.2529
Fannett Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.59%	0.0207
Greencastle Borough	1	30%	3	30%	3	20%	2	10%	4	10%	2.4	2.73%	0.0655
Greene Township	1	30%	2	30%	4	20%	4	10%	4	10%	2.5	11.82%	0.2955
Guilford Township	1	30%	2	30%	1	20%	4	10%	4	10%	1.9	9.38%	0.1782
Hamilton Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	7.29%	0.1166
Letterkenny Township	1	30%	3	30%	4	20%	4	10%	4	10%	2.8	1.58%	0.0442
Lurgan Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.42%	0.0185
Mercersburg Borough	1	30%	4	30%	1	20%	4	10%	4	10%	2.5	0.97%	0.0243
Metal Township	1	30%	2	30%	2	20%	1	10%	4	10%	1.8	1.13%	0.0203
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.01%	0.0131
Montgomery Township	1	30%	2	30%	4	20%	3	10%	4	10%	2.4	3.68%	0.0883
Orstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	3	30%	4	20%	1	10%	4	10%	2.5	3.41%	0.0853
Shippensburg Borough	1	30%	1	30%	4	20%	3	10%	4	10%	2.1	0.75%	0.0158
Southampton Township	1	30%	1	30%	2	20%	1	10%	4	10%	1.5	5.49%	0.0824
St Thomas Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	3.79%	0.0606
Warren Township	1	30%	1	30%	4	20%	4	10%	4	10%	2.2	0.21%	0.0046
Washington Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	9.55%	0.1528
Waynesboro Borough	1	30%	1	30%	4	20%	4	10%	4	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													2.055

Figure 4.3.16.5.1: Municipal Nuclear Incident Threat Vulnerability Self-Assessment

The effects and impacts of a nuclear/radiological threat depend on the type of radiation released, the duration of the release, the volume of the release, and the existing weather conditions, such as wind speed and direction. Franklin County is located within the 50-mile ingestion zone for the TMI facility.

The County's primary vulnerability to nuclear incidents comes in the form of food, soil, and water contamination. In terms of vulnerable land, the 269,530 acres of farmland held in Franklin County's 1,581 farms are vulnerable to radiological contamination in a nuclear incident⁹⁷. In 2017, the market value of all agricultural products of these farms exceeded \$476 million. While unlikely that all agricultural products would be lost in the event of a nuclear incident, the County could expect some portion of that \$476 million to be lost. Time of year also impacts the vulnerability and losses estimated for a nuclear incident; an incident that occurs during the prime growing and harvesting season will have a larger impact on the County. For example, the incident at Three Mile Island occurred in the off-season; as a result, the Pennsylvania

⁹⁷ USDA, 2017

Department of Agriculture estimated that agricultural losses for the entire Commonwealth were not more than \$1 million.

Water contamination is also a concern in nuclear incidents. There are 9 large water systems in the county such as Chambersburg, Guilford, Bear Valley and so forth. There are approximately 30 community systems in the county; many of these serve mobile home parks, villages, and small developments in rural areas. Approximately 65 % of the households are on public water with 35% on private wells or cisterns. They are all vulnerable to the effects of a nuclear incident.

4.3.16.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a nuclear incident are shown below. There is potential for significant impacts to four lifelines (Safety & Security, Energy, Transportation, & Hazardous Materials) and possible impacts expected for the remaining lifelines.



Figure 4.3.16.6.1: Nuclear Incident Community Lifeline Integration

4.3.17 Opioid Addiction Response

Opioid addiction occurs when an individual becomes physically dependent on opioid, a class of drugs that reduces pain. Opioid is used as a broad term and includes opiates, which are drugs naturally extracted from certain types of poppy plants, and narcotics. Opioids can also be synthetically made to emulate opium. According to the Drug Enforcement Administration (DEA) opioids come in various forms: tablets, capsules, skin patches, powder, chunks in various colors from white to shades of brown and black, liquid form for oral use and injection, syrups, suppositories, and lollipops. The Centers for Disease Control and Prevention (CDC) defines the following as the three most common types of opioids:

- **Prescription Opioids:** Opioid medication prescribed by doctors for pain treatment. Prescription opioids can be synthetic-oxycodone (OxyContin) or hydrocodone (Vicodin), or natural, like morphine.
- **Fentanyl:** A powerful synthetic opioid that is 50 to 100 times more powerful than morphine and used for treating severe pain. Illegally made and distributed fentanyl is becoming more prevalent.
- **Heroin:** An illegal natural opioid processed from morphine and is also becoming more commonly used in the United States.

Opioids are highly addictive. They block the body’s ability to feel pain and can create a sense of euphoria. Additionally, individuals often build a tolerance to opioids, which can lead to misuse and overdose.

4.3.17.1 Location and Extent

The CDC estimates that nearly 23 out of every 100,000 Franklin County residents died from opioid-related overdoses in 2021, lower than the state rate of opioid-related deaths of approximately 36.1 out of 100,000 people⁹⁸. The majority of overdose deaths within Franklin County were observed within the 25-44 age range, accounting for 62% of reported deaths from 2018-2022⁹⁹.

4.3.17.2 Range of Magnitude

Opioid addiction can lead to overdose, which can be fatal. The most dangerous side effect of an opioid overdose is depressed breathing. The lack of oxygen to the brain causes permanent brain damage, leading to organ failure, and eventually, death. Signs and symptoms include respiratory depression, drowsiness, disorientation, pinpoint pupils, and clammy skin.

Opioid addiction can also be passed from mother to child in the womb, resulting in a condition known as neonatal abstinence syndrome. According to a 2019 Neonatal Abstinence Syndrome Report, Franklin County had 26 cases of neonatal abstinence syndrome between two facilities. Twenty-five of these cases were residents of Franklin County¹⁰⁰.

First responders—paramedics, police officers, and fire fighters, are also affected by Pennsylvania’s opioid addiction crisis. In addition to the crisis consuming time and resources, first responders also face exposure risk, particularly to synthetic fentanyl. According to the DEA, it takes two milligrams of fentanyl to induce respiratory depression, arrest, and possibly death. Since fentanyl is indistinguishable from several other narcotics and powdered substances, first responders must take extra precaution when dealing with calls related to drug abuse (DEA, 2023)¹⁰¹.

4.3.17.3 Past Occurrence

OverdoseFreePA found that opioids are the main cause of drug-related overdoses and deaths, being responsible for nearly seventy-five percent of drug-related deaths in Franklin County from 2017-2021¹⁰².

⁹⁸ CDC, 2023

⁹⁹ OverdoseFREEPA, 2023

¹⁰⁰ PA DOH, 2021

¹⁰¹ US DEA, 2023

¹⁰² OverdoseFREEPA, 2023

Though the opioid addiction crisis is complex and unprecedented, it is widely acknowledged that the opioid crisis began in the late 1990s when pharmaceutical companies introduced opioid-based pain medication, such as OxyContin, Percocet, and Vicodin. As these drugs became more frequently prescribed, misuse and overdose increased and it became clear that prescription opioids were highly addictive¹⁰³.

4.3.17.4 Future Occurrence

Unlike many counties, Franklin County has not seen a rise in opioid related deaths over the last several years, with drug-related death rates remaining relatively steady between 2017 and 2021. However, future occurrences of opioid addiction and misuse, overdose, and fatalities are unclear as the state moves forward with overdose prevention initiatives. In January 2018, Governor Tom Wolf declared Pennsylvania's opioid addictions epidemic a disaster emergency. This declaration should enhance coordination and data collection between state and local responders, improve tools for families and first responders, and expand treatment access. The declaration also improves access to naloxone, a lifesaving drug that reverses the effects of a drug-overdose. In addition, a new Opioid Coordination Group has is housed within the Pennsylvania Emergency Management Agency. In order to help combat overdoses, Franklin County established an Overdose Task Force to create effective and lasting solutions to eliminate overdoses. Their focus includes providing awareness, education, outreach, hope and healing through community involvement and collaboration.

Social Equity

Opioid addiction is likely to affect the socially vulnerable populations. Those residents with limited economic resources may be more affected since they often do not have access to addiction care resources.

Climate Change

Opioid addiction in Franklin County is not likely to be directly affected by climate change.

4.3.17.5 Vulnerability Assessment

Figure **4.3.17.5.1** below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Opioid Addiction Response hazard. One can see that only 3 of 22 municipalities rated this threat as either a Major or Catastrophic event. This is a Minor threat ranked 19 overall for Franklin County.

¹⁰³ US DOH, 2023

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	Opioid Addiction Response Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	1	30%	1	20%	4	10%	1	10%	1.9	10.12%	0.1923
Chambersburg Borough	2	30%	1	30%	1	20%	2	10%	1	10%	1.4	14.05%	0.1967
Fannett Township	2	30%	1	30%	3	20%	1	10%	1	10%	1.7	1.59%	0.0270
Greencastle Borough	2	30%	2	30%	2	20%	4	10%	1	10%	2.1	2.73%	0.0573
Greene Township	4	30%	2	30%	3	20%	1	10%	1	10%	2.6	11.82%	0.3073
Guilford Township	2	30%	2	30%	1	20%	4	10%	1	10%	1.9	9.38%	0.1782
Hamilton Township	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	7.29%	0.1312
Letterkenny Township	2	30%	3	30%	1	20%	4	10%	1	10%	2.2	1.58%	0.0348
Lurgan Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.42%	0.0156
Mercersburg Borough	2	30%	2	30%	1	20%	1	10%	1	10%	1.6	0.97%	0.0155
Metal Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.13%	0.0113
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.01%	0.0101
Montgomery Township	4	30%	3	30%	4	20%	4	10%	1	10%	3.4	3.68%	0.1251
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	2	30%	1	30%	1	20%	1	10%	1	10%	1.3	3.41%	0.0443
Shippensburg Borough	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	0.75%	0.0120
Southampton Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	5.49%	0.0878
St Thomas Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	3.79%	0.0493
Warren Township	3	30%	2	30%	3	20%	1	10%	1	10%	2.3	0.21%	0.0048
Washington Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	9.55%	0.1528
Waynesboro Borough	4	30%	3	30%	1	20%	4	10%	1	10%	2.8	7.02%	0.1966
Municipal Weighted Average Risk Factor (RF)													1.897

Figure 4.3.17.5.1: Municipal Opioid Addiction Response Threat Vulnerability Self-Assessment

4.3.17.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Opioid Addiction Response are shown below. There is potential for significant impacts to one lifeline (Health & Medical), possible impacts for one lifeline (Safety & Security) and minimal impacts expected for the remaining lifelines.



Figure 4.3.17.6.1: Opioid Addiction Response Community Lifeline Integration

4.3.18 Pandemic and Infectious Disease

A pandemic is the sudden outbreak of a new infectious disease that spreads easily from one person to another and attacks the population of an extensive region, including several countries and/or continents. There have been 5 flu pandemics during the last century; the Spanish Flu, the Asian Flu, the Hong Kong Flu, the Swine Flu, and recently COVID-19.

Generally, pandemic diseases cause sudden, pervasive illness in all age groups on a global scale. Pandemic events cover a wide geographic area and can affect large populations, depending on the disease. 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 non-infected persons.

4.3.18.1 Location and Extent

Franklin County is primarily concerned with the possibility of pandemic outbreaks of various forms of influenza, West Nile Virus, or the Zika virus. Pandemic influenza planning began in response to the H5N1 (avian) flu outbreak in Asia, Africa, Europe, the Pacific and the Near East in the late 1990s and early 2000s. H5N1 did not reach pandemic proportions in the United States, but the county began actively planning for an occurrence of an influenza pandemic. As stated in the Pennsylvania Department of Health Influenza Pandemic Response Plan, “an influenza pandemic is inevitable and will probably give little warning”¹⁰⁴. 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, meaning that people have no immunity to it, virulent, meaning that it causes deaths in normally healthy individuals, and easily transmittable from person-to-person.

Listed below are basic descriptions of identified diseases with identified pandemic potential and their expected impact:

- The Bird Flu is a disease of wild, domesticated, and farm birds. The newer type of bird flu referred to as highly pathogenic avian influenza (HPAI) H5N1 is of concern. HPAI has the potential to spread to humans who have had direct or close contact with sick or dead poultry that were infected with the virus. Human infections are considered to be rare, but 60% of those infected have died. Most cases of human transmission have occurred in other countries; however, the first case of human infection in the Americas was reported in Canada in January 2014.
- The West Nile Virus is carried by mosquitoes and can infect birds, animals and people. Most species of mosquitoes found in Pennsylvania do not carry the virus. In some cases, the virus could cause encephalitis in humans, which is an infection of the brain. The peak season is usually April through October.

¹⁰⁴ DOH, 2005

- Influenza continues to remain a concern in Pennsylvania due to the potential to spread quickly. Between October 2, 2021 and February 4, 2023, there were 3,335 confirmed cases of influenza in Franklin County¹⁰⁵. It is estimated that the numbers are much higher because most do not seek treatment for this virus. According to the Pennsylvania Department of Health, it is estimated that 5 to 20 percent of Pennsylvanians contract the flu each year, and 120 to 2,000 die from complications associated with influenza.
- The Zika virus is a mosquito-borne flavivirus that is transmitted primarily by Aedes mosquitoes. According to the World Health Organization, it is of particular concern because it is believed to cause microcephaly and Guillani-Barre syndrome. It has also been linked to other neurological complications.
- COVID-19 is a novel coronavirus that started in Wuhan, China in December of 2019. It was declared a pandemic by the CDC & WHO on 3/11/2020. Community transmission of this novel virus is still occurring, but Franklin County has not recently experienced any substantial increases in cases. Vaccines were approved in December 2020 and are widely available now.

4.3.18.2 Range of Magnitude

The magnitude of a pandemic in Franklin County will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is fairly easily transmitted from person-to-person compared to West Nile, but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. In terms of lives lost, the impact various pandemic influenza outbreaks have had globally over the last century has declined. The 1918 Spanish Flu pandemic remains the worst-case pandemic event on record. Nearly 24,000 Pennsylvanians died during the first month of the disease. It is estimated that 350,000 Pennsylvanians had been struck with the flu, about 150,000 of whom were from Philadelphia alone¹⁰⁶.

In contrast, the severity of illness from recent influenza viruses has varied, with the gravest cases occurring mainly among those considered at high risk. High risk populations considered more vulnerable include children, the elderly, pregnant women, and chronic disease patients with reduced immune system capacity. Most people infected with H1N1 (swine flu) in 2009 and 2010 outbreak recovered without needing medical treatment. This strain of the flu has continued to circulate in the United States. The 2014 season is the first since 2009 that H1N1 has been so predominant in the United States.

The magnitude of a pandemic may be exacerbated by the fact that pandemics occur over large areas and will cause outbreaks across the United States, thus limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medication, will likely be in short supply or will not be available.

¹⁰⁵ DOH, 2023

¹⁰⁶ FluTracker.com

There are no true environmental impacts in pandemic disease outbreaks, but there may be significant economic and social costs beyond the possibility of deaths. Widespread illness may increase the likelihood of shortages of personnel to perform essential community services. In addition, high rates of illness and worker absenteeism occur within the business community, and these contribute to social and economic disruption. Social and economic disruptions could be temporary but may be amplified in today's closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

4.3.18.3 Past Occurrence

The first cases of the West Nile virus in humans in Pennsylvania occurred in 2001¹⁰⁷. West Nile Virus has been found in Franklin County. In 2022, there were 86 positive mosquito samples in Franklin County and 2 confirmed human cases.

In 2021, there were 2 CDC confirmed cases of Zika virus in the United States, both of which were travel-associated. There have been no **Figure 4.3.18.3.1** below illustrates the distribution of Zika cases throughout the United States in 2017, after large outbreaks occurred in 2015 and 2016. Starting in 2017, the number of Zika virus cases started to decline in the United States and there have been no confirmed cases from United States territories since 2019.

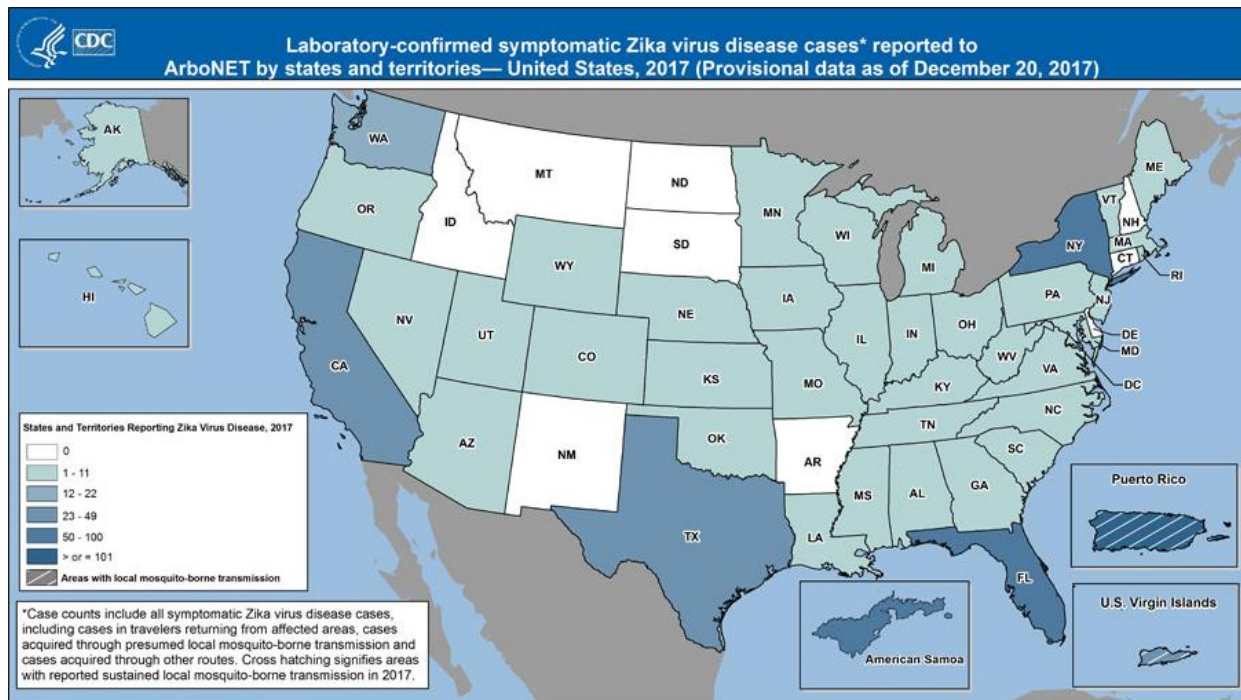


Figure 4.3.18.3.1: Confirmed Cases of Zika Virus in the United States (2017)¹⁰⁸

¹⁰⁷ DOH, 2001

¹⁰⁸ CDC, 2017

There have been several pandemic influenza outbreaks which have occurred over the past 100 years. A list of events worldwide is shown in **Table 4.3.18.3.1**.

Years	Name	Subtype	Extent of Outbreak
2020-Present	COVID-19	Novel Coronavirus	Ongoing Pandemic
2009-2010	Swine Flu	H1N1	Estimated Deaths: USA: 12,469 World-wide: 575,000
1968-1969	Hong Kong Flu	H3N2	Estimated Deaths: USA: 34,000 World-wide: 700,000
1957-1958	Asian Flu	H2N2	Estimated Deaths: USA: 70,000 World-wide: 1-2 million
1918-1919	Spanish Flu	H1N1	Estimated Deaths: USA: 675,000 World-wide: 50 million

Table 4.3.18.3.1: Influenza Outbreaks in Past 100 Years

Deaths occurred in the United States as a result of the Spanish Flu, Asian flu, and Hong Kong Flu outbreaks. The Spanish Flu claimed 675,000 lives in the United States, and there were 350,000 cases in Pennsylvania. This outbreak affected healthy adults between 20-50 years old. Most deaths resulting from the Asian Flu occurred between September 1957 and March 1958. There were about 70,000 deaths in the United States and approximately 15% of the population of Pennsylvania was affected. The Asian Flu affected both the very young and the very old.

The first cases of the Hong Kong Flu in the U.S. were detected in September 1968 with deaths peaking between December 1968 and January 1969¹⁰⁹. Those most affected by this flu were the very old and those with underlying medical conditions.

Franklin County mirrors the rest of the world with Influenza being the most prevalent and most likely disease to reach pandemic proportions. **Table 4.3.18.3.2** shows the total number of confirmed cases of Influenza in the county since 2013. The figures for the 2022/2023 season are only partial, but it can be seen that we have exceeded total numbers for any of the previous 9 seasons and we still have 7 months to go. Flu data for the 2020/2021 and 2021/2022 seasons were unavailable due to the COVID-19 Pandemic.

¹⁰⁹ GlobalSecurity.org

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Flu Season	Inclusive Dates	Influenza Type			Total
		A	B	Unidentified	
2022/2023*	10/02/2022 – 2/4/2023*	3315	20	--	3335*
2021/2022**	--	--	--	--	--**
2020/2021**	--	--	--	--	--**
2019/2020	9/29/2019 – 9/26/2020	567	421	0	988
2018/2019	9/30/2018 – 9/28/2019	668	18	0	686
2017/2018	10/1/2017 – 9/29/2018	995	413	0	1408
2016/2017	10/2/2016 – 9/30/2017	709	285	0	994
2015/2016	10/4/2015 – 10/1/2016	371	194	0	565
2014/2015	9/28/2014 – 10/3/2015	797	113	1	911
2013/2014	9/29/2013 – 9/27/2014	413	36	1	450
* Indicates incomplete data for the 2022/2023 flu season					
** Indicates no data available due to the COVID-19 Pandemic					

Table 4.3.18.3.2: Franklin County Influenza Cases (2013-2023)¹¹⁰

4.3.18.4 Future Occurrence

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 pandemic¹¹¹. That is what happened with COVID-19.

West Nile Virus could potentially impact Franklin County in the future as it is carried and spread by mosquitoes. The probability of the virus infecting animals or humans in the county is low, because most species of mosquitoes found in Pennsylvania don’t carry the virus, and the state as a whole has taken precautions to avoid the spread of the virus such as killing mosquito larvae and by monitoring birds, mosquitoes, people, and horses.

Influenza is already a problem in the county and with the strain that has hit in the 2022/2023 flu season, it is set to be the worst season in at least a decade. This strain will not reach pandemic

¹¹⁰ DOH, 2023

¹¹¹ CDC

levels, but it is an indication that as the virus mutates and inherits resistance to antibiotics, a pandemic is a distinct possibility in the near future.

The whole country is in the midst of the COVID-19 pandemic. Vaccines were approved in December 2020 for front-line workers, and are widely available now for people 12 and over. There have been several “variants” of the virus and this is still an ongoing problem.

Social Equity

Socially vulnerable populations will likely be impacted by any future pandemics, just as they were during the COVID-19 pandemic. The elderly, disabled, and those with limited economic means will be the most impacted across the county.

Climate Change

Climate change is likely to increase the risk of a pandemic. With temperatures and extreme weather events predicted to increase, non-native insects and other animal species may extend their range into the county, thus increasing the risk of a pandemic.

On the whole, the future probability of the pandemic event in Franklin County can be considered ***highly likely*** as defined by the Risk Factor ranking probability criteria (see **Section 4.4**).

4.3.18.5 Vulnerability Assessment

Figure 4.3.18.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Pandemic and Infectious Disease hazard. One can see that 10 of 22 municipalities rated this threat as either a Catastrophic or Major event. Additionally, 4 of the remaining 15 municipalities rated this as a Moderate threat. This ranked as the number 2 threat in Franklin County and is considered a Major threat.

Franklin County Hazard Mitigation Plan - 2023


	Pandemic and Infectious Disease Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	3	30%	4	20%	4	10%	4	10%	3.4	10.12%	0.3441
Chambersburg Borough	1	30%	2	30%	2	20%	2	10%	4	10%	1.9	14.05%	0.2670
Fannett Township	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	1.59%	0.0318
Greencastle Borough	3	30%	3	30%	3	20%	2	10%	4	10%	3.0	2.73%	0.0819
Greene Township	4	30%	3	30%	4	20%	1	10%	4	10%	3.4	11.82%	0.4019
Guilford Township	3	30%	3	30%	4	20%	1	10%	4	10%	3.1	9.38%	0.2908
Hamilton Township	2	30%	2	30%	2	20%	1	10%	4	10%	2.1	7.29%	0.1531
Letterkenny Township	2	30%	3	30%	3	20%	1	10%	4	10%	2.6	1.58%	0.0411
Lurgan Township	1	30%	1	30%	1	20%	3	10%	4	10%	1.5	1.42%	0.0213
Mercersburg Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.97%	0.0126
Metal Township	2	30%	1	30%	2	20%	1	10%	4	10%	1.8	1.13%	0.0203
Mont Alto Borough	1	30%	1	30%	3	20%	1	10%	4	10%	1.7	1.01%	0.0172
Montgomery Township	4	30%	2	30%	4	20%	3	10%	4	10%	3.3	3.68%	0.1214
Orstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	2.86%	0.0458
Quincy Township	2	30%	1	30%	2	20%	1	10%	4	10%	1.8	3.41%	0.0614
Shippensburg Borough	2	30%	2	30%	4	20%	1	10%	4	10%	2.5	0.75%	0.0188
Southampton Township	2	30%	2	30%	2	20%	1	10%	4	10%	2.1	5.49%	0.1153
St Thomas Township	3	30%	2	30%	3	20%	1	10%	4	10%	2.6	3.79%	0.0985
Warren Township	3	30%	3	30%	3	20%	2	10%	4	10%	3.0	0.21%	0.0063
Washington Township	1	30%	2	30%	3	20%	1	10%	4	10%	2.0	9.55%	0.1910
Waynesboro Borough	4	30%	3	30%	4	20%	1	10%	4	10%	3.4	7.02%	0.2387
Municipal Weighted Average Risk Factor (RF)												2.582	

Figure: 4.3.18.5.1: Municipal Pandemic and Infectious Disease Threat Vulnerability Self-Assessment

Certain population groups are at higher risk of pandemic flu infection. This population group includes people 65 years and older, children younger than 5 years old, pregnant women, and people of any age with certain chronic medical conditions. Such conditions include but are not limited to diabetes, heart disease, asthma, and kidney disease¹¹². Schools, convalescent centers, and other institutions serving those younger than 5 years old and older than 65 years old are locations conducive to faster transmission of pandemic influences since populations identified as being at high risk are concentrated at these facilities. Due to these possibilities, we may need to take precautions like social distancing or the use of dust masks (similar to those used in some Asian countries) to stem the spread of these viruses as a mitigation action in the future.

¹¹² CDC

4.3.18.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Pandemic and Infectious Disease are shown below. There is potential for significant impacts to one lifeline (Health & Medical), possible impacts for one lifeline (Safety & Security) and minimal impacts expected for the remaining lifelines.



Figure 4.3.18.6.1: Pandemic and Infectious Disease Community Lifeline Integration

4.3.19 Radon Exposure

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 U.S. Environmental Protection Agency (EPA), Radon is estimated to cause approximately 21,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer¹¹³. An estimated 40% of the homes in Pennsylvania are believed to have elevated Radon levels¹¹⁴. This section provides a profile and vulnerability assessment for the Radon exposure hazard.

4.3.19.1 Location and Extent

Radioactivity caused by airborne Radon has been recognized for many years as an important component in the natural background radioactivity exposure of humans. It was not until the 1980s that the wide geographic distribution of elevated values in houses and the possibility of extremely high Radon values in houses were recognized. In 1984, routine monitoring of employees leaving the Limerick nuclear power plant near Reading, PA, showed that readings on Mr. Stanley Watras frequently exceeded expected radiation levels, yet only natural, nonfission- product radioactivity was detected on him. Radon levels in his home were detected around 2,500 pico Curies per Liter (pCi/L), much higher than the 4 pCi/L guideline of the EPA or even the 67 pCi/L limit for uranium miners. As a result of this event, the Reading Prong section of Pennsylvania where Mr. Watras lived became the focus of the first large-scale Radon scare in the world.

¹¹³ EPA

¹¹⁴ DEP, 2016

However, Radon (i.e. ^{222}Rn), which has a half-life of 3.8 days, is a widespread hazard. The distribution of Radon is correlated with the distribution of Radium (i.e. ^{226}Ra), 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. Three (3) sources of Radon in houses are now recognized:

- Radon in soil air that flows into the house;
- Radon dissolved in water from private wells and exsolved during water usage (this is rarely a problem in Pennsylvania); and
- Radon emanating from Uranium-rich building materials (e.g. concrete blocks or gypsum wallboard)(this is not known to be a problem in Pennsylvania)¹¹⁵.

Figure 4.3.19.1.1 illustrates radon entry points into a home.

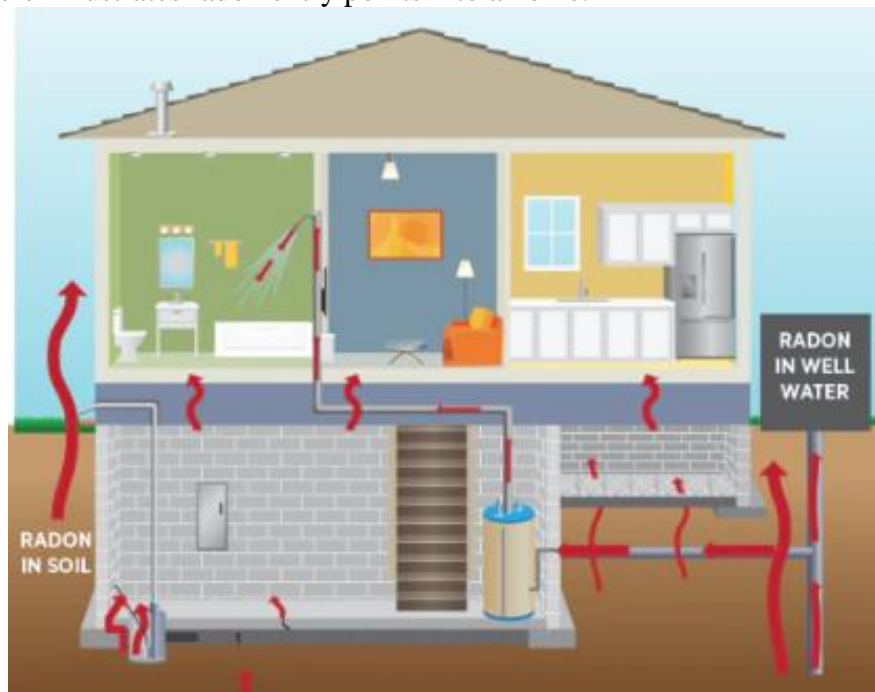


Figure 4.3.19.1.1: Sketch of Radon Entry Points into a House¹¹⁶

Each county in Pennsylvania is classified as having a low, moderate, or high Radon hazard potential. A majority of counties across the Commonwealth, particularly counties in eastern Pennsylvania, have a high hazard potential. The average indoor Radon screening level for these counties is greater than 4 pCi/L. Franklin County is located in Zone 1 – High Radon Potential as noted in **Figure 4.3.19.1.2** below.

¹¹⁵ EPA, 1983

¹¹⁶ Commonwealth of Massachusetts, 2023

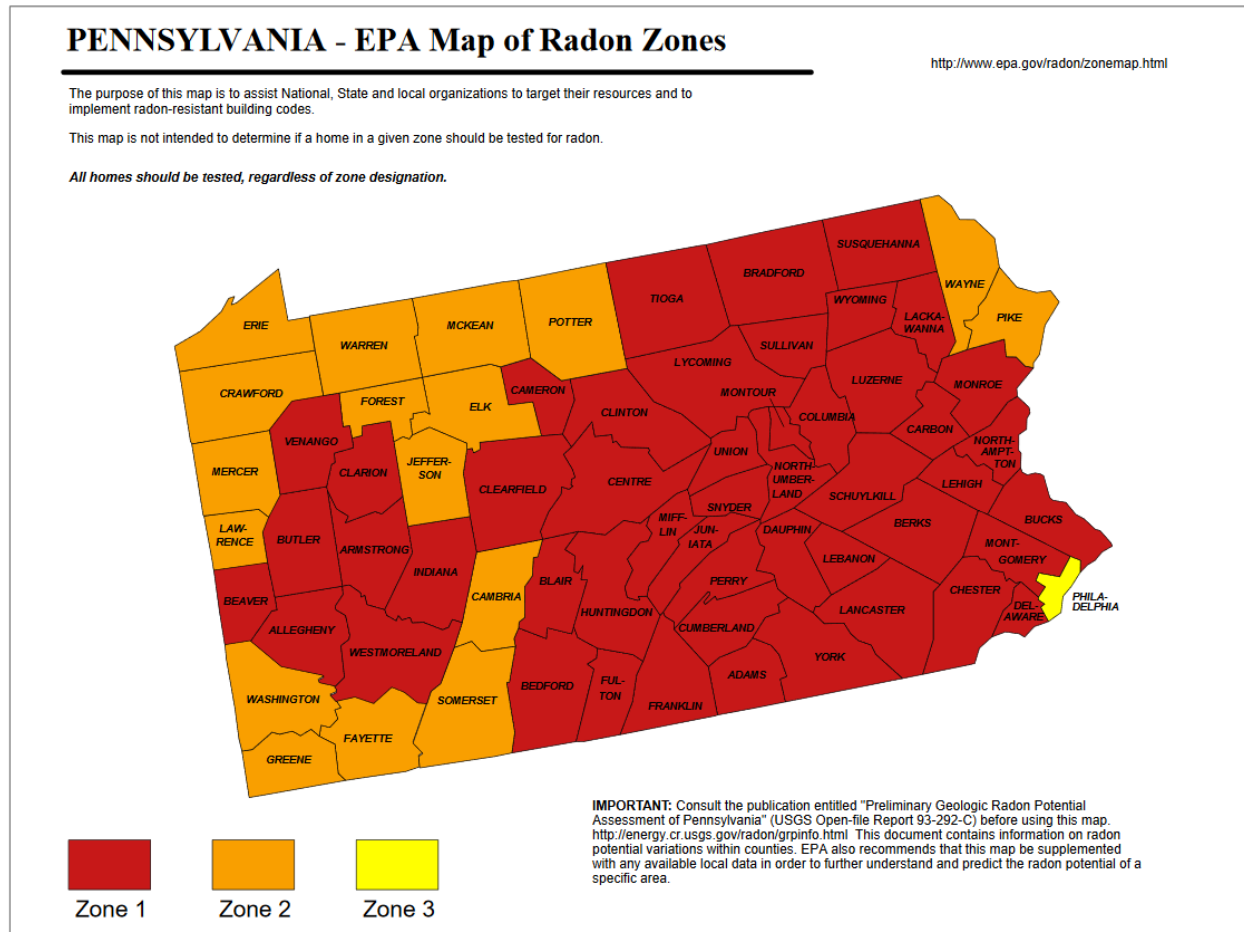


Figure 4.3.19.1.2: Radon Hazard Zones in Pennsylvania (2022)¹¹⁷

High Radon levels were initially thought to be exacerbated in houses that are tightly sealed, but it is now recognized that rates of air flow into and out of houses, plus the location of air inflow and the radon content of air in the surrounding soil, are key factors in Radon concentrations. Outflows of air from a house, caused by a furnace, fan, thermal “chimney” effect, or wind effects, require that air be drawn into the house to compensate. If the upper part of the house is tight enough to impede influx of outdoor air (Radon concentration generally <0.1 pCi/L), then an appreciable fraction of the air may be drawn in from the soil or fractured bedrock through the foundation and slab beneath the house, or through cracks and openings for pipes, sumps, and similar features. 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 Radon concentration of soil gas depends upon a number of soil properties, the importance of which is still being evaluated. In general, 10 to 50% of newly formed Radon atoms escape the host mineral of their parent Radium and gain access to the air-filled pore space. The Radon content of soil gas clearly tends to be higher in soils containing higher levels of Radium and Uranium, especially if the Radium occupies a site on or near the surface of a grain from which

¹¹⁷ EPA, 2022

the Radon can easily escape. The amount of pore space in the soil and its permeability for air flow, including cracks and channels, are important factors determining Radon concentration in soil gas and its rate of flow into a house. Soil depth, moisture content, mineral host, form of Radium, and other soil properties may also be critical factors. For houses built on bedrock, fractured zones may supply air having Radon concentrations similar to those in deep soil.

Areas where houses have high levels of Radon can be divided into 3 groups in terms of Uranium content in rock and soil:

- Areas of very elevated Uranium content (>50 parts per million [ppm]) around Uranium deposits and prospects: Although very high levels of Radon can occur in such areas, the hazard normally is restricted to within a few hundred feet of the deposit. In Pennsylvania, such localities occupy an insignificant area.
- Areas of common rocks having higher than average Uranium content (5 to 50 ppm): In Pennsylvania, such rock types include granitic and felsic alkali igneous rocks and black shales. In the Reading Prong, high Uranium values in rock or soil and high Radon levels in houses are associated with Precambrian granitic gneisses commonly containing 10 to 20 ppm Uranium, but locally containing more than 500 ppm Uranium. In Pennsylvania, elevated Uranium occurs in black shales of the Devonian Marcellus Formation and possibly the Ordovician Martinsburg Formation. High Radon values are locally present in areas underlain by these formations.
- Areas of soil or bedrock that have normal Uranium content but properties that promote high Radon levels in houses: This group is incompletely understood at present. Relatively high soil permeability can lead to high Radon, the clearest example being houses built on glacial eskers. Limestone-dolomite soils also appear to be predisposed for high Radon levels in houses, perhaps because of the deep clay-rich residuum in which Radium is concentrated by weathering on iron oxide or clay surfaces, coupled with moderate porosity and permeability. The importance of carbonate soils is indicated by the fact that Radon contents in 93% of a sample of houses built on limestone-dolomite soils near State College, Centre County, exceeded 4 pCi/L, and 21 percent exceeded 20 pCi/L, even though the Uranium values in the underlying bedrock are all in the normal range of 0.5 to 5 ppm Uranium¹¹⁸.

According to the 2018 PA HMP, Radon tends to exist as a gas or as a dissolved atomic component in groundwater. In Pennsylvania, the most problematic source of Radon in houses is Radon in soil gas that flows into the house. Even a small rate of soil gas inflow can lead to elevated Radon concentrations in a house. The state plan indicates that current data on the abundance and distribution of Radon in Pennsylvania homes is incomplete and biased, but the plan identifies general patterns. Values exceeding the Environmental Protection Agency's guidelines occur in all regions of the state. The highest proportion of elevated values includes South Central PA and Franklin County¹¹⁹.

¹¹⁸ PEMA, 2018

¹¹⁹ PEMA, 2018

4.3.19.2 Range of Magnitude

Exposure to Radon is the second leading cause of lung cancer after smoking. It is the number one cause of lung cancer among non-smokers. As stated earlier, Radon is responsible for about 21,000 lung cancer deaths every year; approximately 2,900 of which occur among people who have never smoked. 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 adults¹²⁰. The main hazard is actually from the Radon daughter products (218Po, 214Pb, and 214Bi), which may become attached to lung tissue and induce lung cancer by their radioactive decay. **Table 4.3.19.2.1** shows the relationship between various Radon levels, probability of lung cancer, comparable risks from other hazards, and action thresholds.

Years	If 1,000 people were exposed to this level over a lifetime ...*	Risk of cancer from Radon exposure compares to ...**	Action Threshold
Smokers			
20	About 260 people could get lung cancer	250 times the risk of drowning	Fix Structure
10	About 150 people could get lung cancer	200 times the risk od dying in a home fire	Fix Structure
8	About 120 people could get lung cancer	30 times the risk of dying in a fall	Fix Structure
4	About 62 people could get lung cancer	5 times the risk of dying in a car crash	Fix Structure
2	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3	About 20 people could get lung cancer	(Average indoor Radon level)	Reducing Radon levels below 2 pCi/L is difficult
0.4	About 3 people could get lung cancer	(Average outdoor Radon level)	
Non-Smokers			
20	About 36 people could get lung cancer	35 times the risk of drowning	Fix Structure
10	About 18 people could get lung cancer	20 times the risk of dying in a home fire	Fix Structure
8	About 15 people could get lung cancer	4 times the risk of dying in a fall	Fix Structure
4	About 7 people could get lung cancer	The risk of dying in a car crash	Fix Structure
2	About 4 people could get lung cancer	The risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3	About 2 people could get lung cancer	(Average indoor Radon level)	Reducing Radon levels below 2 pCi/L is difficult
0.4		(Average outdoor Radon level)	
NOTE: Risk may be lower for former smokers. * Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003). ** Comparison data calculated using the Centers for Disease Control and Prevention’s 1999-2001 National Center for Injury Prevention and Control Preorts.			

Table 4.3.19.2.1: Radon Risk for Smokers and Non-Smokers¹²¹

¹²⁰ EPA, 2016

¹²¹ EPA, 2016

According to the EPA, the average Radon concentration in the indoor air of U.S. homes is 1.3 pCi/L. The EPA recommends homes be fixed if the radon level is 4 pCi/L or more. However, because there are no known safe levels of exposure to Radon, the EPA also recommends that Americans consider fixing their home for Radon levels between 2 pCi/L and 4 pCi/L. As shown in **Table 4.3.19.2.1**, a smoker exposed to Radon has a much higher risk of lung cancer.

The worst-case scenario for Radon exposure would be that a large area of tightly sealed homes providing residents high levels of exposure over a prolonged period of time without the residents being aware¹²².

4.3.19.3 Past Occurrence

Current data on abundance and distribution of Radon in Pennsylvania houses is considered incomplete and potentially biased, but some general patterns exist.

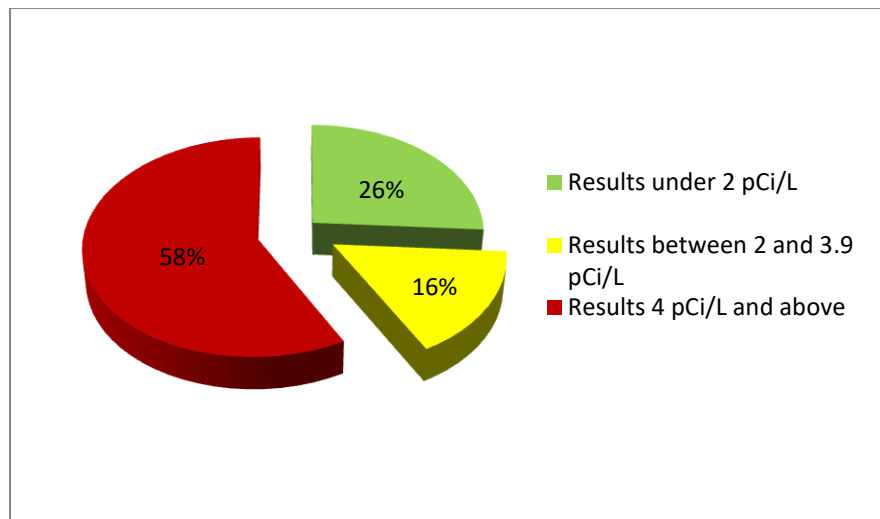


Figure 4.3.19.3.1: Percentage of Franklin County Homes and Radon Levels (2017)¹²³

Values exceeding the EPA guideline of 4 pCi/L occur in all regions of the Commonwealth. The highest proportion of elevated Radon values in the Commonwealth exist is in a zone extending from central Pennsylvania to southeastern Pennsylvania. High values in the latter area are attributed to known Uranium-rich granitic gneisses, accentuated by local factors such as shear zones, and include a surprising number of extremely high Radon values (>200 pCi/L). Information on average Radon levels by zip code in Pennsylvania can be obtained from the DEP at: <https://www.dep.pa.gov/DataandTools/Reports/Pages/Radiation-Protection.aspx>¹²⁴.

4.3.19.4 Future Occurrence

Radon exposure is inevitable given present soil, geologic, and geomorphic factors across Pennsylvania. Development in areas where previous Radon levels have been significantly high

¹²² PEMA, 2018

¹²³ Bureau of Radiation Protection

¹²⁴ DEP

will continue to be more susceptible to exposure. However, new incidents of concentrated exposure may occur with future development or deterioration of older structures. Exposure can be limited with proper testing for both past and future development and appropriate mitigation measures¹²⁵.

Social Equity

Socially vulnerable residents are likely to be affected by radon within Franklin County, especially those with limited economic means since they are less able to test for and mitigate radon in the homes.

Climate Change

The U.S. EPA suspects that climate change, coupled with the associated increased use of air conditioning, may result in increased indoor radon concentrations due to decreased air exchange rates, especially in tightly-sealed residences.

4.3.19.5 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable to the identified hazard area. For Radon Exposure, all of Franklin County has been identified as the hazard area. Therefore, all critical facilities, houses, population, and infrastructure as outlined in **Tables 2.4.3 and 2.4.5, Section 2** are vulnerable.

Figure 4.3.19.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Radon Exposure hazard. One can see that 2 of 22 municipalities rated this threat as either a Catastrophic or Major event and 2 rated it is a Moderate event. This was ranked as the number 15 threat in Franklin County and is considered a Minor threat.

¹²⁵ PEMA, 2018

Franklin County Hazard Mitigation Plan - 2023


	<div style="text-align: center;"> Radon Exposure Hazard Threat Risk Assessment </div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	10.12%	0.1923
Chambersburg Borough	2	30%	3	30%	2	20%	3	10%	4	10%	2.6	14.05%	0.3653
Fannett Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.59%	0.0207
Greencastle Borough	2	30%	2	30%	2	20%	4	10%	4	10%	2.4	2.73%	0.0655
Greene Township	2	30%	1	30%	1	20%	3	10%	4	10%	1.8	11.82%	0.2128
Guilford Township	2	30%	1	30%	1	20%	3	10%	4	10%	1.8	9.38%	0.1688
Hamilton Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	7.29%	0.1166
Letterkenny Township	1	30%	3	30%	2	20%	1	10%	4	10%	2.1	1.58%	0.0332
Lurgan Township	1	30%	1	30%	1	20%	2	10%	4	10%	1.4	1.42%	0.0199
Mercersburg Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.97%	0.0126
Metal Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.13%	0.0147
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.01%	0.0131
Montgomery Township	4	30%	2	30%	4	20%	3	10%	4	10%	3.3	3.68%	0.1214
Orstown Borough	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	0.14%	0.0018
Peters Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	2.86%	0.0458
Quincy Township	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	3.41%	0.0443
Shippensburg Borough	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	0.75%	0.0120
Southampton Township	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	5.49%	0.0878
St Thomas Township	2	30%	1	30%	1	20%	4	10%	4	10%	1.9	3.79%	0.0720
Warren Township	2	30%	1	30%	2	20%	1	10%	4	10%	1.8	0.21%	0.0038
Washington Township	1	30%	2	30%	2	20%	1	10%	4	10%	1.8	9.55%	0.1719
Waynesboro Borough	2	30%	1	30%	2	20%	2	10%	4	10%	1.9	7.02%	0.1334
Municipal Weighted Average Risk Factor (RF)													1.930

Figure 4.3.19.5.1: Municipal Radon Exposure Threat Vulnerability Self-Assessment

4.3.19.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Radon are shown below. There is potential for possible impacts to two lifelines (Health & Medical and Safety & Security) and minimal impacts expected for the remaining lifelines.



Figure 4.3.19.6.1: Radon Exposure Community Lifeline Integration

4.3.20 Subsidence, Sinkhole

Subsidence is the downward movement of earth surface material. It involves little or no horizontal movement.

A sinkhole is a basin-like, funnel shaped, or vertical sided depression in the land surface. In general, sinkholes form by the subsidence of unconsolidated materials or soils into voids created by dissolution of the underlying soluble bedrock.

There are three general types of sinkholes: collapse, subsidence, and solution. These different types of sinkholes generally correspond to the thickness of the sediments overlying limestone. The sediments and water contained in the unsaturated zone, surficial aquifer system, and the confining layer are collectively referred to as overburden. Collapse sinkholes are most common in areas where overburden is thick, but the confining layer is breached or absent. Subsidence sinkholes form where the overburden is thin and only a veneer of sediments is present overlaying the limestone (See **Figure 4.3.20.1** below). Solution sinkholes form where the overburden is absent and the limestone is exposed at the land surface.

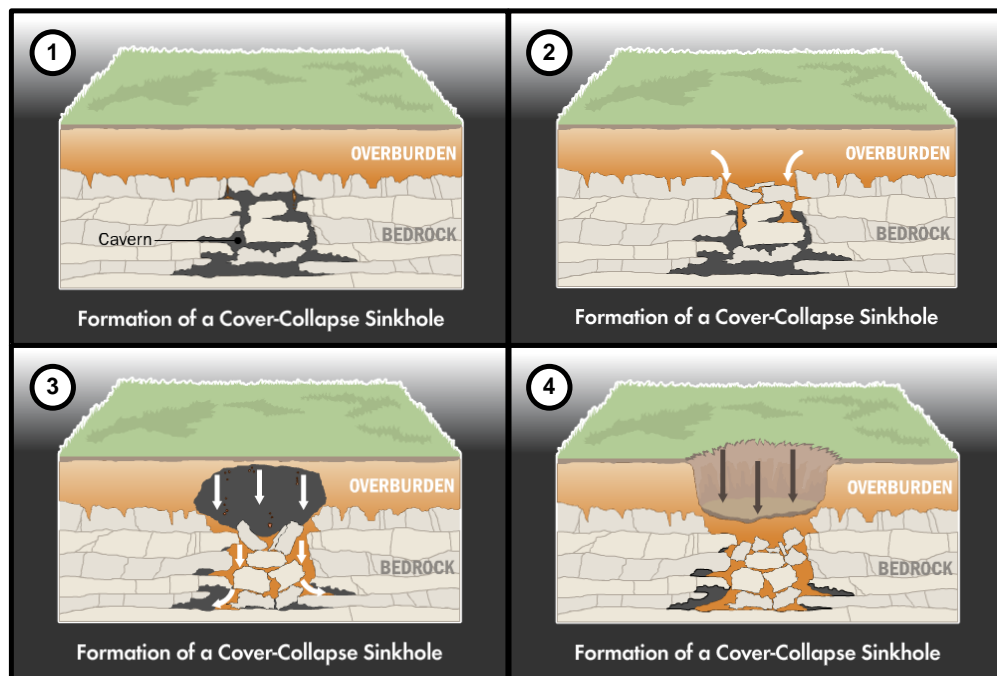


Figure 4.3.20.1: Formation of a Collapse Sinkhole¹²⁶

4.3.20.1 Location and Extent

Subsidence occurs naturally due to the physical and chemical weathering of certain types of bedrock (solid rock that underlies soil or other unconsolidated surface material). Subsidence can also occur as a result of underground mining, excessive pumping of groundwater, or subsurface

¹²⁶ Silverman, Jacob

erosion due to the failure of existing utility lines. All of these can produce surface features that appear similar, but not all are naturally occurring. Some are solely the result of human activities¹²⁷.

Figure 4.3.20.1.1 below shows a map of Pennsylvania indicating areas of sinkholes and surface depressions consistence with subsidence events. As one can see from this map, Franklin County has a significant portion (approximately 40%) of our land area susceptible to subsidence events. Almost every municipality has areas covered by the susceptible regions except for Lurgan Township and Orrstown Borough.

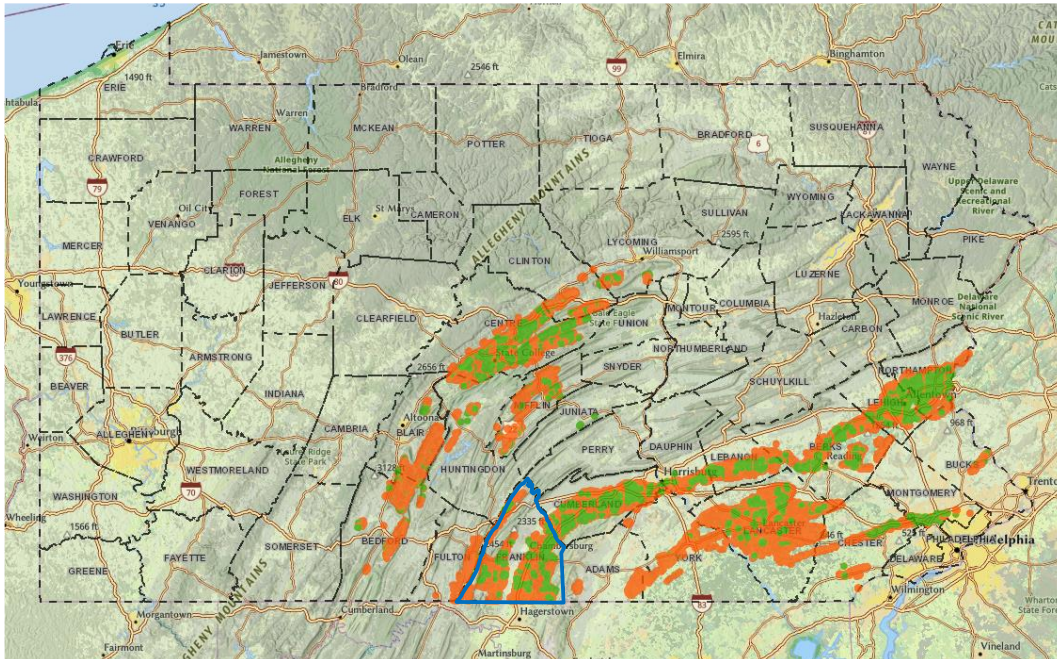


Figure 4.3.20.1.1: Areas of PA and Franklin County Susceptible to Subsidence (2023)¹²⁸

4.3.20.2 Range of Magnitude

Franklin County currently has no significant mining industry, but we were able to identify areas of the county impacted by surface mines in the past. Additionally, Franklin County does have considerable deposits of limestone that is utilized in several quarry operations. It is estimated that 32% of the land is considered limestone. Subsidence and sinkhole events can cause severe damage in urban environments, although gradual events can be addressed before significant damage occurs. If long-term subsidence or sinkhole formation is not recognized and mitigation measures are not implemented, fractures or complete collapse of building foundations and roadways may result. Therefore, we should be aware of the potential hazard of sinkholes.

There have been several incidences of sinkholes throughout the county. These incidents were for the most part minor and resulted in no loss of property or lives. **Figure 4.3.20.2.1** shows the geological make-up of Pennsylvania (highlight added for Franklin County). As can be seen from

¹²⁷ PA DCNR, 2015

¹²⁸ PA DCNR , PaGEODE 2023

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this map, Franklin County has rock formations from several Geologic Eras with distinct rock compositions (sandstone and limestone) which provide the right conditions for subsidence (See **Table 4.3.20.2.1** below).

Geologic Era	Age	Rock Formations
Devonian	365-405 Million yrs	Red sandstone , gray shale, black shale, limestone , and chert.
Ordovician	430-500 Million yrs	Shale, limestone , dolomite, and sandstone .
Cambrian	500-570 Million yrs	Limestone , dolomite, sandstone , shale, quartzite, and phyllite.
Precambrian	>570 Million yrs	Gneiss, granite, anorthosite, metabasalt, metarhyolite, and marble.

Table 4.3.20.2.1: Geologic Composition of Franklin County

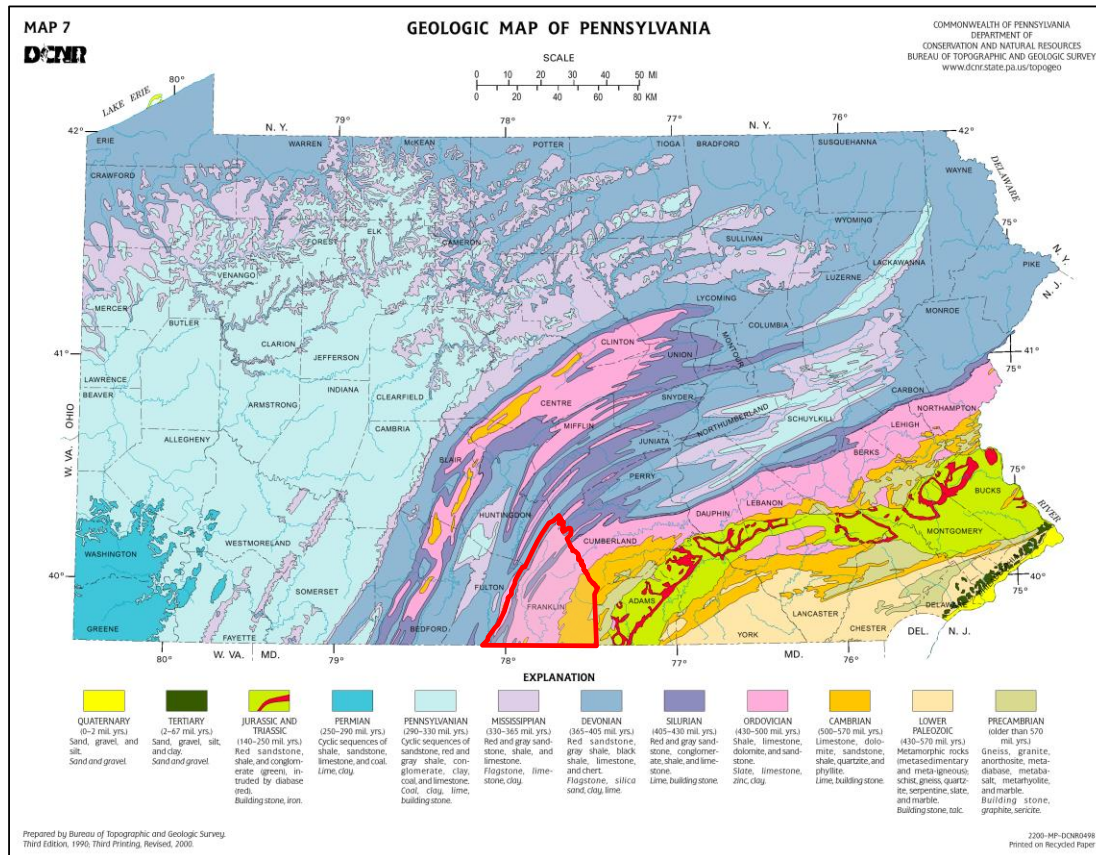


Figure 4.3.20.2.1: Geologic Map of Pennsylvania (2000)¹²⁹

4.3.20.3 Past Occurrence

We were able to get a data pull from the PA DCNR, Bureau of Topographic and Geologic Survey for Franklin County. This data contains the current recorded subsidence events for Franklin County to include mines, caves, sinkholes, and surface depressions. We specifically did

¹²⁹ DCNR, Bureau of Topographic and Geologic Survey, 2000

not try to analyze all of the data related to surface depressions as the total number recorded in Franklin County was in excess of 10,000. We did analyze the number and locations of surface mines (See **Figure 4.3.20.3.1**), caves (See **Figure 4.3.20.3.2**), and sinkholes (See **Figure 4.3.20.3.3**). These numbers and totals of subsidence events/features per municipality are listed in **Table 4.3.20.3.1** below.

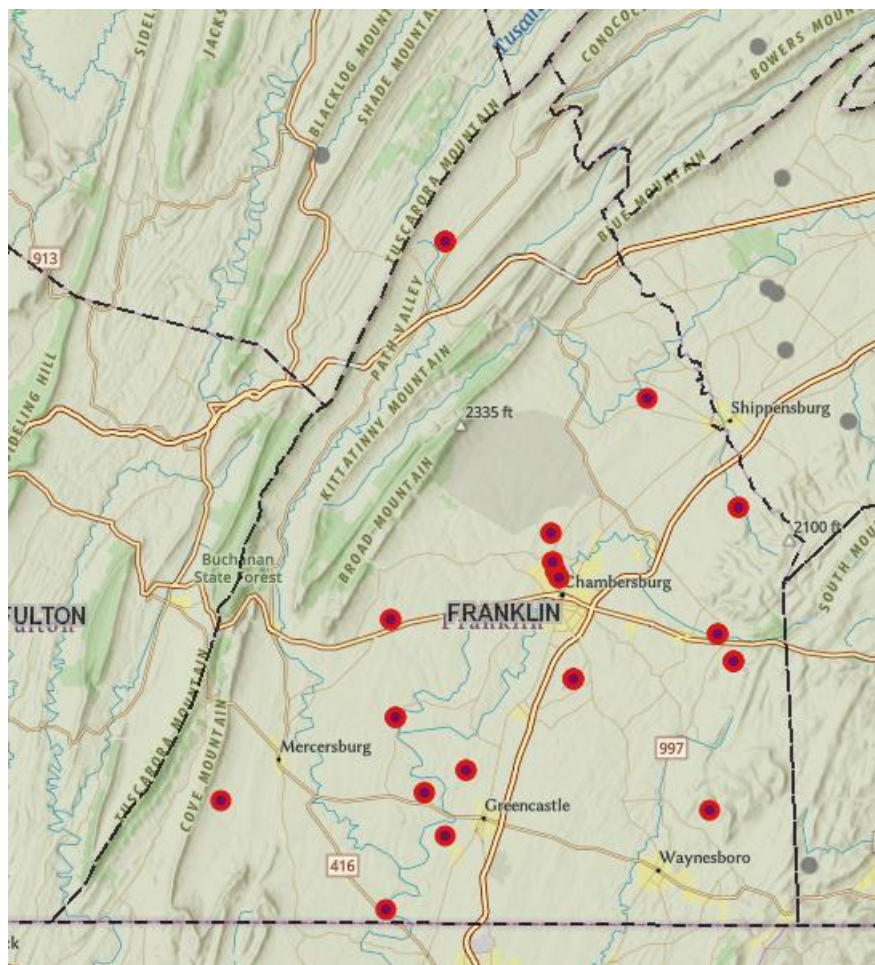


Figure 4.3.20.3.1: Location of Surface Mines in Franklin County (2023)¹³⁰

¹³⁰ PA DCNR , PaGEODE 2023

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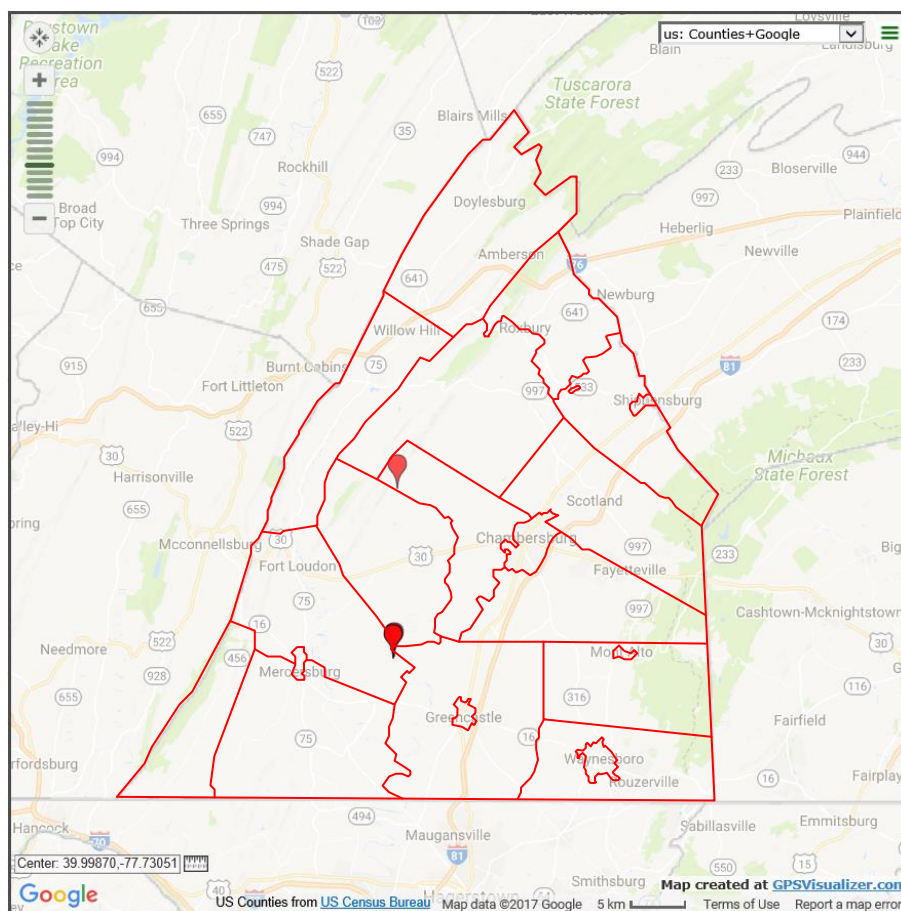


Figure 4.3.20.3.2: Location of Caves in Franklin County (2017)¹³¹

¹³¹ DCNR, Bureau of Topographic and Geologic Survey, 2017

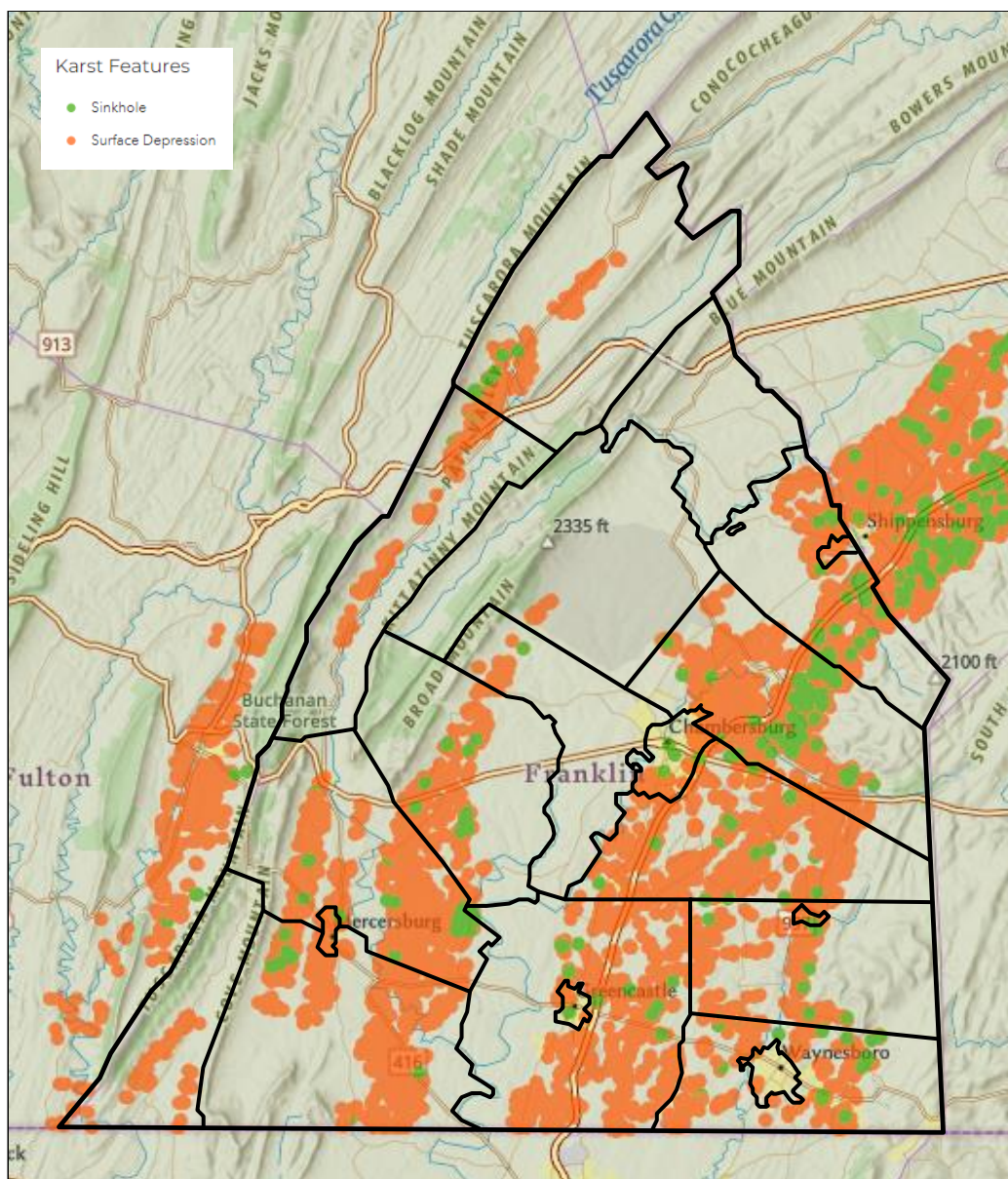


Figure 4.3.20.3.3: Location of Sinkholes in Franklin County (2023)¹³²

¹³² PA DCNR , PaGEODE 2023

Franklin County Hazard Mitigation Plan - 2023

Municipality	Sinkholes	Surface Mines	Caves	Totals
Antrim Township	9	1	0	10
Chambersburg Borough	0	0	0	0
Fannett Township	12	5	0	17
Greencastle Borough	0	0	0	0
Greene Township	94	9	0	103
Guilford Township	36	3	0	39
Hamilton Township	2	1	1	4
Letterkenny Township	0	5	0	5
Lurgan Township	0	0	0	0
Mercersburg Borough	0	0	0	0
Metal Township	4	0	0	4
Mont Alto Borough	0	0	0	0
Montgomery Township	12	2	0	14
Orrstown Borough	0	0	0	0
Peters Township	47	0	3	50
Quincy Township	0	3	0	3
Shippensburg Borough	0	0	0	0
Southampton Township	15	3	0	18
St Thomas Township	20	5	0	25
Warren Township	0	0	0	0
Washington Township	9	7	0	16
Waynesboro Borough	0	0	0	0
Totals	260	44	4	308

Table 4.3.20.3.1: Subsidence Events/Features Recorded in Franklin County (2023)¹³³

The data presented above illustrates the susceptibility of certain regions of our county to subsidence. Even though all municipalities do not show an event, it only means that events were not reported. These events often go unnoticed or unreported if there is no significant property damage.

4.3.20.4 Future Occurrence

Sinkhole occurrence is a continuing phenomenon and is fairly common in the carbonate areas of the Cumberland Valley, but the impact is relatively low based on past occurrences. However, as the rural areas of the county become increasingly developed due to more people moving out of

¹³³ DCNR, Dept of Conservation and Natural Resources, 2023

the Boroughs and into the Townships, the strain on underground aquifers will increase. This will pose an even greater threat for sinkholes in those areas resulting from groundwater depletion.

Based on geological conditions, subsidence events are likely to continue to occur in the future for the areas of the Cumberland Valley underlain by carbonate bedrock (See **Figure 4.3.20.2.1**) and experiencing increased development.

Social Equity

Socially vulnerable residents could be impacted by subsidence/sinkholes, especially those with limited mobility in the event of an evacuation. Those residents with limited economic means may be affected as well since they may be unable to purchase insurance or afford repairs.

Climate Change

Climate change is expected to increase both the annual rainfall amounts and the likelihood of flooding, which may increase sinkhole occurrence in those areas that are susceptible. These rain and flooding events may increase the intensity of subsidence incidents within those susceptible areas, but the affected areas are expected to stay within the karst areas identified in Figure 4.3.20.4.1 and not expand out into other areas of the county.

It is difficult to calculate financial losses for all existing buildings, critical facilities and infrastructure from potential sinkhole formations in the county. However, we have plotted the susceptibility area in our GIS mapping system to determine the number of critical facilities and infrastructure in each municipality that are at risk to this threat (See **Figure 4.3.20.4.1** and **Table 4.3.20.4.1**).

Franklin County Hazard Mitigation Plan - 2023

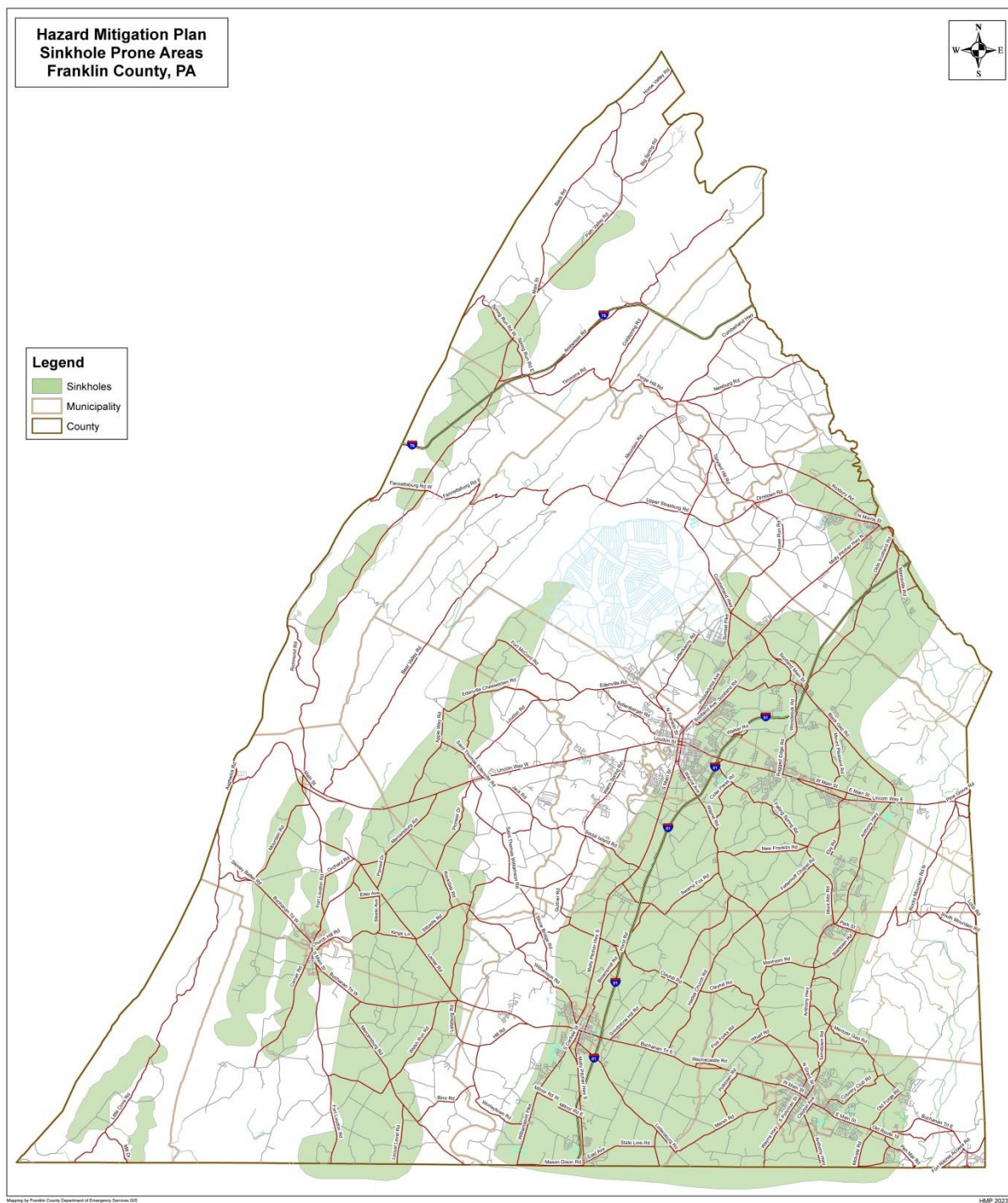


Figure 4.3.20.4.1: Areas of Susceptibility to Sinkholes in Franklin County (Mar 2023)

Franklin County Hazard Mitigation Plan - 2023

Municipality	Total Number of Critical Facilities	Critical Facilities in Risk Areas
Antrim Township	110	80
Chambersburg Borough	185	104
Fannett Township	33	7
Greencastle Borough	32	28
Greene Township	135	92
Guilford Township	110	105
Hamilton Township	52	5
Letterkenny Township	29	0
Lurgan Township	24	0
Mercersburg Borough	18	11
Metal Township	21	7
Mont Alto Borough	7	7
Montgomery Township	31	13
Orrstown Borough	1	0
Peters Township	34	16
Quincy Township	54	29
Shippensburg Borough	6	6
Southampton Township	46	28
St Thomas Township	32	8
Warren Township	4	0
Washington Township	65	46
Waynesboro Borough	64	57
Totals	1093	649

Table 4.3.20.4.1: Critical Facilities in Sinkhole Susceptible Areas by Municipality

From the information above, it is easily seen that the susceptibility area amounts to approximately 40% of the land area of Franklin County (See **Figure 4.3.20.1.1** above). Additionally, it is evident that we have several critical facilities and infrastructure in these susceptible areas that cause concern for this threat. Therefore, the future occurrence of subsidence and sinkholes is considered *possible* as defined by the Risk Factor Methodology probability criteria (refer to **Section 4.4**).

4.3.20.5 Vulnerability Assessment

Figure 4.3.20.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Subsidence/Sinkhole hazard. One can see that only 1 of 22 municipalities rated this threat as Catastrophic and 3 rated this threat as a Moderate event. This was ranked as the number 22 threat in Franklin County and is considered a Minor threat.

Franklin County Hazard Mitigation Plan - 2023


	Subsidence/Sinkhole Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	10.12%	0.1316
Chambersburg Borough	2	30%	2	30%	2	20%	4	10%	1	10%	2.1	14.05%	0.2951
Fannett Township	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	1.59%	0.0286
Greencastle Borough	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	2.73%	0.0437
Greene Township	4	30%	1	30%	1	20%	4	10%	1	10%	2.2	11.82%	0.2600
Guilford Township	3	30%	2	30%	1	20%	4	10%	1	10%	2.2	9.38%	0.2064
Hamilton Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	7.29%	0.1166
Letterkenny Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	1.58%	0.0205
Lurgan Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.42%	0.0156
Mercersburg Borough	2	30%	2	30%	1	20%	4	10%	1	10%	1.9	0.97%	0.0184
Metal Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	1.13%	0.0147
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.01%	0.0101
Montgomery Township	4	30%	2	30%	4	20%	4	10%	1	10%	3.1	3.68%	0.1141
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	2.86%	0.0372
Quincy Township	1	30%	1	30%	1	20%	3	10%	1	10%	1.2	3.41%	0.0409
Shippensburg Borough	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	0.75%	0.0120
Southampton Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	5.49%	0.0878
St Thomas Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	3.79%	0.0606
Warren Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	0.21%	0.0034
Washington Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	9.55%	0.1528
Waynesboro Borough	2	30%	2	30%	1	20%	4	10%	1	10%	1.9	7.02%	0.1334
Municipal Weighted Average Risk Factor (RF)													1.805

Figure 4.3.20.5.1: Municipal Subsidence/Sinkhole Threat Vulnerability Self-Assessment

From the information above, it can be said that the majority of communities in Franklin County are vulnerable on some level to the Subsidence/Sinkhole threat. However, the impact to lives and level of property damage for this threat has been negligible to date.

4.3.20.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Subsidence/Sinkholes are shown below. There is potential for possible impacts to five lifelines (Safety & Security, Food/Water/Shelter, Energy, Communications, and Transportation) and minimal impacts expected for the remaining lifelines.



Figure 4.3.20.6.1: Subsidence, Sinkhole Community Lifeline Integration

4.3.21 Terrorism

The term “terrorism” refers to intentional, criminal, malicious acts, but the functional definition of terrorism can be interpreted in many ways. Officially, terrorism is defined in the Code of Federal Regulations (CFR) as “...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives” (28 CFR §0.85). Terrorists use threats to create fear, to try to convince citizens of the powerlessness of their government, and/or to get publicity for their cause.

International terrorism: Perpetrated by individuals and/or groups inspired by or associated with designated foreign terrorist organizations or nations (state-sponsored). For example, the December 2, 2015 shooting in San Bernardino, CA, that killed 14 people and wounded 22 which involved a married couple who radicalized for some time prior to the attack and were inspired by multiple extremist ideologies and foreign terrorist organizations.

Domestic terrorism: Perpetrated by individuals and/or groups inspired by or associated with primarily U.S.-based movements that espouse extremist ideologies of a political, religious, social, racial, or environmental nature. For example, the June 8, 2014 Las Vegas shooting, during which two police officers inside a restaurant were killed in an ambush-style attack, which was committed by a married couple who held anti-government views and who intended to use the shooting to start a revolution¹³⁴.

4.3.21.1 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

¹³⁴ FBI

international, national, regional, or local importance. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, high-profile landmarks. Terrorists might also target large public gatherings and events indoor or outdoor, 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, religious or cultural agendas. Therefore, **all locations** are a potential terrorist target.

Of particular concern are the critical facilities in Franklin County. Police stations, hospitals, fire stations, schools, wastewater treatment plants, and a military installation (Letterkenny Army Depot) along with critical infrastructure such as bridges, tunnels, electric generation and distribution facilities, public water supplies, and government buildings may be potential terrorist targets. Damage to these facilities and infrastructure could cripple transportation routes and commerce. Additionally, there are 134 Superfund Amendments and Reauthorization Act (SARA) Title III facilities as well as many transportation routes vital to the entire Commonwealth traversing Franklin County, making intentional hazard material releases a potential threat to citizens and the environment.¹³⁵ For Terrorism, all of Franklin County has been identified as the hazard area. Therefore, all critical facilities, houses, population, and infrastructure as outlined in **Tables 2.4.3 and 2.4.5, Section 2** are vulnerable.

4.3.21.2 Range of Magnitude

Terrorist attacks can take many forms, including agro-terrorism, arson/incendiary attack, armed attack, assassination, biological agent, chemical agent, cyber-terrorism, conventional bomb, hijackings, intentional hazardous material release, kidnapping, nuclear bomb and radiological agent (FEMA April 2009). Explosives have been the traditional method of conducting terrorism, but intelligence suggests that the possibility of biological or chemical terrorism is increasing. The severity of terrorist incidents depends upon the method of attack, the proximity of the attack to people, animals, or other assets and the duration of exposure to the incident or attack device. For example, chemical agents are poisonous gases, liquids or solids that have toxic effects on people, animals, or plants. Many chemical agents can cause serious injuries or death. In this case, severity of injuries depends on the type and amount of the chemical agent used and the duration of exposure.

Biological agents are organisms or toxins that have illness-producing effects on people, livestock and crops. Some biological agents cannot 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.

In recent years, cyber-terrorism has become a larger threat than in years past. Cyber-terrorism can be defined as activities intended to damage, disrupt, or exploit vital computer systems.

¹³⁵ PEMA, 2018

These acts can range from taking control of a host website to using networked resources to directly cause destruction and harm. Protection of databases and infrastructure appear to be the main goals at this point in time. Cyber-terrorists can be difficult to identify because the internet provides a meeting place for individuals from various parts of the world. Individuals or groups planning a cyber-attack are not organized in a traditional manner, as they are able to effectively communicate over long distances without delay. The largest threat to institutions from cyber-terrorism comes from any processes that are networked and controlled via computer. Any vulnerability that could allow access to sensitive data or processes should be addressed and any possible measures taken to harden those resources to attack.

Active assailant, as defined by the US Department of Homeland Security, is an individual actively engaged in killing or attempting to kill people in a confined area; in most cases, active assailants use firearm(s) and there is no pattern or method to their selection of victims. Recent high-profile incidents involving active assailants include; the Sandy Hook Elementary school shootings in Newtown, Connecticut, the shooting in the Aurora, Colorado movie theater, Pulse Nightclub mass shooting in Orlando Florida, the deadliest mass shooting incident in U.S. history in Las Vegas, Nevada at the Mandalay Bay Resort and Casino, and the most recent mass shooting at the First Baptist Church in Sutherland Springs, Texas. Historical active assailant events include the 1982 Wilkes-Barre, Pennsylvania mass shootings, the Nickel Mines Pennsylvania hostage taking and shootings, the Virginia Tech shootings, the Columbine High School shootings, and the University of Texas, Austin shootings. No substantive research has yet been compiled to address the potential vulnerability to an active assailant incident. As a very open, public society, these incidents are easier to accomplish for those bent on doing harm. Some of these incidents have occurred in public places, and some in places that are considered more restricted (like elementary schools and high schools). There is no discernible pattern to the location chosen by the assailant.

Instances of terrorism in Franklin County have thankfully thus far been minimal. A worst-case scenario for a terrorism event in Franklin County would be if a “dirty bomb” combining radioactive material with conventional explosives were to be detonated at a large gathering of people at a large athletic event or a heavily attended school or community function. On the given day and specific location, a significant number of individuals would be exposed to the bomb’s radiation both at the time of detonation and after the fact as the radiation spread. The explosive device could damage or even topple buildings, spark utility outages area-wide, and/or ignite large-scale fires. Another potential lethal and injurious situation for terrorism in Franklin County is where a “known or lone wolf” individual rents or uses some type of vehicle and drives into a crowd or a group of people along a street or at some type of event. An incident of this depiction occurred on October 31, 2017 in Manhattan, New York City, where an individual drove a rental truck on a bike path and killed at least eight people while injuring 11 more. Another harmful scenario for Franklin County would be if the water or food supply is intentionally contaminated in an act of agro-terrorism. Franklin County ranks second in the state in many valuable agricultural commodities. Not only would this act of terrorism endanger the lives of people and livestock in the county, it would adversely affect the local economy¹³⁶.

¹³⁶ PEMA, 2018

4.3.21.3 Past Occurrence

There has been a high consciousness of terrorist activity in the press with few catastrophic events. The most significant terrorist attack on US soil occurred on September 11, 2001. Flight 93, the fourth hijacked aircraft in the attack, crashed in Somerset County, Pennsylvania. Another significant recent terrorist event was the detonation of a pair of homemade pressure cooker bombs at the finish line of the Boston Marathon. This event killed 3 people and injured a further 264 people¹³⁷.

Franklin County experienced a case of domestic terrorism between September 10 and 24, 2008. During this time frame there were 10 pipe bombing incidents in St. Thomas Township. Through a joint investigation conducted by the Pennsylvania State Police; the Bureau of Alcohol, Tobacco and Firearms; and the U.S. Postal Service Inspector Division, three local high school students were arrested and charged as juveniles with Possessing Weapons of Mass Destruction, Causing or Risking a Catastrophe, Recklessly Endangering Another Person, and Possession of Instruments of Crime from statutes found in the Pennsylvania Crimes Code. Fortunately, no one was seriously injured during this crime spree¹³⁸. **Table 4.3.21.3.1** illustrates the previously recorded events in Franklin County that can be categorized as Terrorist Activity.

Terrorist Activity Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Totals
Bomb Threat	4	2	2	0	2	4	2	1	0	6	23
Suspicious Activity	322	349	404	348	70	236	190	192	523	1119	3753
Suspicious Package	11	11	17	13	1	14	16	6	*	*	89
Terrorist Activity	1	2	2	0	0	0	0	0	0	0	5
Threats - Non-specified	202	212	258	235	230	216	291	354	345	645	2988
Totals	540	576	683	596	303	470	499	553	868	1770	6858

**As of 2021, the CAD system includes these reports with Suspicious Activity.*

Table 4.3.21.3.1: Threat/Suspected Terrorist Activity Events Reported in Franklin County (2013-2022)¹³⁹

4.3.21.4 Future Occurrence

Based on historical events, Franklin County and Pennsylvania can expect to experience terrorist incidents and suspicious activities sometime in the near future. Note that this estimate is based on the occurrence of past events over a short period of time and is not the result of detailed statistical sampling. Although previous events have not resulted in what are considered significant terrorist attacks, the severity of a future incident cannot be predicted with a sufficient level of certainty. Prediction of terrorist attacks is almost impossible because terrorism is a result

¹³⁷ PEMA, 2018

¹³⁸ The Herald Mail, 2008

¹³⁹ Franklin County CAD System, 2013-2022

of human factors. As long as fringe groups maintain radically different ideas than that of the government or general population, terrorism is a possibility¹⁴⁰.

Social Equity

In general, residents that live in more densely populated areas or work at facilities, landmarks, or other buildings of international, national, regional, or local importance will be more at risk during a terrorism incident. Since terrorists have a wide range of personal, political, religious or cultural agendas, many of our socially vulnerable residents may be at risk of a terrorism incident.

Climate Change

Climate change will not necessarily directly increase the risk of a terrorism incident in Franklin County.

4.3.21.5 Vulnerability Assessment

Figure 4.3.21.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Terrorism hazard. One can see that 5 of 22 municipalities rated this threat as a Major event. Of the remaining 17 municipalities, only 3 ranked this as a Moderate threat. This was ranked as the number 21 threat in Franklin County and is considered a Minor threat.

¹⁴⁰ PEMA, 2018

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	Terrorism Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	10.12%	0.1417
Chambersburg Borough	1	30%	1	30%	2	20%	2	10%	2	10%	1.4	14.05%	0.1967
Fannett Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.59%	0.0175
Greencastle Borough	2	30%	3	30%	4	20%	2	10%	2	10%	2.7	2.73%	0.0737
Greene Township	2	30%	2	30%	1	20%	4	10%	2	10%	2.0	11.82%	0.2364
Guilford Township	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	9.38%	0.2064
Hamilton Township	2	30%	1	30%	2	20%	4	10%	2	10%	1.9	7.29%	0.1385
Letterkenny Township	2	30%	3	30%	2	20%	4	10%	2	10%	2.5	1.58%	0.0395
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.0170
Mercersburg Borough	1	30%	4	30%	4	20%	4	10%	2	10%	2.9	0.97%	0.0281
Metal Township	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	1.13%	0.0181
Mont Alto Borough	1	30%	2	30%	2	20%	3	10%	2	10%	1.8	1.01%	0.0182
Montgomery Township	3	30%	2	30%	4	20%	4	10%	2	10%	2.9	3.68%	0.1067
Orstown Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	0.14%	0.0015
Peters Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	2.86%	0.0400
Quincy Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	3.41%	0.0375
Shippensburg Borough	1	30%	2	30%	2	20%	4	10%	2	10%	1.9	0.75%	0.0143
Southampton Township	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	5.49%	0.0604
St Thomas Township	2	30%	2	30%	1	20%	4	10%	2	10%	2.0	3.79%	0.0758
Warren Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	0.21%	0.0029
Washington Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	9.55%	0.1337
Waynesboro Borough	3	30%	2	30%	4	20%	4	10%	2	10%	2.9	7.02%	0.2036
Municipal Weighted Average Risk Factor (RF)													1.808

Figure 4.3.21.5.1: Municipal Terrorism Threat Vulnerability Self-Assessment

All communities in Franklin County are vulnerable on some level, directly or indirectly, to a terrorist attack. However, communities where the previously mentioned potential targets are located should be considered more vulnerable. Larger populated areas are the most vulnerable to terrorist attacks due to the sheer size of these areas, density of the population, and concentration of critical infrastructure located there.

4.3.21.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Terrorism are shown below. There is potential for significant impacts to five lifelines (Safety & Security, Health & Medical, Energy, Communications, and Transportation) and possible impacts expected for the remaining lifelines.



Figure 4.3.21.6.1: Terrorism Community Lifeline Integration

4.3.22 Tornado, Windstorm

A tornado is a violently rotating column of air extending from the base of a thunderstorm down to the ground. Tornadoes are capable of completely destroying well-made structures, uprooting trees, and hurling objects through the air like deadly missiles. Tornadoes can occur at any time of day or night and at any time of the year. Although tornadoes are most common in the Central Plains and the southeastern United States, they have been reported in all 50 states¹⁴¹. Wind speeds in tornadoes can range from 65 to over 200 mph. Although tornadoes occur in many parts of the world, these destructive forces of nature are found most frequently in the United States east of the Rocky Mountains during the Spring and Summer seasons. Tornadoes are most frequent during late afternoon into early evening, the warmest hours of the day.

Straight-line winds and windstorms are experienced on a more region-wide scale. While such winds usually accompany tornadoes, straight-line winds are caused by the movement of air from areas of higher pressure to areas of low pressure. Stronger winds are the result of greater differences in pressure. Windstorms are generally defined with sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.

4.3.22.1 Location and Extent

Both tornado and windstorm events can occur throughout Pennsylvania. Tornado events are usually localized. However, severe thunderstorms may result in conditions favorable to the formation of numerous or long-lived tornadoes. 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 or less, are approximately 250 feet across, and travel a few miles before dissipating. Some attain wind speeds of more than 300 mph, stretch more than a mile across, and stay on the ground for dozens of miles. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times. According to FEMA's National Risk Index, the entire county has a relatively low risk for tornadoes, with no municipalities being at an increased risk as compared to the others.

Wind events can vary in spatial size from small micro-scale events which take place over only a few hundred meters to large-scale synoptic wind events often associated with warm or cold fronts. These events can affect all of our municipalities, but are often localized.

¹⁴¹ NOAA/NWS

4.3.22.2 Range of Magnitude

Tornadoes cause an average of 70 fatalities and 1,500 injuries in the United States each year¹⁴². There are regions of the United States that have a higher level of tornado activity, such as Tornado Alley in the Mid-West, but all areas of the country are susceptible to them, including Franklin County.

Tornadoes vary in size and severity and were measured by the Fujita Scale until February 2007. At that time, the scale was retooled to allow for a better indicator of damage from the storms. This new scale is called the Enhanced Fujita Scale. **Figure 4.3.19.2.1** shows both scales. The Fujita scale is included because the historical tornado events for Franklin County can be reported using either scale, depending on when they occurred.

Fujita Scale		Enhanced Fujita Scale* * In use since 2007	
F-0	40–72 mph winds	EF-0	65–85 mph winds
F-1	73–112 mph	EF-1	86–110 mph
F-2	113–157 mph	EF-2	111–135 mph
F-3	158–206 mph	EF-3	136–165 mph
F-4	207–260 mph	EF-4	166–200 mph
F-5	261–318 mph	EF-5	>200 mph

Figure 4.3.22.2.1: Fujita and Enhanced Fujita Scales

There are two types of alerts for tornado activity, they are defined below:

- **Tornado Watch:** Tornadoes are possible, be prepared. Weather conditions favor thunderstorms capable of producing tornadoes in and near the defined watch area.
- **Tornado Warning:** Tornadoes are expected, seek shelter. A tornado is occurring or will shortly develop in or near the defined watch area.

Pennsylvania averages 12 tornadoes per year, resulting in an average of 1 fatality. Counties in a high risk tornado area include York County, Lancaster County, and Dauphin County (all part of the South Central Task Force Region that includes Franklin County). The largest tornado on record in this region occurred on 05/31/1985, measuring an F4 on the Fujita-Pearson scale¹⁴³.

4.3.22.3 Past Occurrence

Franklin County has experienced 13 recorded tornado events on 10 separate days since 1950¹⁴⁴. **Figure 4.3.22.3.1** shows a map of these tornado events in Franklin County since 1950.

¹⁴² Missouri Storm Aware

¹⁴³ Homefacts

¹⁴⁴ NOAA/NCEI

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Table 4.3.22.3.1 below lists these events with the deaths, injuries, and property damage assessed for each storm.

#	Location	Municipality	Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
1	Grindstone Hill	Guilford Township	5/27/2022	1045	EF0	0	0	\$70,000	\$0
2	Lemasters	Peters Township	4/19/2019	1810	EF2	0	0	\$100,000	\$0
3	Milnor	Antrim Township	8/26/2012	1256	EF0	0	0	\$10,000	\$1,500
4	Zumbro	Guilford Township	5/26/2011	1710	EF1	0	0	\$10,000	\$0
5	Chambersburg	Greene Township	9/17/2004	1918	F1	0	0	\$0	\$0
6	St Thomas	Peters Township	9/17/2004	1828	F1	0	0	\$0	\$0
7	Greencastle	Antrim Township	9/17/2004	1814	F1	0	0	\$0	\$0
8	Shippensburg	Shippensburg Borough	7/30/1996	1830	F1	0	0	\$0	\$0
9	Waynesboro	Waynesboro Borough	7/19/1996	1330	F1	0	0	\$0	\$0
10	Pond Bank	Guilford Township	4/30/1994	2010	F2	0	2	\$500,000	\$0
11	Greencastle	Antrim Township	4/30/1994	2000	F1	0	0	\$50,000	\$0
12	Lemasters	Peters Township	6/19/1992	1120	F0	0	0	\$25,000	\$0
13	Mont Alto	Quincy Township	6/20/1989	1756	F1	0	0	\$25,000	\$0
14	Scotland	Greene Township	3/21/1976	1050	F0	0	0	\$2,500	\$0
15	Fayetteville	Greene Township	7/29/1974	1900	F1	0	0	\$25,000	\$0
Totals						0	2	\$817,500	\$1,500

Table 4.3.22.3.1: List of Tornado Events in Franklin County (1950-2022)

Franklin County has experienced 252 recorded High Wind/Thunderstorm Wind events on 188 separate days since 1950¹⁴⁵. **Table 4.3.22.3.2** shows the municipalities where these events occurred in Franklin County since 1950.

¹⁴⁵ NOAA/NCEI

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Municipality	# of Events	Deaths	Injuries	Property Damage	Crop Damage
Antrim Township	22	0	0	\$85,000	\$0
Chambersburg Borough	28	0	1	\$120,500	\$0
Fannett Township	11	0	0	\$26,000	\$0
Greencastle Borough	13	0	0	\$22,500	\$0
Greene Township	17	0	0	\$627,500	\$0
Guilford Township	27	0	0	\$51,000	\$0
Hamilton Township	38	0	0	\$78,500	\$0
Letterkenny Township	10	0	0	\$51,000	\$0
Lurgan Township	6	0	0	\$10,000	\$0
Mercersburg Borough	21	0	0	\$35,500	\$0
Metal Township	5	0	0	\$9,000	\$0
Mont Alto Borough	2	0	0	\$6,000	\$0
Montgomery Township	3	0	0	\$10,000	\$0
Orrstown Borough	1	0	0	\$6,000	\$0
Peters Township	5	0	0	\$22,000	\$0
Quincy Township	13	0	0	\$18,000	\$0
Shippensburg Borough	5	0	0	\$17,000	\$0
Southampton Township	2	0	0	\$0	\$0
St Thomas Township	7	0	0	\$32,500	\$0
Warren Township	3	0	0	\$9,000	\$0
Washington Township	17	0	0	\$45,500	\$0
Waynesboro Borough	26	0	0	\$30,000	\$0
Countywide Events	16	1	0	\$58,450	\$4,000
Totals	254	1	1	\$1,076,950	\$4,000

Table 4.3.22.3.2: Roll-up of Thunderstorm Wind and High Wind Events in Franklin County (1950-2022)¹⁴⁶

¹⁴⁶ NOAA/NCEI

4.3.22.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for Tornado using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Tornado is classified as Relatively Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Low as compared to other communities in the United States. The risk for a Wind event is slightly higher, with the Expected Annual Loss for Wind classified as Relatively Moderate, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Moderate as compared to other communities in the United States. Socially vulnerable populations could be impacted by tornadoes, but the people who will be most impacted by hail are our farmers. All farms in the county would be at risk to experience negative effects on crop yields and pasture productivity. A large storm could result in huge financial losses across the county. Those people at greatest physical risk would be those that are unable to seek shelter during a tornado, such as those experiencing homelessness, people who work outdoors or those that are walking or cycling. Tornadoes may cause damage to homes or cars, and those people with limited economic means or lacking insurance coverage to address damage could be most affected by a tornado event.

While the chance of being hit by a tornado is small, the damage that results when the tornado arrives is devastating. An EF4 tornado can have wind velocities of 200 mph, resulting in a force of more than 100 pounds per square foot of surface area. This is a "wind load" that exceeds the design limits of most buildings. Unlike some hazards, tornadoes are not specific to select parts of the county. Rather, a tornado could strike any part of the county, and at any time, and could cause as much or as little damage as possible for the given magnitude event.

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would also make it more likely for the county to have an increased risk for storms that contain tornadoes. This increased risk would result in increased tornado intensity and duration across the entire county.

Based on tornado activity in Pennsylvania between 1950 and 2022, most of Franklin County has experienced within the area of 15 tornado events, all in the F0/EF0, F1/EF1, and F2/EF2 ranges (See **Table 4.3.22.3.1 above**). This equates to roughly 1 tornado every 4.8 years.

Climate Change

Based on the Tornado and Windstorm event history of Franklin County, the future occurrences of tornadoes and/or windstorms should be considered *highly likely* as defined by the Risk Factor ranking probability criteria (See **Section 4.4**).

4.3.22.5 Vulnerability Assessment

Based on all the information available, every community in Franklin County is equally vulnerable to the direct impacts of Tornadoes and Windstorms. For Tornadoes and Windstorms, all of Franklin County has been identified as the hazard area. Therefore, all critical facilities, houses, population, and infrastructure as outlined in **Tables 2.4.3 and 2.4.5, Section 2** are vulnerable.

Figure 4.3.22.5.1 lists the vulnerability self-assessments of each of the Franklin County municipalities for the Tornado and Windstorm hazard. One can see that 7 of 22 municipalities rated this threat as a Major event. Furthermore, 7 of the remaining 15 municipalities have it ranked as a Moderate threat. This is a Moderate threat ranked number 6 highest for Franklin County and will garner significant attention during the Mitigation Strategy in **Section 6**.

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	Tornado/Windstorm Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	3	30%	4	20%	3	10%	1	10%	2.7	10.12%	0.2732
Chambersburg Borough	2	30%	3	30%	3	20%	2	10%	1	10%	2.4	14.05%	0.3372
Fannett Township	3	30%	2	30%	3	20%	4	10%	1	10%	2.6	1.59%	0.0413
Greencastle Borough	3	30%	3	30%	3	20%	2	10%	1	10%	2.7	2.73%	0.0737
Greene Township	3	30%	2	30%	2	20%	4	10%	1	10%	2.4	11.82%	0.2837
Guilford Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	9.38%	0.2157
Hamilton Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	7.29%	0.1677
Letterkenny Township	2	30%	2	30%	2	20%	3	10%	1	10%	2.0	1.58%	0.0316
Lurgan Township	1	30%	1	30%	1	20%	3	10%	1	10%	1.2	1.42%	0.0170
Mercersburg Borough	2	30%	3	30%	4	20%	4	10%	1	10%	2.8	0.97%	0.0272
Metal Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.13%	0.0124
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.01%	0.0101
Montgomery Township	2	30%	2	30%	2	20%	4	10%	1	10%	2.1	3.68%	0.0773
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	2	30%	2	30%	1	20%	3	10%	1	10%	1.8	3.41%	0.0614
Shippensburg Borough	4	30%	2	30%	2	20%	3	10%	1	10%	2.6	0.75%	0.0195
Southampton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	5.49%	0.0714
St Thomas Township	4	30%	2	30%	2	20%	4	10%	1	10%	2.7	3.79%	0.1023
Warren Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	0.21%	0.0048
Washington Township	2	30%	2	30%	1	20%	4	10%	1	10%	1.9	9.55%	0.1815
Waynesboro Borough	4	30%	2	30%	2	20%	4	10%	1	10%	2.7	7.02%	0.1895
Municipal Weighted Average Risk Factor (RF)													2.246

Figure 4.3.22.5.1: Municipal Tornado/Windstorm Threat Vulnerability Self-Assessment

Windstorm events related to Thunderstorms and High Winds are more common in Franklin County than are tornadoes, but the impacts to life and property of these events tends to be much smaller and localized. Combined there have been 269 Tornado and Windstorm events in Franklin County since 1950. Fortunately, the impacts to life have been relatively small with only 1 death and 3 injuries. On the other hand, property and crop damages have been significant, with \$1,894,450 in property damages and \$5,500 in crop damages.

Tornadoes and Windstorms will occur again in Franklin County and mitigation plans will have to be crafted to reduce the threat to life and property of our citizens.

4.3.22.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for Tornado are shown below. There is potential for significant impacts to three lifelines (Safety & Security, Food/Water/Shelter, & Energy) and possible impacts expected for the remaining lifelines.

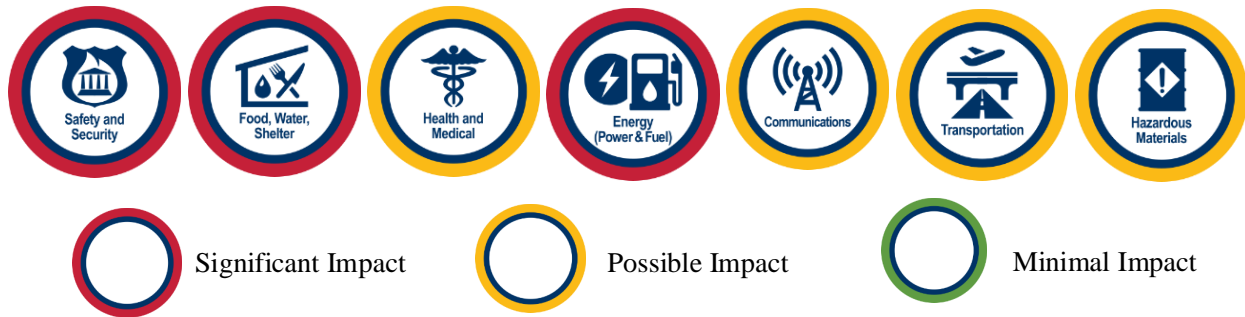


Figure 4.3.22.6.1: Tornado/Windstorm Community Lifeline Integration

4.3.23 Transportation Accident

Transportation hazards can include, but are not limited to: hazardous materials in transit, vehicular accidents, aviation accidents, and at-grade railroad crossings and roadways vulnerable to floods. For the purposes of this plan, transportation accidents are defined as incidents involving highway, rail, and air travel.

4.3.23.1 Location and Extent

Within Franklin County, there are over 1,700 miles of roads and streets, over 400 bridges, 2 intermodal terminals, 1 airport, and about 149 miles of railways. Primary key routes move traffic and goods in and out of Franklin County. The following routes are considered primary key routes: I-81, I-76, US Route 30, US Route 11, and PA 16. Secondary key routes typically move traffic and goods within Franklin County. The following routes are considered secondary key routes: PA 997, PA 316, PA 75, PA 416, PA 433, PA 696, PA 641 and PA 533. **Figure 4.3.23.1.1** identifies where these key secondary routes intersect. **Figure 4.3.23.1.2** shows where these intersections are in the county that can be high accident areas or choke points for evacuations.

SR	997	641	533	433	416	316	233	75	30	16	11
11	X		X	X		X			X	X	
16	X					X		X			
30	X				X		X	X			
75		X	X		X						
233	X										
316											
416											
433			X								
533	X										
641	X										
997											

Figure 4.3.23.1.1: Secondary Route Intersections in Franklin County

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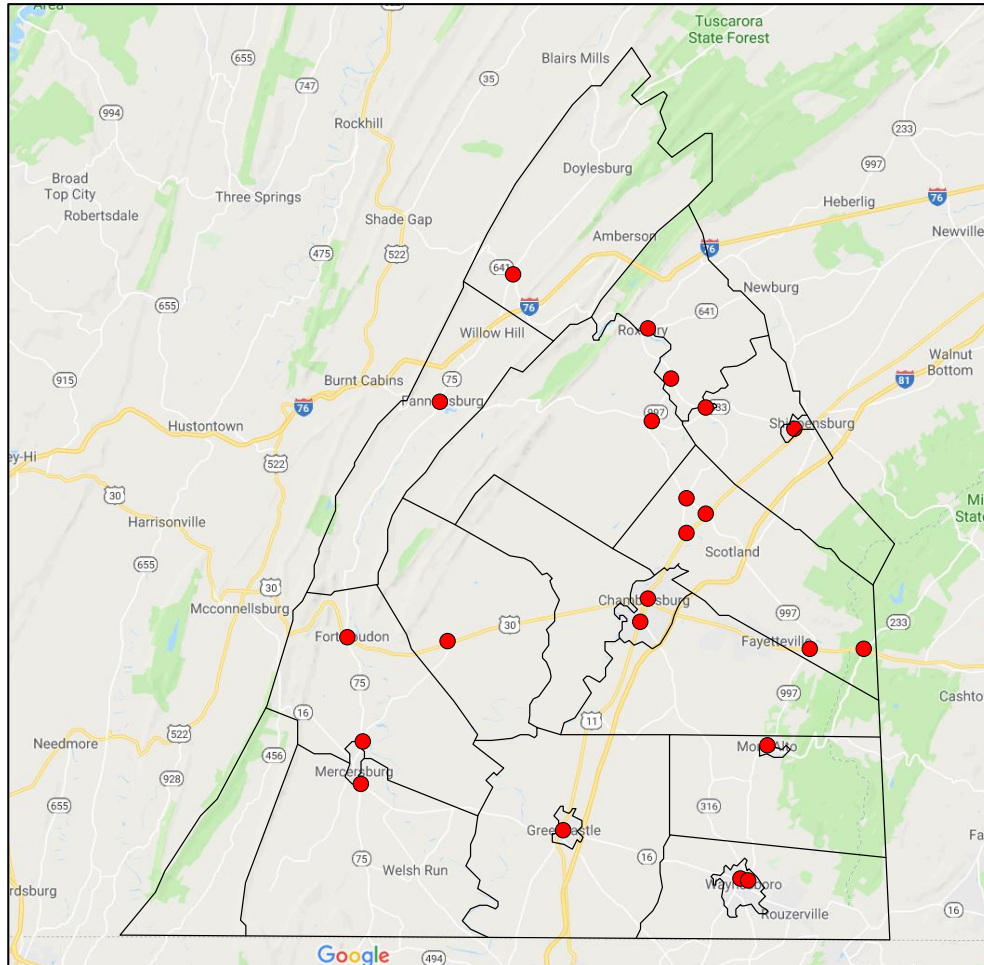


Figure 4.3.23.1.2: Locations of Key Secondary Route Intersections

Railroad Lines:

The county has two main railroad lines within its borders: Norfolk Southern Railroad Line and CSX Railroad Line. The Norfolk Southern Railroad line runs along the center of Franklin County paralleling US Route 11 and I-81. The Norfolk Southern Railroad transverses through the following municipalities: Shippensburg Borough, Southampton Township, Greene Township, Chambersburg Borough, Guilford Township, Antrim Township, and Greencastle Borough. This railroad line utilizes a combination of at-grade crossing, and above and under grade road/street crossings. Out of the two aforementioned railroad lines, Norfolk Southern Railroad Line is built through densely populated areas in Franklin County. **Figure 4.3.23.1.3** depicts our railroad system.

Intermodal Terminals:

The county has 2 intermodal (railroad) terminals. One owned by Norfolk Southern in Antrim Township and the second owned by CSX in Guilford Township. Millions of goods enter or exit these 2 terminals by railcar or truck/tractor trailer thus creating additional usage on the road system and railroad line system (see **Figure 4.3.23.1.3** for a map showing the Franklin County Rail System and Intermodal Facilities).

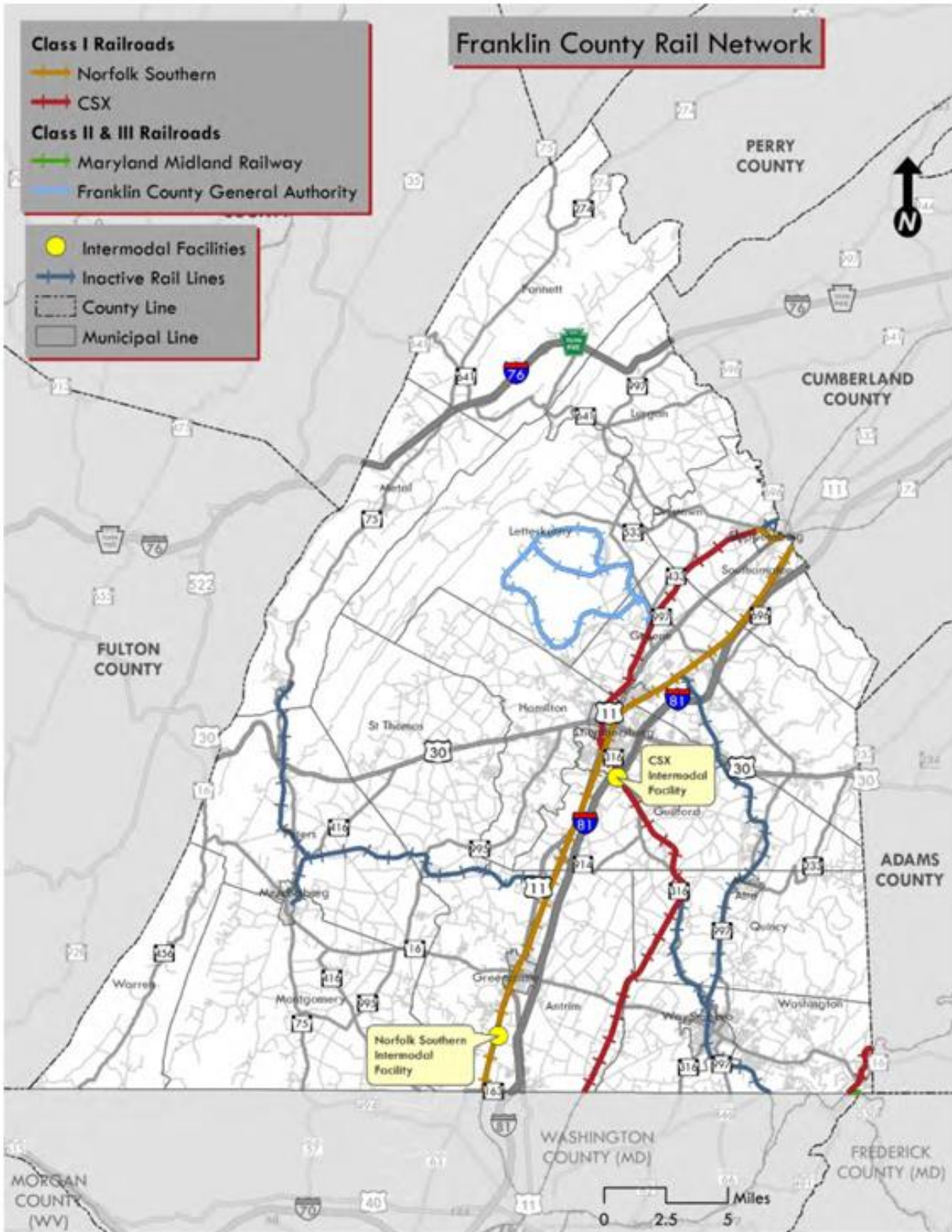


Figure 4.3.23.13: Franklin County Rail Network¹⁴⁷

¹⁴⁷ PennDOT, 2020

Aviation:

The county has 1 publicly owned airport, the Franklin County Regional Airport (FCRA). Its governing authority is the Susquehanna Area Regional Airport Authority (SARAA). SARAA, in addition to the FCRA (formally known as the Chambersburg Municipal Airport) is in control of the Harrisburg International Airport, Capital City Airport, and the Gettysburg Regional Airport. SARAA's website notes that *"FCRA hosts approximately 10,000 operations each year including recreational flying, agricultural spraying, corporate and business flying, aerial inspections and various community events"*¹⁴⁸. SARAA's website also notes that *"FCRA is home to the only full-service skydiving center in South Central Pennsylvania."* FCRA is located 2-3 miles north of the Borough of Chambersburg and just south of Letterkenny Army Depot. FCRA is generally located near agricultural fields (abutting land use), single family countryside homes, and a suburban style housing development. Due to the county's proximity to Harrisburg International Airport, Capital City Airport, PA Air National Guard (in Middletown, PA and Fort Indiantown Gap, PA), 167th Airlift Wing (West Virginia Air National Guard in Martinsburg, WV), and the Hagerstown-Washington County Regional Airport, the county's airspace is frequently visited by larger aircraft for multiple purposes including commercial and military training. A five-mile radius area around each airport could be considered a high-risk area since most aviation incidents occur near land or take-off sites. Air traffic flyovers present the possibility of injury, damage to structures, and fire, if an aircraft were to crash. For more information regarding aviation in Franklin County, please view the Franklin County Long-Range Transportation Plan

(<https://franklincountypa.gov/ckeditor/files/files/Planning/FCMPO/FranklinCountyLRTP%202018.pdf>). **Figure 4.3.23.1.4** depicts the location of FCRA and nearby aviation facilities with the 5, 10, and 20 mile radii annotated. **Figure 4.3.23.1.5** is a closer view of the Franklin County Regional Airport (FCRA).

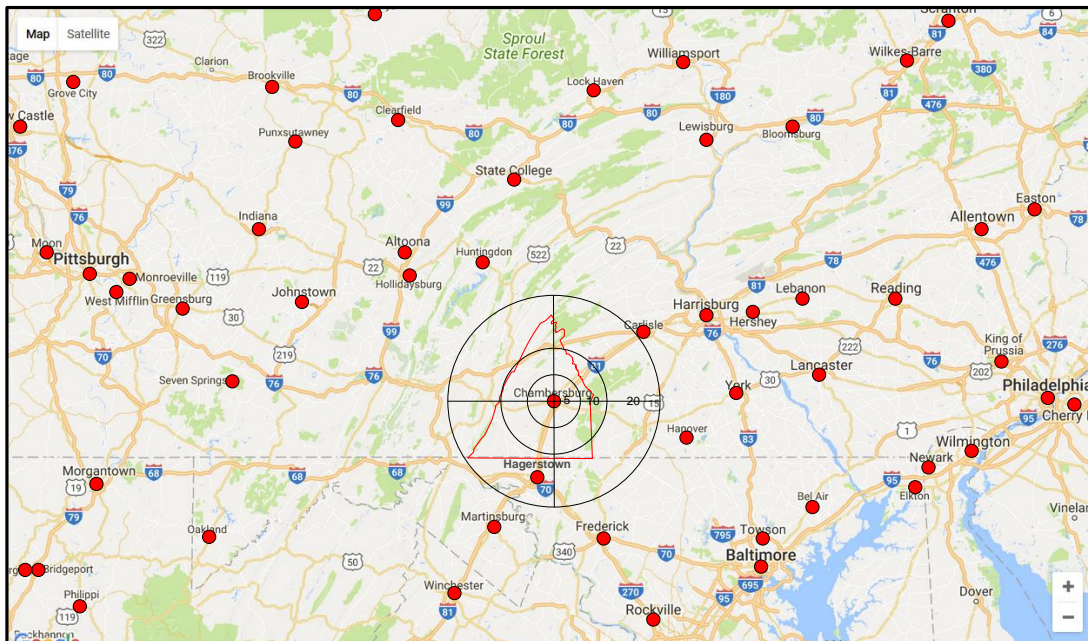


Figure 4.3.23.1.4: Location of FCRA and Nearby Public Airports in Franklin County

¹⁴⁸ Harrisburg International Airport

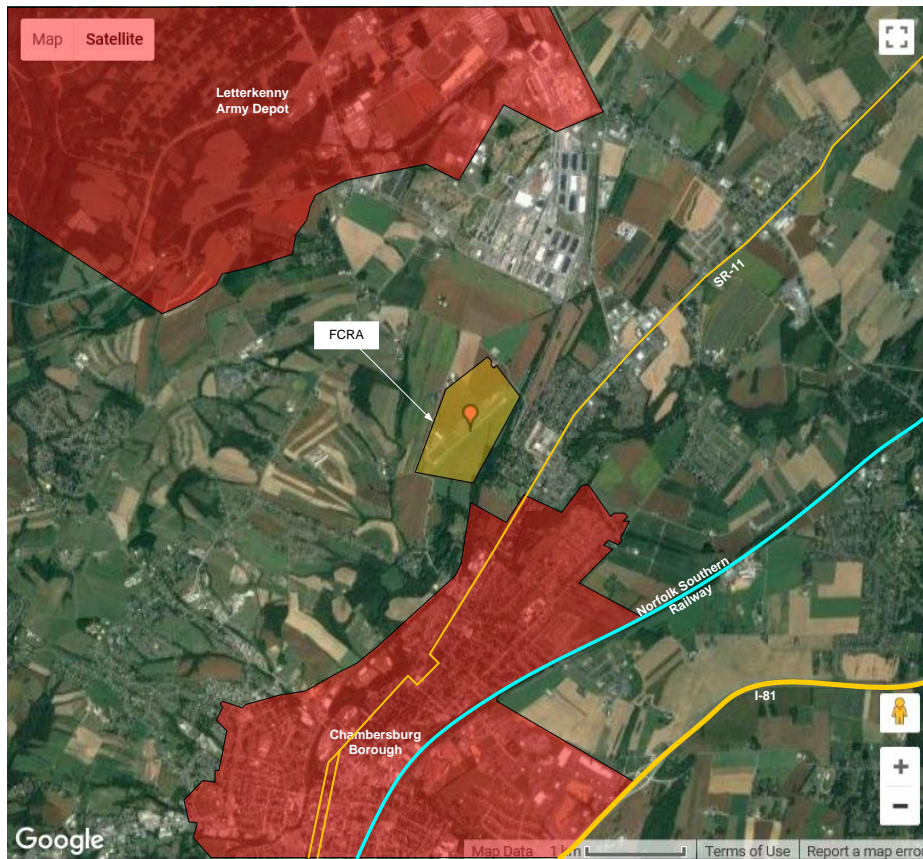


Figure 4.3.23.1.5: Franklin County Regional Airport (FCRA)

The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) are the agencies responsible for monitoring air travel and investigation accidents. Some of the most common causes of aviation accidents occur as a result of violations of FAA and NTSB regulations. Some other causes of accidents include, but are not limited to:

- Pilot or flight crew errors – Pilot errors are the number one cause of aviation accidents and account for the highest number of fatalities. Pilots have the responsibility to transport passengers safely from one place to another and follow the FAA and NTSB regulations to better ensure passenger safety. If a pilot or flight crew makes an error, an accident may occur.
- Faulty equipment – Faulty aircraft equipment or mechanical features are another common cause of an aviation accident.
- Aircraft design flaws – The manufacturer of an aircraft is responsible for an aviation accident if the structural design is flawed and results in an accident.
- Failure to properly fuel or maintain the aircraft – If any regulations and safety standards set by the FAA or NTSB are violated, an accident may occur.
- Negligence of Federal Air Traffic Controllers – The failure of air traffic controllers to properly monitor the airways is another cause of aviation accidents (Aviation Law News, Date Unknown).

Highway and Bridge:

Franklin County's (2018) Long-Range Transportation Plan (LRTP) notes that the county's highway network includes the Pennsylvania Turnpike (I-76), I-81, 15 state routes, 2 US Routes (11 and 30), and more than 100 local roads. Based on mileage, local roads represent the majority of the system (62.4%), however, only 13% percent of the daily vehicle miles traveled (DVMT) in Franklin County are on local roads. The majority of travel occurs on I-76 and I-81, which traverse the county. These 2 routes accommodate 38% of the county's DVMT, but only account for 2% of roadway mileage in the county. The LRTP also describes the bridge system in Franklin County: There are a total of 437 state- and locally-owned bridges in Franklin County. The PennDOT Bridge Management System (BMS) identifies 323 bridges greater than 8 feet in length on the state-owned network. Nine and one-half (9.5) percent of the bridges greater than 8 feet in length are structurally deficient. On the locally-owned network there are 114 bridges that are greater than or equal to 20 feet in length, of which, 13.4% are structurally deficient. An unknown number of local bridges with a total length of less than 20 feet are also located throughout the county.

From State Line, PA to Shippensburg, PA (Southampton Township), Franklin County has 9 existing and 1 planned (future) interchange with I-81 as well as 2 interchanges with I-76. However, the majority of the average daily traffic occurs on I-81, US 11, US 30 and SR (PA) 16.

The highway and bridge system also includes traffic signals. The county's traffic signal system contains a total of 123 traffic signals. Eighty-nine (89) percent of these traffic signals are concentrated in and around Chambersburg Borough and along Route 16 in the Boroughs of Greencastle and Waynesboro. Chambersburg Borough accounts for 40% of the signals in the county's system, with a total of 50 signals within its jurisdiction.

The LRTP notes that 72 state owned bridges greater than 8 feet within Franklin County are structurally deficient or functionally obsolete. Of the 127 locally-owned bridges with a total length greater than 20 feet, 13% (17 bridges) are structurally deficient (SD) and 17% (21 bridges) are functionally obsolete (FO). Nine (9) local bridges are posted for weight restrictions. Refer to **Figure 4.3.23.1.6** below for a map showing for Franklin County's structurally deficient and functionally obsolete bridges.

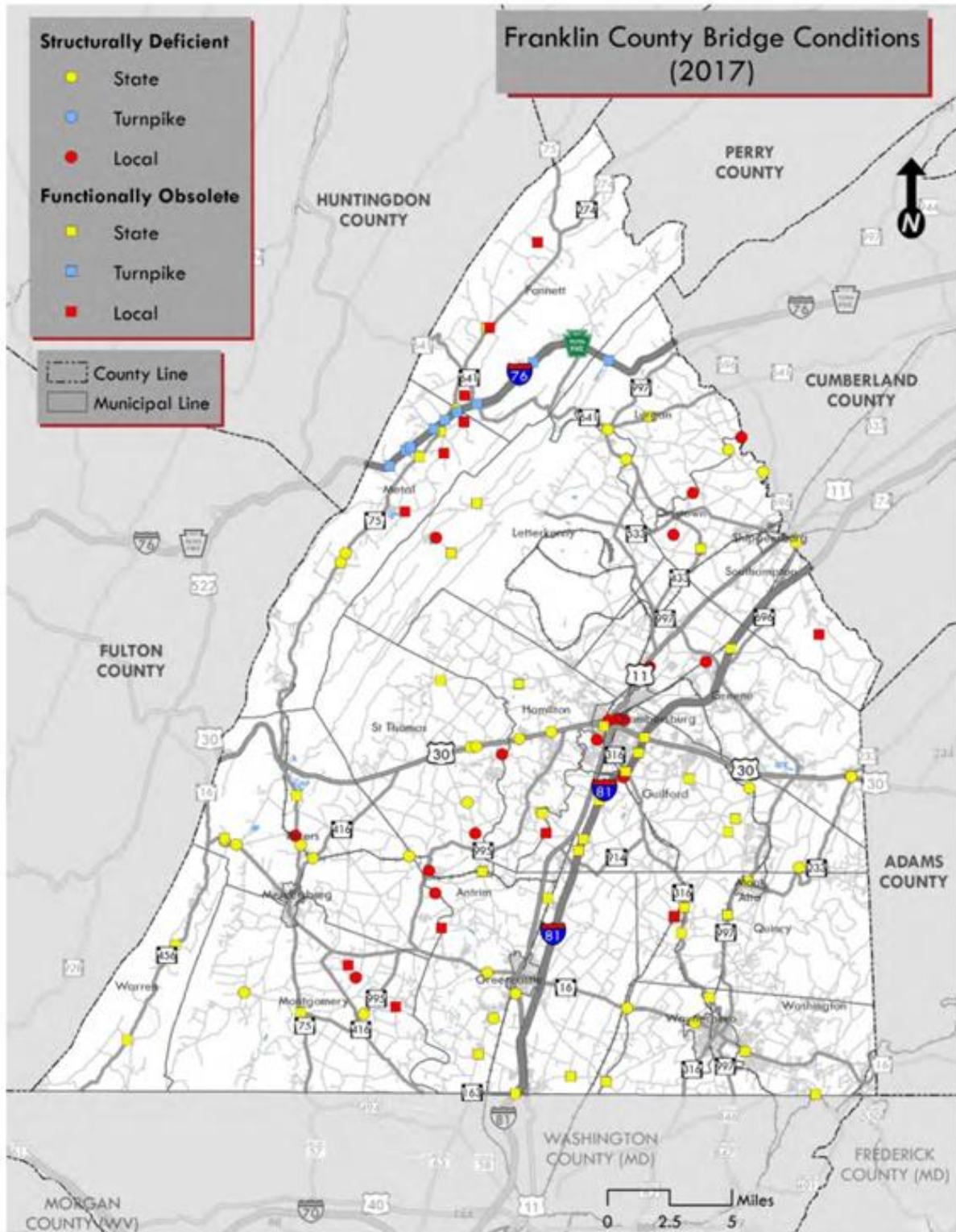


Figure 4.3.23.1.6: Structurally Deficient & Functionally Obsolete Bridges¹⁴⁹

Figure 4.3.23.1.7 depicts the county's highway system.

¹⁴⁹ Franklin County Long-Range Transportation Plan, 2018

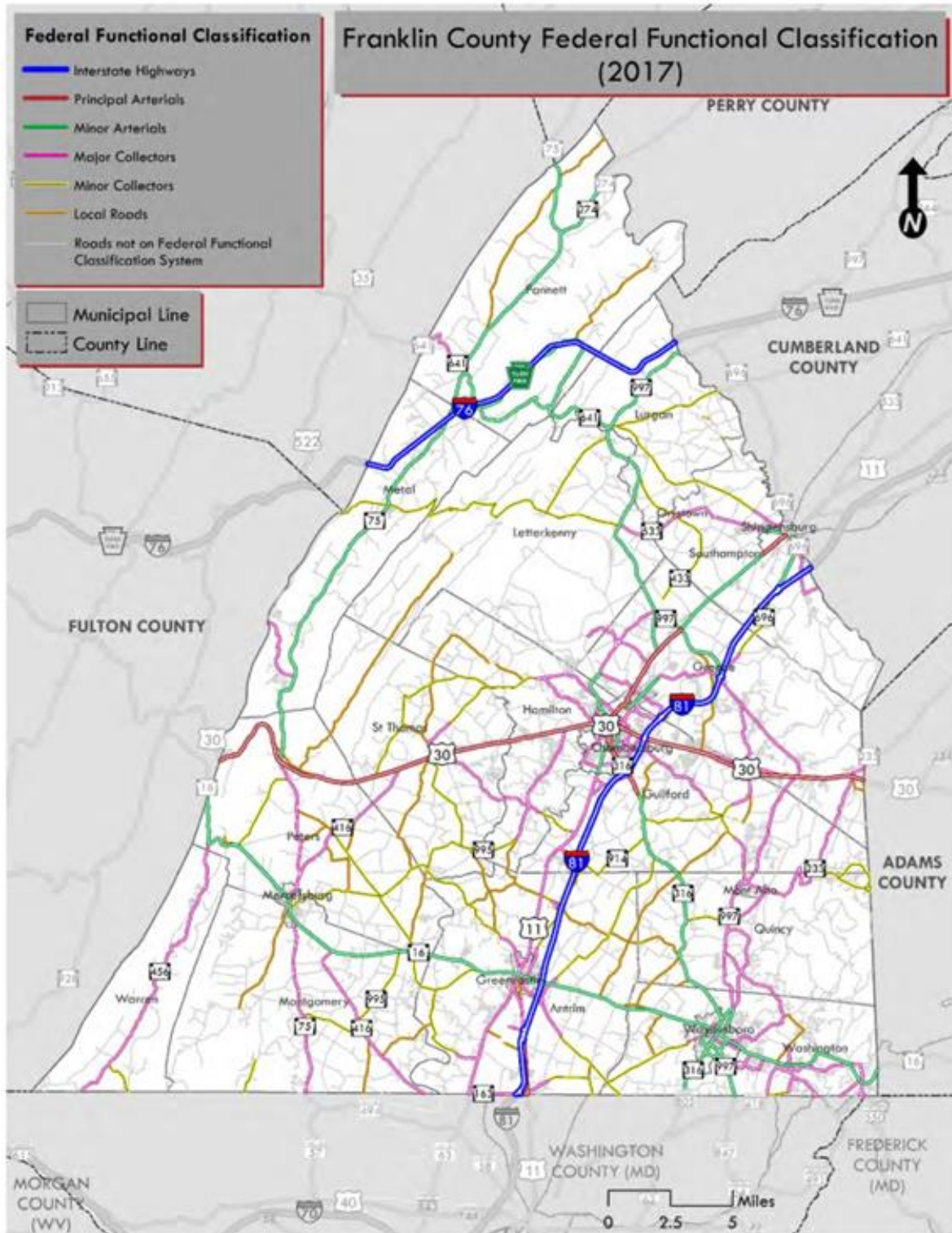


Figure 4.3.23.1.7: Franklin County Highway and Bridge Systems¹⁵⁰

¹⁵⁰ Franklin County Long-Range Transportation Plan, 2018

There is no expected warning time for vehicular accidents. Contributing factors for these accidents are typically associated with the driver, vehicle, and the environment. Factors associated with the driver include error, speeding, experience, and blood-alcohol level. Factors associated with the vehicle include type, condition, and center of gravity. Environmental factors include quality of the infrastructure, weather, and obstacles. The majority of vehicular accidents are attributed to the driver. Vehicular accidents can have severe effects on those directly involved, as well as to others not directly involved. Other effects may include severe traffic delays, lost sales to businesses, delayed commodity shipments, and increased insurance costs¹⁵¹.

Non-motorized Transportation:

Franklin County boasts a multitude of natural and built resources for bicyclist, pedestrian, and horse and buggy use. In Franklin County's more populated communities, pedestrians can walk along sidewalks and cross at numerous crosswalks and signalized intersections. Bicyclists can take advantage of Bicycle Route "S" that traverses the entire county as well as the existing grid street network in the county's larger communities and the recreation/exercise routes that extend throughout the countryside. Numerous recreational trails travel throughout the county, including nationally-recognized hiking and bicycling destinations. In northwestern Franklin County, where buggy traffic is heaviest, varying levels of accommodation exist along the county's roadway network, mainly in the form of wide shoulders. It is important to note the severity of a non-motorized versus motorized accidents/incidents, due to the high concentration of Amish communities in Franklin County and a growing bicycling community.

4.3.23.2 Range of Magnitude

A transportation hazard may be defined as a condition created by moving anything by common carrier. Transportation hazards can be divided into two categories: hazards created by the material that is being transported; and hazards created by the transportation medium.

Transportation systems available in Franklin County include air, rail, and road/highway/street. A major accident in each of these transportation systems is possible. All of these systems and supporting transportation resources provide services locally, regionally, and nationally.

Vehicular Accidents/Hazards: A vehicular accident is a road/highway/street incident that usually involves one vehicle colliding with another vehicle or other road/highway/street user or an animal or stationary roadside object (e.g.: telephone pole, building, or a tree). A vehicular accident may result in injury, property damage, or possibly fatalities. Many factors contribute to vehicle accidents/incidents, including equipment failure, poor road conditions, weather, traffic volume, and driver behavior.

Aviation Accidents/Hazards: According to the International Civil Aviation Organization, an aviation accident is an occurrence with the operation of an aircraft that takes place between the time a person boards the aircraft with the intention of flying to a destination to the time the person disembarks the aircraft. There are 3 different situations that qualify as an aviation accident:

¹⁵¹ Cova J. T. and Conger S., 2004

- A person is fatally or seriously injured.
- The aircraft sustains damage or structural failure.
- The aircraft is missing or inaccessible.

An aviation incident is an occurrence, other than an accident, associated with operation of an aircraft that affects or could affect the safety of operation¹⁵².

Hazardous Materials (HAZMAT) in Transit: A HAZMAT is defined as a substance or material determined to be capable of posing an unreasonable risk to health, safety, or property when transported. They come in various forms that can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. As stated previously in the HAZMAT definition, unreasonable risk covers a broad range of health, fire, and environmental considerations. HAZMAT substances include explosives, flammable solids, substances that become dangerous when wet, oxidizing substances, and toxic liquids. An accident involving a vehicle carrying HAZMAT becomes a HAZMAT incident if the HAZMAT leaks, is involved in a fire, or if the potential for release, or other hazards exists. Hazards can occur during production, storage, transportation, use, or disposal¹⁵³. Additional effects of the release of hazardous materials from transportation accidents are addressed in the Environmental Hazard profile (**Section 4.3.7**).

Railway Accidents/Hazards: Railway accidents are accidents involving one or more trains.

Transportation accidents described here include incidents involving road, air, and rail travel. At a minimum, transportation accidents can result in damage to the vehicles and minor injuries to passengers and drivers. At worst, significant transportation accidents can result in death or serious injury or extensive property loss or damage coupled with business interruptions and hours of congestion. Most air incidents are non-fatal and cause minor injuries or property damage. The majority of motor vehicle crashes are non-fatal in Pennsylvania, but as of 2021, Penn DOT estimated that every hour (across the Commonwealth) 7 people are injured in a car crash, and every 7 hours someone dies as a result of a car crash. Most fatal crashes occur in the months of October, November & December. The expected impacts of transportation accidents are amplified by the fact that there is often little warning of accidents.

The environmental impacts of transportation accidents can vary greatly. In the case of a simple motor vehicle crash, train derailment, or aviation accident, the environmental impact is minimal. However, if the accident involves any type of vehicle moving chemicals or other hazardous materials, the impact will be considerably larger and may include an explosion or the release of potentially hazardous material.

4.3.23.3 Past Occurrence

County-wide vehicle crash analysis data was collected from PennDot for the years 2017 through 2021. An analysis of this data was conducted to logically group the crashes into common

¹⁵² National Business Aviation Association

¹⁵³ Ready.gov

condition and causal factors. This analysis can be seen in **Table 4.3.23.3.1** below. The analysis allowed the project team to identify trends to indicate safety concerns. The data shows that most vehicle crashes are a single vehicle, run-off-the-road type of accidents generally involving fixed objects. It also shows that about half of these accidents are occurring on local versus state roads. However, the analysis becomes a little more interesting when you look at some of the causal factors. Driver impairment and experience/ability seem to be leading causes of most accidents and they tend to occur more often at intersections. It is understood that most accidents involve multiple factors and conditions and this chart captures single accidents with multiple entries, but it does give us empirical data in which to make some mitigation decisions to reduce the overall risk to the travelling public.

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Accident Description	2017	2018	2019	2020	2021
Total Accidents	1487	1545	1569	1284	1495
Single Vehicle Run-Off-The-Road	603	623	659	567	606
Hit Fixed Object	507	521	542	493	510
Hit Utility Pole	157	178	187	164	168
Hit Tree	96	95	102	86	86
Hit Guiderail	63	68	86	57	84
Intersection	480	523	458	321	411
Stop Controlled Intersection	182	208	188	123	148
Signalized Intersection	148	152	138	104	154
Running Red Light	43	46	44	38	55
Pedestrian	26	33	17	17	27
Bicycle	7	5	7	4	10
Driver Impairment					
Distracted Driver	177	157	148	161	164
Alcohol-Related	122	137	130	109	143
Drinking Driver	119	136	129	108	141
Aggressive Driving	82	83	69	107	101
Drowsy/Asleep Driver	57	33	45	35	29
Driver Experience/Ability Related	1032	1091	1083	871	1040
Involving a 50-64 Year Old Driver	391	431	441	320	425
Involving a 65-74 Year Old Driver	186	193	177	153	163
Involving a 75+ Year Old Driver	129	126	132	99	130
Involving a 18 Year Old Driver	94	93	63	74	78
Involving a 17 Year Old Driver	76	76	85	63	73
Involving a 19 Year Old Driver	60	84	91	62	70
Involving a 20 Year Old Driver	68	72	67	73	71
Involving a 16 Year Old Driver	28	26	27	27	30
Local Road (only)	279	302	326	240	265
Unrestrained	129	158	155	127	128
Heavy Truck	99	103	111	104	123
Head-on / Opposite Direction Side Swipe	98	90	91	68	102
Motorcycle	43	45	45	33	53
Speeding	61	58	46	50	63
Vehicle Failure Related (any factor)	59	46	53	55	57
Cross Median	41	43	28	24	32
Work Zone	14	7	4	4	5
Train/Trolley with Motor Vehicle	0	0	0	1	1
Horse and Buggy	2	0	0	1	5

Table 4.3.23.3.1: Vehicle Accidents in Franklin County (2017-2021)¹⁵⁴

¹⁵⁴ PennDOT, 2023

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In addition to the analysis above, Franklin County averaged 18.8 fatalities per year from 2017-2021, with a total of 94 fatalities during that time. There were also 13 pedestrian fatalities during that same timeframe.

We also searched PennDOT data to see how many Pedestrian related accidents and were recorded in the county between January 2017 and December 2021. **Table 4.3.23.3.2** lists pedestrian accidents in the county during that time and includes accidents with fatalities and injuries.

Municipality	Accidents with Fatalities	Accidents with Injuries	Total Pedestrian Accidents
Antrim Township	0	6	6
Chambersburg Borough	5	39	45
Fannett Township	1	1	2
Greencastle Borough	0	5	5
Greene Township	4	7	11
Guilford Township	1	11	12
Hamilton Township	0	0	0
Letterkenny Township	0	0	0
Lurgan Township	0	1	1
Mercersburg Borough	0	2	2
Metal Township	0	0	0
Mont Alto Borough	0	0	0
Montgomery Township	0	0	0
Orrstown Borough	0	0	0
Peters Township	0	3	3
Quincy Township	0	3	3
Shippensburg Borough	0	1	1
Southampton Township	0	1	1
St Thomas Township	0	2	2
Warren Township	0	0	0
Washington Township	0	4	4
Waynesboro Borough	2	22	24
Totals	13	108	122

Table 4.3.23.3.2: Pedestrian Accidents in Franklin County (2017-2022)

Franklin County is also a busy area for commercial and private aviation traffic. A search of the

National Transportation Board (NTSB) and Federal Aviation Administration's (FAA) accident/incident databases as well as other online resources was performed for Franklin County. We were able to uncover several incidents and accidents that have occurred in Franklin County since 1965. **Figure 4.3.23.3.1** below shows the geographic location of the accidents that were uncovered. **Table 4.3.23.3.3** below shows all aviation incidents and accidents that were discovered.

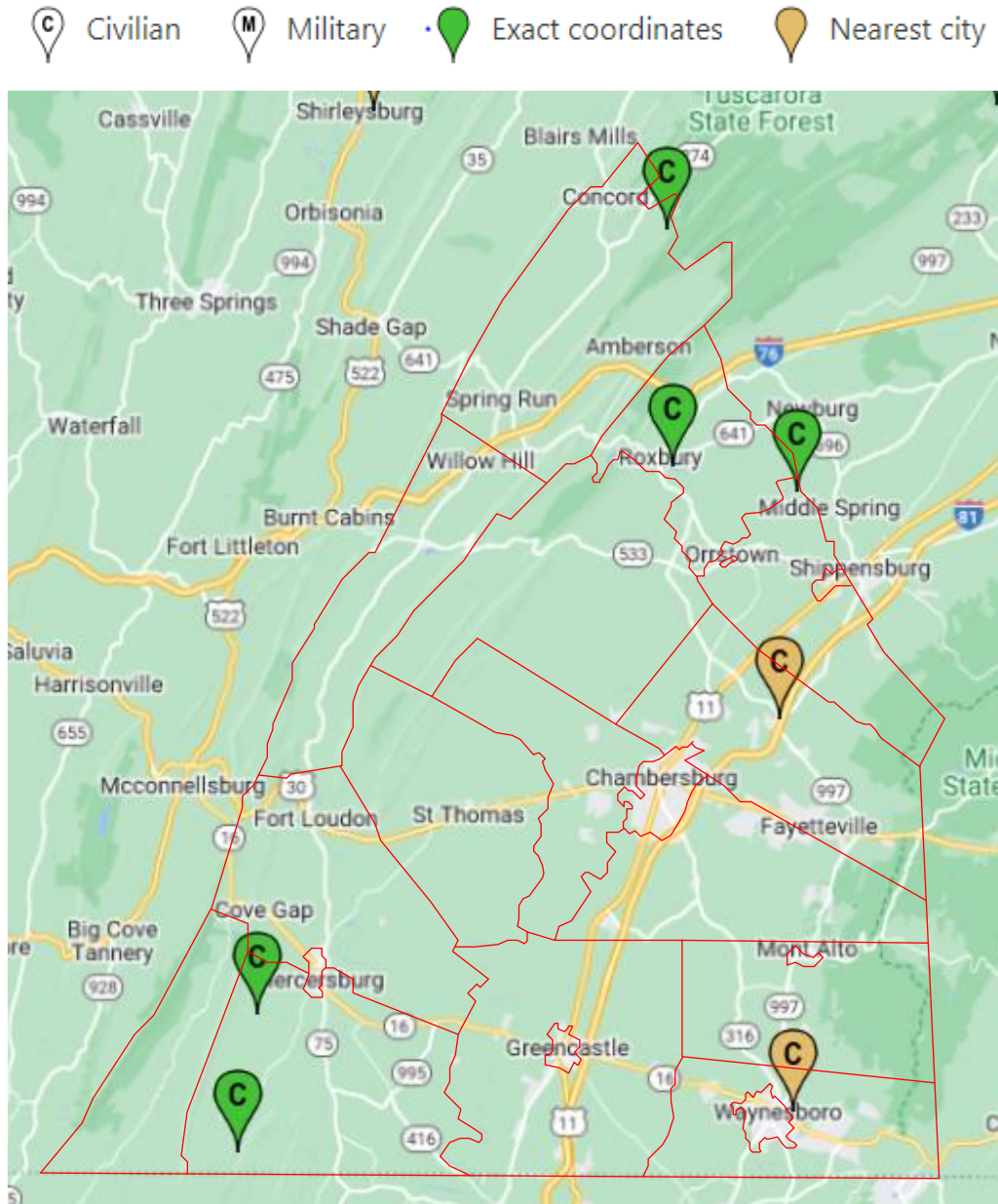


Figure 4.3.23.3.1: Aviation Accidents in Franklin County (1972-2020)¹⁵⁵

¹⁵⁵ Baker, Lee C, 2009-2020

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Date	Location	Event Type	Airport (if appropriate)	Event description	Injuries/Fatalities (if known)
5/11/2014	Roxbury, PA	Accident		Highlander crash	1 injury plane
4/12/2009	Chambersburg, PA	Incident	Franklin County Regional Airport	Landing	
4/25/2006	Montgomery Township	Accident		Cessna 172L crash	1 fatality plane
1/14/2004	Chambersburg, PA	Incident	Franklin County Regional Airport	Roll-out (Fixed Wing)	
8/15/2002	Chambersburg, PA	Incident	Franklin County Regional Airport	To initial climb (1 st Power Reduction)	
8/3/2000	Chambersburg, PA	Incident	Franklin County Regional Airport	Other Ground Operations	
6/8/2000	Chambersburg, PA	Incident	Franklin County Regional Airport	Normal Cruise	
11/18/1998	Chambersburg, PA	Incident		Forced Precautionary Landing from cruise	
8/8/1998	Chambersburg, PA	Incident		Level Off Touchdown	
10/8/1996	Fannett Township	Accident		Beech F33A crash	2 fatalities plane
6/15/1996	Chambersburg, PA	Incident		Parachute Jumping	
8/20/1994	Chambersburg, PA	Incident		Forced Precautionary Landing from cruise	
8/16/1994	Waynesboro Borough	Accident		Cessna 320C crashed	2 fatalities plane/ 2 fatalities ground
5/12/1992	Chambersburg, PA	Incident	Lost Acres	Level Off Touchdown	
11/18/1998	Chambersburg, PA	Incident	Franklin County Regional Airport	Forced Precautionary Landing from cruise	
3/3/1984	Chambersburg, PA	Incident	Franklin County Regional Airport	Force Precautionary Landing	
12/7/1984	Chambersburg, PA	Incident	Chambersburg Municipal Airport	Ground Taxi, other airplane	
8/16/1982	Greene Township	Accident		Cessna A152 crash	
11/28/1981	Chambersburg, PA	Incident	Chambersburg Municipal Airport	Roll-out (Fixed Wing)	
8/18/1979	Greene Township	Accident		Cessna 172M crash	
1/15/1978	Chambersburg, PA	Incident		Forced Precautionary Landing from cruise	
6/18/1972	Fannett Township	Accident		Beech 23 crash	

Table 4.3.23.3.3: Aviation Accidents & Incidents Franklin County (1972-2022)^{156,157}

As one can see, we have had several accidents and incidents over the past 50 years, but only two accidents in the past 20 years in Franklin County. The aviation industry is highly regulated and takes lessons learned from accidents and incidents to improve overall safety of the travelling

¹⁵⁶ Baker, Lee C., 2009-2020

¹⁵⁷ NTSB, Aviation Accident Database & Synopses

public. As a result, the accident trend in Franklin County has dropped significantly. However, we do have a small regional airport and several mountain ridges surrounding the county. Since pilot error is a general contributing factor to most private plane crashes, the aviation accident threat is still a viable concern to the travelling public as well as those living nearby this regional airport.

Federal Railroad Administration (FRA) defines an accident/incident as a reportable event. These include (1) collisions, derailments, and other events involving the operation of on track equipment; (2) impacts between railroad on-track equipment and highway users at crossings; and (3) all other incidents or exposures that cause a fatality or injury to any person. Accidents/incidents are divided into three groups:

- 1. Train accident.** A safety-related event involving on-track rail equipment, causing monetary damage to the rail equipment and track.
- 2. Highway-rail grade crossing incidents.** Any impact between a rail and highway user at a designated crossing site.
- 3. Other incidents.** Any death, injury, or occupational illness of a railroad employee that is not the result of a “train accident” or “highway-rail incident.”

Even with the significant freight train traffic in Franklin County due to the 2 Intermodal Railroads Hubs (Norfolk Southern & CSX), we have only recorded 4 incidents between 2013 and 2022: 2 minor derailments due to an improperly lined switch; 1 highway rail-grade crossing accident due to drive inattentiveness and 1 incident involving moving cars while loading equipment was not in proper position ¹⁵⁸

4.3.23.4 Future Occurrence

Transportation hazards are impossible to accurately predict, but an analysis of the data provided above can provide general areas of concern to allow for the development of mitigation actions for each municipality.

New highway and logistic/warehouse construction, including the addition of interchange 12 on I-81 (Guilford Springs Road) and the industrial zoned land between US Route 11 and I-81 (between Chambersburg and Marion) will likely result in increased trucking and traffic congestion. However, there is some hope that the Greater Chambersburg Traffic Signal Improvement Project will properly coordinate traffic signals to help improve the flow of vehicle traffic. Additionally, the current trend of shopping is moving from purchasing products at the ‘brick and mortar’ stores to online will continue and we will likely see an increase in delivery vehicles across all types of highways, roads, and streets.

Non-motorized accidents may continue to occur at the same level in Franklin County until driver behavior and/or highways/roads/streets are rebuilt or renovated to include the non-motorized user (e.g.: wider shoulder for horse and buggy use).

¹⁵⁸ Federal Railroad Administration, 2023

The average rate of aviation accidents nationwide is 9.2 accidents per 100,000 flight hours¹⁵⁹. Therefore, the likelihood of an aviation incident in the county is considered low.

A review of the railway accident/incident information above indicates that the numbers of accidents in the county will remain relatively low. However, it is expected as increased train traffic continues due to our 2 intermodal facilities, the number of railway incidents will continue to rise.

Social Equity

Many times, houses that are in close proximity to major highways and rail lines are priced lower than others that are further away, so socially vulnerable populations with limited economic means are more likely to buy or rent homes in those areas, resulting in a higher risk of transportation accidents.

Climate Change

Climate change is expected to cause more frequent storms with more intensity and duration, which could result in more transportation accidents.

4.3.23.5 Vulnerability Assessment

Transportation systems available in the county include rail, road/street, and air. Hazards associated with transportation can either be created by natural hazards that affect the roadway or rail system, the material being transported, or created by the transportation medium itself. Overall, the probability of future transportation accidents can be considered *likely* according to the Risk Factor Methodology (See **Section 4.4**).

Figure 4.3.23.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Transportation Accident hazard. One can see that 7 of 22 municipalities rated this threat as either a Catastrophic or Major event and 5 of the remaining 15 municipalities have it ranked as a Moderate threat. This is a Moderate threat ranked number 7 highest for Franklin County and will garner significant attention during the Mitigation Strategy in **Section 6**.

¹⁵⁹ NTSB, 2023

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	<div>Transportation Accident Hazard Threat Risk Assessment</div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	2	30%	1	20%	4	10%	1	10%	2.2	10.12%	0.2226
Chambersburg Borough	2	30%	3	30%	2	20%	2	10%	1	10%	2.2	14.05%	0.3091
Fannett Township	3	30%	2	30%	3	20%	4	10%	1	10%	2.6	1.59%	0.0413
Greencastle Borough	3	30%	3	30%	3	20%	4	10%	1	10%	2.9	2.73%	0.0792
Greene Township	3	30%	1	30%	1	20%	4	10%	1	10%	1.9	11.82%	0.2246
Guilford Township	4	30%	3	30%	1	20%	4	10%	1	10%	2.8	9.38%	0.2626
Hamilton Township	2	30%	2	30%	2	20%	4	10%	1	10%	2.1	7.29%	0.1531
Letterkenny Township	4	30%	2	30%	1	20%	4	10%	1	10%	2.5	1.58%	0.0395
Lurgan Township	1	30%	1	30%	1	20%	3	10%	1	10%	1.2	1.42%	0.0170
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	0.97%	0.0126
Metal Township	3	30%	2	30%	1	20%	4	10%	1	10%	2.2	1.13%	0.0249
Mont Alto Borough	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	1.01%	0.0162
Montgomery Township	3	30%	3	30%	4	20%	4	10%	1	10%	3.1	3.68%	0.1141
Orrstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.0458
Quincy Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	3.41%	0.0546
Shippensburg Borough	2	30%	2	30%	1	20%	4	10%	1	10%	1.9	0.75%	0.0143
Southampton Township	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	5.49%	0.0988
St Thomas Township	4	30%	2	30%	2	20%	4	10%	1	10%	2.7	3.79%	0.1023
Warren Township	4	30%	2	30%	2	20%	4	10%	1	10%	2.7	0.21%	0.0057
Washington Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	9.55%	0.1528
Waynesboro Borough	3	30%	2	30%	1	20%	4	10%	1	10%	2.2	7.02%	0.1544
Municipal Weighted Average Risk Factor (RF)													2.147

Figure 4.3.23.5.1: Municipal Transportation Accident Threat Vulnerability Self-Assessment

Potential losses from transportation hazards include human health and life, property, and natural resources. Vehicular accidents, flooded roadways, aviation accidents, and accidents at public railroad crossings at grade may result in injury or death to drivers and passengers on the road, the public in the immediate vicinity, and emergency services personnel. The number of people exposed depends on population density, both by day and night, and on the proportions located indoors and outdoors.

As a result of insufficient data, a full loss estimate was not completed for the transportation hazard. Loss of roadway use would affect thousands of commuters, employment, day-to-day operations within the county, and delivery of critical municipal and emergency services. Disruption of one or more of these modes of transportation can lead to the congestion of another, and not only affect the county, but the region as a whole. Increased development in the county and region will contribute to increased road and rail traffic.

While it is not possible to predict when and where a transportation accident will occur, the local fire and police departments, as well as the Pennsylvania State Police, are generally well-equipped and prepared to respond to these situations. In addition, established emergency procedures are in place and remediation occurs in a timely manner, so any infrastructure would be repaired as needed. However, these events can be costly.

In regards to vehicular accidents, data indicates that these are frequent occurrences and as traffic increases, the potential for vehicular accidents also can occur. Law enforcement, driver education, and transportation management efforts can help to reduce the potential for accidents. Existing and future mitigation efforts should continue to be developed and employed to reduce the potential impact of such events and prepare the county and local responders for these situations.

4.3.23.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a Transportation Accident are shown below. There is potential for significant impacts to one lifeline (Transportation), possible impacts for four lifelines (Safety & Security, Energy, Communications, and Hazardous Materials) and minimal impact is expected for the remaining lifelines.



Figure 4.3.23.6.1: Transportation Accident Community Lifeline Integration

4.3.24 Urban Fire and Explosion

Urban fire and explosion hazards incorporate vehicle and building/structure fires as well as overpressure rupture, overheating, or other explosions that do not ignite. Statewide, this hazard occurs in the denser, more urbanized areas and occurs most often in residential structures.

4.3.24.1 Location and Extent

Structural fires within Franklin County have had a detrimental impact on life and property just like in any other county over the past decade. In today's time there is a never ending change in building material that has created a threat of fire loss on a regular basis.

4.3.24.2 Range of Magnitude

The severity of any structure fire varies and is measured according to any losses associated with an incident. If the structure fire is a residential structure the impact to a local economy will be

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more minimal, unlike if it were to be a commercial structure. The loss of life caused by a structure fire is opposite of the two impacts above. Normally the loss of life in a structure fire is more common to occur within a residential structure rather than a commercial structure. In Franklin County most structure fires occur in a residential structure and are limited in duration and resources needed. While most of these fires are in the smaller aspect, the risk for large fires within a commercial structure is present every day. Many of the commercial structures within Franklin County have experienced some type of small fire but they have been contained, but still could lead to a large catastrophic fire.

4.3.24.3 Past Occurrence

Franklin County experiences a number of urban fires, most of which are small and affect a limited number of structures at a single event. Franklin County has little to no history of explosion events over the last 10 years. A detail analysis of the Franklin County CAD System was performed to collect data on urban fires in Franklin County. **Table 4.3.24.3.1** shows all the responses to commercial/business/industry fires in Franklin County from 2013 through 2022. This does include agricultural building fires as this is a leading industry in the county.

Municipality	Business/ Industry Fires	Silo Fires	Barn Fires	Totals
Antrim Township	19	6	21	46
Chambersburg Borough	40	1	0	41
Fannett Township	1	3	9	13
Greencastle Borough	7	1	0	8
Greene Township	35	4	9	48
Guilford Township	18	6	17	41
Hamilton Township	7	2	10	19
Letterkenny Township	4	4	0	8
Lurgan Township	4	0	1	5
Mercersburg Borough	2	0	0	2
Metal Township	0	3	3	6
Mont Alto Borough	1	0	0	1
Montgomery Township	6	5	10	21
Orrstown Borough	0	0	0	0
Peters Township	4	4	14	22
Quincy Township	2	4	6	12
Shippensburg Borough	2	0	0	2
Southampton Township	10	3	4	17
St Thomas Township	4	4	15	23
Warren Township	0	0	0	0
Washington Township	11	2	4	17
Waynesboro Borough	11	0	0	11
Totals	188	52	123	363

Table 4.3.24.3.1: Commercial Fire Responses (2013-2022)

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Table 4.3.24.3.2 shows the residential fire response in the county from January 2013 through Dec 2022.

Municipality	Chimney Fires	House Fires	Mobile Home Fires	Garge Fires	Appliance Fires	Multi-Dwelling Fires	Totals
Antrim Township	22	70	4	7	11	1	115
Chambersburg Borough	15	152	0	3	58	20	248
Fannett Township	4	17	3	3	1	0	28
Greencastle Borough	2	15	2	0	7	0	26
Greene Township	27	78	9	9	16	2	141
Guilford Township	27	79	0	8	12	3	129
Hamilton Township	11	46	7	2	7	2	75
Letterkenny Township	11	17	3	3	0	0	34
Lurgan Township	7	18	0	2	0	0	27
Mercersburg Borough	6	10	0	1	7	0	24
Metal Township	11	8	1	2	0	0	22
Mont Alto Borough	2	13	0	2	2	0	19
Montgomery Township	5	32	0	2	2	0	41
Orrstown Borough	3	1	0	0	0	0	4
Peters Township	6	19	1	9	5	2	42
Quincy Township	11	35	3	3	5	0	57
Shippensburg Borough	3	10	1	4	2	0	20
Southampton Township	8	34	5	4	6	1	58
St Thomas Township	10	24	8	6	5	0	53
Warren Township	1	1	0	1	0	0	3
Washington Township	25	93	8	7	5	10	148
Waynesboro Borough	9	95	1	2	27	12	146
Totals	226	867	56	80	178	53	1,460

Table 4.3.24.3.2: Residential Fire Responses (2013-2022)

There were several different types of fire responses captured in our CAD analysis that either applied to both residential and commercial responses, or were a false positive for actual fire response. These incidents are captured in **Table 4.3.24.3.3**.

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Municipality	Automatic Fire Alarms	Arson	Electrical Fires	Rekindle Fires	Smoke Inside	Totals
Antrim Township	624	6	6	0	7	643
Chambersburg Borough	2,687	5	19	0	32	2,743
Fannett Township	38	0	3	0	1	42
Greencastle Borough	269	1	1	0	3	274
Greene Township	1,300	0	12	1	10	1,323
Guilford Township	665	0	17	0	0	682
Hamilton Township	182	0	5	0	1	188
Letterkenny Township	117	0	3	0	2	122
Lurgan Township	18	0	0	0	1	19
Mercersburg Borough	455	1	1	0	0	457
Metal Township	53	0	2	0	2	57
Mont Alto Borough	31	0	2	0	0	33
Montgomery Township	206	0	2	0	0	208
Orrstown Borough	1	0	0	0	0	1
Peters Township	104	0	4	0	0	108
Quincy Township	418	0	8	0	0	426
Shippensburg Borough	95	0	2	0	2	99
Southampton Township	177	0	8	0	7	192
St Thomas Township	101	0	6	0	0	107
Warren Township	4	0	1	0	0	5
Washington Township	613	3	19	0	18	653
Waynesboro Borough	608	6	15	0	14	643
Totals	8,766	22	136	1	100	9,025

Table 4.3.24.3.3: Miscellaneous Fire Response Activity (2013-2022)

As one can see from the data above, Franklin County has over 3 times as many residential fire responses as we do commercial responses. It was not possible to collect the damages to life or property due to these fires. However, as indicated in **Section 4.3.24.3.2** above, the cost associated with residential fires is far smaller than that of commercial fires, but loss of life tends to be greater.

4.3.24.4 Future Occurrence

Social Equity

Socially vulnerable populations may be affected by urban fire and explosion, especially the elderly and those with mobility issues. Those with limited economic means may also be at risk

since they would have a harder time recovering from fire damage and would have trouble finding a new place.

Climate Change

According to NOAA's Climate Mapping for Resilience and Adaption, Franklin County could see a 1.9 – 2.8 inch increase in average annual precipitation due to climate change through 2044, which would make it more likely for the county to have a decreased risk of urban fire and explosion.

The future occurrence of urban fire and explosion events can be considered *possible* as defined by the Risk Factor Methodology probability criteria (**Section 4.4**). Residential fires are more common within Franklin County but industrial fires have a potentially higher risk because of the possibility of there being flammable chemicals and greater fuel sources which make industrial fires to be the greater risk due to those factors.

4.3.24.5 Vulnerability Assessment

Figure 4.3.24.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Urban Fire and Explosion hazard. One can see that only 4 of 22 municipalities rated this threat as either a Major or Moderate event. This is a Minor threat for Franklin County ranked number 23 overall, but will still garner some attention during the Mitigation Strategy in **Section 6**.

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	Urban Fire and Explosion Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	10.12%	0.23276
Chambersburg Borough	2	30%	3	30%	3	20%	4	10%	1	10%	2.6	14.05%	0.3653
Fannett Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.59%	0.0159
Greencastle Borough	2	30%	3	30%	2	20%	4	10%	1	10%	2.4	2.73%	0.06552
Greene Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	11.82%	0.18912
Guilford Township	1	30%	2	30%	1	20%	4	10%	1	10%	1.6	9.38%	0.15008
Hamilton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	7.29%	0.09477
Letterkenny Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	1.58%	0.02054
Lurgan Township	1	30%	1	30%	1	20%	2	10%	1	10%	1.1	1.42%	0.01562
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	0.97%	0.01261
Metal Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.13%	0.0113
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1.01%	0.0101
Montgomery Township	1	30%	2	30%	2	20%	4	10%	1	10%	1.8	3.68%	0.06624
Orstown Borough	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.14%	0.0014
Peters Township	2	30%	1	30%	1	20%	4	10%	1	10%	1.6	2.86%	0.04576
Quincy Township	2	30%	2	30%	1	20%	3	10%	1	10%	1.8	3.41%	0.06138
Shippensburg Borough	4	30%	2	30%	1	20%	4	10%	1	10%	2.5	0.75%	0.01875
Southampton Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	5.49%	0.07137
St Thomas Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	3.79%	0.04927
Warren Township	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	0.21%	0.0021
Washington Township	1	30%	1	30%	1	20%	4	10%	1	10%	1.3	9.55%	0.12415
Waynesboro Borough	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	7.02%	0.12636
Municipal Weighted Average Risk Factor (RF)													1.750

Figure 4.3.24.5.1: Municipal Urban Fire and Explosion Threat Vulnerability Self-Assessment

The areas within Franklin County that should be considered more vulnerable to urban fires and explosions are the areas where large buildings are located or the development is close. Franklin County has two more densely populated municipalities with populations over 5,000. They are the Borough of Chambersburg at 21,903 (rated as a Major event) and the Borough of Waynesboro at 10,951 (rated as a Minor event) per the 2020 US Census.

As of December 31, 2006, all communities in Pennsylvania are required to comply with the Uniform Construction Codes. This includes requirements to comply with both the International Fire Code and the International Wildland Urban Interface Code. The adoption and enforcement of these codes will hopefully decrease the overall vulnerability of structures in Franklin County. However, these regulations will only affect new construction, as well as additions and renovations to existing structures. Older buildings that do not meet the criteria established in these modern fire codes will continue to remain vulnerable to urban fire and explosion events.

To give a better perspective on this issue, we looked at the 2016-2020 American Community Survey 5-yr estimate numbers to determine the age of the houses in the county and some predictions on future construction. However, since the Census does not break up the ages of the houses on the 2006 date of the adoption of the Uniform Construction Code, we had to make the age cut-line at the year 2000. What this means to our analysis is that the true percentage of houses built after the Uniform Construction Code was adopted is significantly smaller than our assessed number. Even so, you can see that the percentage of houses built after the year 2000 in the county is only 19.1% (see **Table 4.3.24.5.1** below). That means at least 80.9% of the homes in the county were built using the older construction codes. Again, because we used 2000 instead of 2006, this number of older homes is most certainly larger, but one can see the order of magnitude problem we have in the county as a result of older construction.

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Municipality	Percent of Houses built in Time Period							Estimated number of houses	Percent of houses built after 2000	Estimated number of houses built after 2000	Percent of houses built after 2000, in the county
	2020 or later	2010-2019	2000-2009	1980-1999	1960-1979	1940-1959	1939 or earlier				
Antrim Township	0.0%	5.4%	15.7%	24.1%	29.9%	10.0%	14.9%	6187	21.1%	1308	2.0%
Chambersburg Borough	0.0%	4.1%	10.7%	15.4%	19.7%	24.8%	25.3%	10186	14.8%	1508	2.3%
Fannett Township	0.0%	2.5%	6.4%	24.1%	33.8%	11.4%	21.8%	1059	8.9%	94	0.1%
Greencastle Borough	0.0%	1.0%	15.7%	19.2%	22.2%	20.3%	21.7%	1756	16.9%	293	0.4%
Greene Township	0.0%	8.9%	19.1%	31.4%	21.3%	11.6%	7.7%	8003	28.0%	2243	3.4%
Guilford Township	0.1%	2.9%	18.3%	28.5%	34.2%	9.5%	6.5%	6596	21.3%	1406	10.0%
Hamilton Township	1.3%	5.6%	22.3%	30.4%	3.6%	11.9%	4.1%	4304	29.1%	1254	1.9%
Letterkenny Township	0.0%	7.4%	7.4%	32.9%	23.2%	5.1%	24.1%	922	14.8%	136	0.2%
Lurgan Township	0.0%	6.1%	9.2%	23.7%	29.0%	16.0%	16.0%	758	15.3%	116	0.2%
Mercersburg Borough	0.0%	0.0%	7.5%	12.6%	14.6%	15.7%	49.5%	808	7.5%	61	0.1%
Metal Township	0.2%	1.8%	7.0%	24.9%	28.6%	16.4%	21.1%	873	9.0%	79	0.1%
Mont Alto Borough	0.0%	2.0%	15.5%	19.8%	25.7%	22.6%	14.3%	645	17.5%	113	0.2%
Montgomery Township	0.0%	3.8%	19.9%	23.4%	23.5%	10.1%	19.4%	2206	19.4%	427	0.6%
Orrstown Borough	0.0%	0.6%	0.6%	5.0%	2.5%	37.7%	53.5%	159	1.3%	2	0.0%
Peters Township	0.0%	3.6%	3.3%	36.7%	25.4%	18.7%	12.3%	1855	6.9%	229	0.3%
Quincy Township	0.0%	4.1%	8.5%	18.1%	31.5%	21.6%	16.2%	1957	16.2%	317	0.5%
Shippensburg Borough	0.0%	0.0%	8.7%	23.0%	19.3%	43.3%	5.7%	688	5.7%	39	0.1%
Southampton Township	0.0%	2.3%	20.7%	33.2%	26.9%	8.8%	8.1%	3391	8.1%	273	0.4%
St Thomas Township	0.0%	5.6%	11.2%	17.2%	35.9%	12.0%	18.2%	2186	18.2%	398	0.6%
Warren Township	0.0%	3.4%	12.1%	30.5%	22.4%	9.2%	22.4%	174	22.4%	39	0.1%
Washington Township	0.2%	5.7%	23.6%	29.2%	16.2%	15.9%	9.1%	6581	9.1%	599	0.9%
Waynesboro Borough	0.0%	2.7%	6.3%	18.9%	17.8%	18.6%	35.7%	4828	35.7%	1723	2.6%
County Totals								66122		12657	19.1%

Table 4.3.2.5.1: Estimated Age of Houses in Franklin County (2016-2020)¹⁶⁰

¹⁶⁰ US Census Bureau, American Community Survey 5-Year Estimates, 2016-2020

4.3.24.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for an Urban Fire and Explosion are shown below. There is potential for significant impacts to two lifelines (Safety & Security and Communications) and possible impacts for the five remaining lifelines.



Figure 4.3.24.6.1: Urban Fire and Explosion Community Lifeline Integration

4.3.25 Utility Interruption

Utilities as defined in this Hazard Mitigation Plan refer to power, water, sewer, communications, and gas services. These services are essential to the normal operations of the people of Franklin County as well as the economy that supports them.

Interruptions to these services can be caused by many factors, including weather events, geological events, construction accidents, vehicle accidents, and intentional man-made destruction. Utilities that employ above-ground wiring (power and communications) are especially vulnerable to the effects of other hazards such as high wind, heavy snow, ice, rain, and vehicular accidents. These events can be small in nature and very hard to track. However, they can be quite large and impact entire regions of the state and/or country.

4.3.25.1 Location and Extent

Utility interruptions in electric, water, communications, sewer, and gas services are common in Franklin County. However, a majority of our interruptions are electric related. Most of the power and communications interruptions are caused by third party vehicular accidents and affect a small number of the population for a short amount of time. Water, sewer, and gas interruptions frequently occur in the county but are localized and usually due to human error as well.

Weather, such as severe thunderstorms, wind storms, and winter storms, increase the chance of a regional power or communications disruption. These types of events also require more resources and manpower during the response and recovery stages. These larger events are rare in the county, but have occurred here in the past.

4.3.25.2 Range of Magnitude

Most severe utility interruptions and power failures are regional events. A loss of utilities can have numerous impacts including, but not limited to, food spoilage, loss of water supply (damaged pipeline/pump failure), loss of heating or air conditioning, basement flooding, lack of indoor lighting, and lack of telephone and internet services. These issues range from a minor nuisance to a full hazard event, but the degree of damage or harm depends on the population affected and the severity/duration of the outage

At a minimum, utility interruptions can cause short term disruption in the normal operations of business, government, and private citizen functioning and activities like traffic signals, elevators, and retail sales. The impacts of a utility outage can be compounded by coinciding with other hazard events, such as a severe winter storm. In these cases, high risk populations are in peril as they rely on these utilities to maintain safe temperatures in their homes and businesses.

4.3.25.3 Past Occurrence

Information on past events of this nature had to be extracted from the Franklin County 911 Dispatch Center's CAD system. Individual searches on keywords and/or responding units had to be performed against the entire data set of all 911 incidents. A CAD system upgrade was completed in November of 2020 and, as a result, two separate datasets for utility incidents will be shown – one covering the period from January 2013-November 2020 and the most recent data from November 2020-December 2022. Incidents were categorized differently between the two systems, so the results were separated out based on the new categories.

Table 4.3.25.3.1 shows the number of utility incidents received by the Franklin County 911 Operations Center from January 2013-November 2020.

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Municipality	Wires/Poles	Inside Investigation	Totals
Antrim Township	78	20	98
Chambersburg Borough	82	142	224
Fannett Township	12	4	16
Greencastle Borough	24	8	32
Greene Township	99	75	174
Guilford Township	81	37	118
Hamilton Township	42	20	62
Letterkenny Township	28	16	44
Lurgan Township	14	0	14
Mercersburg Borough	21	10	31
Metal Township	26	0	26
Mont Alto Borough	3	5	8
Montgomery Township	43	11	54
Orrstown Borough	0	1	1
Peters Township	33	11	44
Quincy Township	43	10	53
Shippensburg Borough	7	13	20
Southampton Township	21	23	44
St Thomas Township	46	6	52
Warren Township	8	2	10
Washington Township	101	45	146
Waynesboro Borough	71	71	142
Totals	883	530	1413

Table 4.3.25.3.1: Reported Utility Incidents (2013-2020)¹⁶¹

¹⁶¹ Franklin County CAD System, 2013-2020

Table 4.3.25.3.2 below captures the utility outages from Nov 2020 through Dec 2022.

Municipality	Wires/ Poles	Utility Emergency	Inside Gas Odor	Outside Gas Odor	Totals
Antrim Township	40	11	11	0	22
Chambersburg Borough	38	24	43	0	67
Fannett Township	12	4	2	1	7
Greencastle Borough	2	16	7	1	24
Greene Township	61	36	9	0	45
Guilford Township	41	21	0	1	22
Hamilton Township	23	8	0	0	8
Letterkenny Township	6	2	4	2	8
Lurgan Township	14	7	0	0	7
Mercersburg Borough	13	4	0	0	4
Metal Township	10	1	0	0	1
Mont Alto Borough	2	2	0	0	2
Montgomery Township	22	17	0	0	17
Orrstown Borough	0	0	0	0	0
Peters Township	23	6	0	0	6
Quincy Township	31	8	0	0	8
Shippensburg Borough	3	0	1	0	1
Southampton Township	16	6	4	6	16
St Thomas Township	19	5	0	0	5
Warren Township	4	3	0	0	3
Washington Township	81	43	6	0	49
Waynesboro Borough	67	45	24	0	69
Totals	528	269	111	11	391

Table 4.3.25.3.2: Reported Utility Incidents (2020-2022)¹⁶²

Water and sewage service outages can also affect local municipalities as well. This data is included in Table 4.3.22.3.2 under the “Utility Emergency” column. Historically, it was found that 3 municipalities (Antrim Township, Chambersburg Borough, and Washington Township) account for more than half of all water and sewage outages in the county. These municipalities account for over 32% of the total population of the county, which can account for this higher percentage, but it may also indicate aging infrastructure systems that could be a target for mitigation. Some mitigation efforts have already been implemented since then, but continued monitoring of those systems as well as others that are facing increased population pressure should also be considered for mitigation.

¹⁶² Franklin County CAD System, 2020-2022

4.3.25.4 Future Occurrence

Utility interruptions are difficult to predict. Franklin County expects several utility interruptions each year, but they are generally minor in nature and have a short duration. Long-term utility disruptions are more likely to occur during severe weather events, but provisions are in place with local municipalities and the American Red Cross to open heating/cooling centers for these longer duration events to protect the at-risk populations. Considering the historical information and outlook for recurrence, it is assessed that the probability of a Utility Interruption happening again in Franklin County is *highly likely* as defined by the Risk Factor Methodology Probability criteria (**Section 4.4**).

Social Equity

Socially vulnerable residents would be most at risk from a utility interruption, especially elderly populations or others at risk of health problems due to the lack of utilities. Extended power outages can also affect those who rely on electricity-dependent medical devices.

Climate Change

Climate change can greatly affect the reliability of our electricity supply. These include downed lines due to storms, electrical infrastructure failing due to flooding, extreme winter weather conditions, and failures due to circuit overloads as demand peaks in hotter summer heat waves and winter cold snaps.

4.3.25.5 Vulnerability Assessment

Utility interruptions most severely affect individuals with access and functional needs (e.g., children, the elderly, and individuals with special medical needs). Special medical equipment will not function without power. Likewise, a loss of air conditioning during periods of extreme heat or the loss of heat during extreme cold can be especially detrimental to those with medical needs, children, and the elderly. Additionally, a lack of clean, potable water has health implications for all people, and a lack of water supply may also impact the sewer system and the availability of sewer service.

All critical facilities are vulnerable to utility interruptions, especially the loss of power. Therefore, all critical facilities, houses, population, and infrastructure as outlined in **Tables 2.4.3 and 2.4.5, Section 2** are vulnerable. The establishment of reliable backup power at these facilities is extremely important to continue to provide for the health, safety, and well-being of population and economy of Franklin County.

Figure 4.3.25.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Utility Interruption hazard. One can see that 9 of 22 municipalities rated this threat as either a Catastrophic or Major event. Furthermore, 7 of the remaining 13 municipalities have it ranked as a Moderate threat. This is a Moderate threat for Franklin County ranked number 3 overall and will garner significant attention during the Mitigation Strategy in **Section 6**.

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	Utility Interruption Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	1	30%	4	20%	4	10%	2	10%	2.6	10.12%	0.26312
Chambersburg Borough	3	30%	3	30%	3	20%	3	10%	2	10%	2.9	14.05%	0.40745
Fannett Township	2	30%	1	30%	2	20%	4	10%	2	10%	1.9	1.59%	0.03021
Greencastle Borough	2	30%	2	30%	3	20%	3	10%	2	10%	2.3	2.73%	0.06279
Greene Township	4	30%	1	30%	3	20%	4	10%	2	10%	2.7	11.82%	0.31914
Guilford Township	3	30%	2	30%	3	20%	4	10%	2	10%	2.7	9.38%	0.25326
Hamilton Township	2	30%	1	30%	3	20%	4	10%	2	10%	2.1	7.29%	0.15309
Letterkenny Township	3	30%	1	30%	3	20%	4	10%	2	10%	2.4	1.58%	0.03792
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.01704
Mercersburg Borough	2	30%	1	30%	4	20%	4	10%	2	10%	2.3	0.97%	0.02231
Metal Township	2	30%	3	30%	1	20%	4	10%	2	10%	2.3	1.13%	0.02599
Mont Alto Borough	3	30%	1	30%	4	20%	4	10%	2	10%	2.6	1.01%	0.02626
Montgomery Township	4	30%	2	30%	4	20%	4	10%	2	10%	3.2	3.68%	0.11776
Orstown Borough	3	30%	1	30%	3	20%	1	10%	2	10%	2.1	0.14%	0.00294
Peters Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	2.86%	0.04862
Quincy Township	2	30%	1	30%	2	20%	3	10%	2	10%	1.8	3.41%	0.06138
Shippensburg Borough	2	30%	1	30%	3	20%	4	10%	2	10%	2.1	0.75%	0.01575
Southampton Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	5.49%	0.07686
St Thomas Township	4	30%	2	30%	3	20%	3	10%	2	10%	2.9	3.79%	0.10991
Warren Township	4	30%	2	30%	3	20%	4	10%	2	10%	3.0	0.21%	0.0063
Washington Township	2	30%	2	30%	1	20%	2	10%	2	10%	1.8	9.55%	0.1719
Waynesboro Borough	4	30%	1	30%	3	20%	4	10%	2	10%	2.7	7.02%	0.18954
Municipal Weighted Average Risk Factor (RF)												2.420	

Figure 4.3.25.5.1: Municipal Utility Interruption Threat Vulnerability Self-Assessment

No data regarding economic impacts from utility interruptions in Franklin County is available. However, utility interruptions can cause economic impacts stemming from lost income, spoiled food and other goods, costs to the owners/operators of the utility facilities, and costs to government and community service groups.

In Franklin County the risk factor for Utility Interruptions future occurrence is major. These minor interruptions are generally short lived and are more frequent. However, if the outage lasts for an extended period of time, medical facilities and nursing homes become extremely vulnerable.

4.3.25.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a Utility Interruption are shown below. There is potential for significant impacts to two lifelines (Safety & Security and Communications) and possible impacts for the five remaining lifelines.



Figure 4.3.25.6: Utility Interruption Community Lifeline Integration

4.3.26 Wildfire

A wildfire is an uncontrolled fire in an area of combustible vegetation that occurs in the countryside or rural area.

4.3.26.1 Location and Extent

Franklin County experiences a number of fires every year, most of which are small and affect one or more residential structures. However, a significant portion of county land consists of forests or farms, which are more prone to wildfires.

Wildfires occur throughout wooded and open vegetation areas of Pennsylvania. They can occur any time of the year, but mostly occur during long, dry hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Wildfires can be started by human negligence, lightning strikes, and rare instances of spontaneous combustion.

Data provided by DCNR shows that for Pennsylvania, the greatest potential for wildfires is in the Spring and Autumn months. In the Spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. In the Fall, dried leaves are also fuel for fires.

A review of the Wildfire data in the county's CAD system shows that this pattern is somewhat similar for Franklin County. We appear to have the highest risk in the Autumn months and a little lower risk in the Spring months (see **Figure 4.3.26.1.1** below).

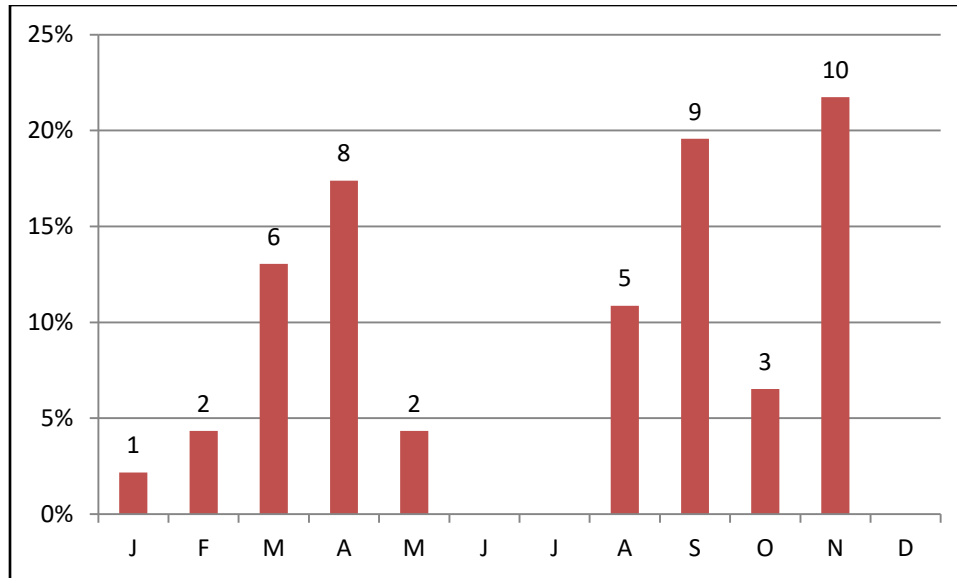


Figure 4.3.26.1.1: Percentage of Franklin County Wildfires per Month (2013-2022)¹⁶³

While the occurrence of fires is similar, Franklin County could easily see a change in that trend based on local drought conditions in any given year (see **Section 4.3.5**).

4.3.26.2 Range of Magnitude

As stated above, 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 the Commonwealth of Pennsylvania can occur in fields, grass, and brush as well as in the forest itself. In Franklin County, much of the western and southeast portions of the County consist of forested areas. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands. Ninety-eight (98) percent of wildfires in Pennsylvania are caused by people, often by debris burns. Several fires have started in a private backyard and traveled through dead grasses and weeds into bordering woodlands.

An uncontrolled fire (wildfire) is one of the most destructive fires caused by nature or man. It kills people, livestock, and wildlife. It destroys property, valuable timber, forage, and inestimable scenic and recreational value.

Vegetation loss is often an environmental concern with wildfires, but it typically is not a serious impact since natural re-growth occurs with time. The most significant environmental impact is the potential for severe erosion, silting of stream beds and reservoirs, and flooding due to ground-cover loss following a fire event.

¹⁶³ Franklin County CAD System, 2013-2022

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4.3.26.3 Past Occurrence

An analysis of our CAD system was done to extract all instances of Brush and Mountain Fires in the county over the past ten years. **Table 4.3.26.3.1** illustrates the findings of this analysis.

Municipality	Brush Fires	Mountain Fires	Totals
Antrim Township	165	0	165
Chambersburg Borough	127	0	127
Fannett Township	46	0	46
Greencastle Borough	9	0	9
Greene Township*	122	4	126
Guilford Township*	153	9	162
Hamilton Township	82	0	82
Letterkenny Township	39	4	43
Lurgan Township	40	3	43
Mercersburg Borough	16	0	16
Metal Township	43	1	44
Mont Alto Borough	2	0	2
Montgomery Township	81	1	82
Orrstown Borough	1	0	1
Peters Township	57	3	60
Quincy Township*	90	10	100
Shippensburg Borough	5	0	5
Southampton Township*	68	3	71
St Thomas Township	93	1	94
Warren Township	13	1	14
Washington Township*	133	1	134
Waynesboro Borough	39	0	39
Totals	1424	41	1465
* Municipalities that make up part of the Michaux State Forest; 593/1465 = 40% of the wildfires in the county.			

Table 4.3.26.3.1: Wildfire Events in Franklin County (2013-2022)^{164, 165}

A major concern with respect to wildfires is the Michaux State Forest, located in Franklin, Cumberland, and Adams Counties. The Michaux State Forest totals more than 85,000 acres and is utilized for not only recreational purposes, but also wood products and timber resources. Numerous local communities in the 3-county area also depend on the forest for its pure water

¹⁶⁴ Franklin County CAD System, 2013-2022

¹⁶⁵ PA DCNR, Forestry Bureau

supplies. Therefore, fires within the forest can have severe impacts on the well-being of residents and the local economy.

According to the DCNR, Forestry Bureau, there have been a total of 69.41 acres burned as a result of wildfires in Franklin County between 2013 and 2022. These forest fires are the result of numerous causes, including campfires, debris, lightning, and smoking. **Table 4.3.26.3.2** lists the wildfire occurrences in Franklin County since 2013. **Figure 4.3.26.3.1** plots these fires on the map to show the areas impacted by these wildfires.

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Date	Municipality	Wildfire Name	Cause	Acres Impacted
11/17/2020	Quincy Township	Mentzer	Debris Burning	0.70
9/26/2020	Guilford Township	Blue Bank	Camp Fire	0.10
9/23/2020	Quincy Township	Wirt 5	Incendiary	0.10
9/9/2020	Quincy Township	Wirt 4	Incendiary	0.10
8/26/2020	Quincy Township	Wirt 3	Incendiary	0.10
8/26/2020	Quincy Township	Wirt 2	Incendiary	0.10
8/26/2020	Quincy Township	Wirt 1	Incendiary	0.10
4/6/2020	Washington Township	Club	Debris Burning	0.40
3/16/2020	Quincy Township	Vista	Incendiary	0.10
11/28/2019	Peters Township	Charlestown Road	Power Line	1.00
5/25/2018	Peters Township	Mountain Road Fire	Camp Fire	0.10
3/22/2018	Guilford Township	Penn National	Misc	0.10
3/11/2018	Montgomery Township	Fritz	Misc	0.40
5/14/2017	Guilford Township	Limestone	Camp Fire	0.10
2/18/2017	Quincy Township	Pulpit Rock	Camp Fire	7.00
2/17/2017	Peters Township	Hawbaker	Debris Burning	0.10
11/28/2016	Metal Township	Cowns Village	Misc	10.20
11/9/2016	Quincy Township	Snowy Mt	Incendiary	1.00
10/24/2016	Guilford Township	Brown Rocks	Incendiary	5.00
9/23/2016	Quincy Township	Moonshine	Camp Fire	0.10
4/15/2016	Peters Township	Route 16	Equipment Use	0.40
3/21/2016	Lurgan Township	Forge Hill	Power Line	8.00
3/3/2016	Lurgan Township	Roxbury Fire	Power Line	0.67
11/21/2015	Guilford Township	White Rocks	Camp Fire	0.10
11/13/2015	Montgomery Township	Africa Fire	Misc	0.40
9/28/2015	Greene Township	Rocky Mountain Fire	Camp Fire	0.10
9/26/2015	Letterkenny Township	Letterkenny Fire	Misc	19.70
9/23/2015	Antrim Township	Clayhill Road	Debris Burning	0.50
4/19/2015	Guilford Township	Smith Corl Ridge Rd Fire	Debris Burning	0.10
4/13/2015	Guilford Township	White Rock Rd	Incendiary	0.25
4/11/2015	Lurgan Township	Letterkenny Reservoir Fire	Misc	3.19
4/6/2015	Peters Township	Atherton Fire	Debris Burning	1.65
4/2/2015	Guilford Township	Corls Ridge Rd	Debris Burning	0.50
11/5/2014	Greene Township	Heisey Rd	Misc	0.25
11/2/2014	Greene Township	Mt Cydonia 2	Incendiary	0.10
11/1/2014	Greene Township	Mt Cydonia	Incendiary	0.10
10/26/2014	Peters Township	Bittinger	Misc	2.00
10/23/2014	Warren Township	Utermohlen	Equipment Use	0.10
9/12/2014	Southampton Township	Stillhouse	Equipment Use	0.10
8/31/2014	Guilford Township	White Rocks 2	Camp Fire	1.70
8/27/2014	Guilford Township	White Rocks	Camp Fire	0.10
3/15/2014	Quincy Township	Monns Gap	Incendiary	1.00
11/14/2013	Greene Township	Ridge Road	Incendiary	0.10
9/10/2013	Quincy Township	WWII Reenactment	Equipment Use	0.10
4/7/2013	Quincy Township	Spruce Road	Debris Burning	0.50
1/19/2013	Southampton Township	Stillhouse Powerline	Misc	0.80
Total Acres Impacted:				69.41

Table 4.3.26.3.2: Franklin County Wildfires with Causes List (2013-2022)¹⁶⁶

¹⁶⁶ PA DCNR, Forestry Bureau

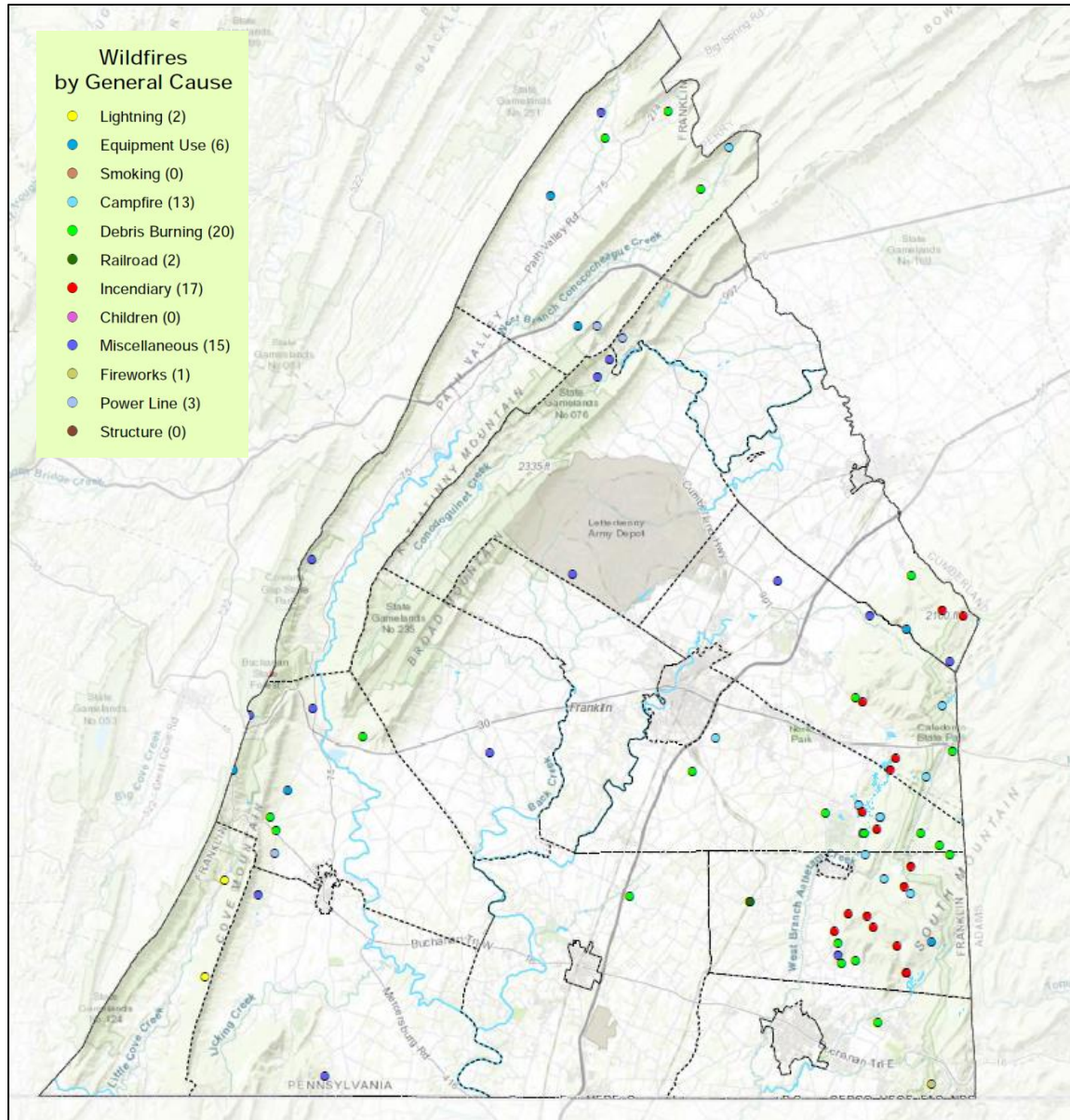


Figure 4.3.26.3.1: Franklin County Wildfires with Causes (2013-2022)¹⁶⁷

4.3.26.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for Wildfires using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Wildfires is classified as Very Low, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Very Low as compared to other communities in the United States. Socially vulnerable populations are not likely to be impacted by wildfires in Franklin County.

¹⁶⁷ PA DCNR, Forestry Bureau

Climate Change

Climate change is not likely to cause an increased wildfire risk in Franklin County since the annual precipitation is expected to increase and help to minimize the risk.

Unpredictable weather conditions like drought can increase the likelihood of fires burning out of control and becoming a wildfire. Any fire, without the quick response or attention of firefighters, forestry personnel, or visitors to the forest, has the potential to become a wildfire. The probability of future wildfires should be considered *likely* according to the Risk Factor Methodology (see **Section 4.4**). However, the likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions, particularly drought events (see **Section 4.3.5** for the Drought hazard), increase the likelihood of wildfires occurring.

4.3.26.5 Vulnerability Assessment

Analyzing the Past Occurrence data and the causal factors of wildfires, it is apparent that Franklin County will continue to experience these events, especially since the county has significant amounts of publicly and privately owned forested land along the eastern and western mountain boundaries that could be greatly impacted by wildfires. That land currently has a variety of uses, including hunting, fishing, recreation, and timbering, all of which could be negatively affected in the event of a wildfire. That being said, there is no data to indicate any loss of life and little data to indicate that the events we have experienced have resulted in significant financial losses. Therefore, even though the likelihood of recurrence is moderate, the impact of these incidents has been low. It is still a viable threat to the county, and mitigation actions can be put in place to further reduce the occurrence rate and impact of these events. One action that we have added is to restart the Franklin County Firewise program and encourage municipal participation to raise awareness of the threat and implement preventive measures.

Figure 4.3.26.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Wildfire hazard. One can see that only 2 of 22 municipalities rated this threat as a Major event, and neither of those are the municipalities in the Michaux or Buchanan State Forest. Furthermore, only 3 of the remaining 20 municipalities have it ranked as a Moderate threat. This is considered a Minor threat for Franklin County, ranked number 25 overall. Mitigation Actions will be developed to counter this threat in the Mitigation Strategy in **Section 6**.

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	Wildfire Hazard Threat Risk Assessment										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	2	30%	2	30%	3	20%	4	10%	2	10%	2.4	10.12%	0.24288
Chambersburg Borough	1	30%	2	30%	2	20%	1	10%	2	10%	1.6	14.05%	0.2248
Fannett Township	3	30%	1	30%	3	20%	4	10%	2	10%	2.4	1.59%	0.03816
Greencastle Borough	1	30%	2	30%	1	20%	3	10%	2	10%	1.6	2.73%	0.04368
Greene Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	11.82%	0.20094
Guilford Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	9.38%	0.13132
Hamilton Township	2	30%	2	30%	2	20%	3	10%	2	10%	2.1	7.29%	0.15309
Letterkenny Township	1	30%	1	30%	2	20%	4	10%	2	10%	1.6	1.58%	0.02528
Lurgan Township	1	30%	1	30%	1	20%	2	10%	2	10%	1.2	1.42%	0.01704
Mercersburg Borough	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	0.97%	0.01358
Metal Township	2	30%	1	30%	2	20%	4	10%	2	10%	1.9	1.13%	0.02147
Mont Alto Borough	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.01%	0.01111
Montgomery Township	2	30%	2	30%	4	20%	4	10%	2	10%	2.6	3.68%	0.09568
Orrstown Borough	2	30%	1	30%	1	20%	1	10%	2	10%	1.4	0.14%	0.00196
Peters Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	2.86%	0.04004
Quincy Township	2	30%	1	30%	1	20%	4	10%	2	10%	1.7	3.41%	0.05797
Shippensburg Borough	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	0.75%	0.0105
Southampton Township	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	5.49%	0.07137
St Thomas Township	2	30%	1	30%	1	20%	3	10%	2	10%	1.6	3.79%	0.06064
Warren Township	3	30%	2	30%	3	20%	4	10%	2	10%	2.7	0.21%	0.00567
Washington Township	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	9.55%	0.1337
Waynesboro Borough	1	30%	1	30%	1	20%	4	10%	2	10%	1.4	7.02%	0.09828
Municipal Weighted Average Risk Factor (RF)													1.699

Figure 4.3.26.5.1: Municipal Wildfire Threat Vulnerability Self-Assessment

It is important to note that most wildfires in Pennsylvania are human-caused. As a result, the occurrence of future wildfire events will strongly depend on patterns of human activity. Events are more likely to occur in wildfire-prone areas experiencing new or additional development. Wildfires may also be more likely after Invasive Species (**Section 4.3.12**) infestations or Windstorm events (**Section 4.3.22**); these events would add additional potential fuel load to fire-prone locations.

4.3.26.6 Community Lifeline Integration

Potential impacts to the Community Lifelines for a Wildfire are shown below. There is potential for significant impacts to three lifelines (Safety & Security, Food/Water/Shelter, and Energy) and possible impacts for the four remaining lifelines.



Figure 4.3.26.6.1: Wildfire Community Lifeline Integration

4.3.27 Winter Storm

Winter storms consist of cold temperatures, heavy snow or ice and sometimes strong winds. They begin as low-pressure systems that move through Pennsylvania either following the jet stream or developing as extra-tropical cyclonic weather systems over the Atlantic Ocean called Nor'easters.

4.3.27.1 Location and Extent

Winter Storms can, and usually do, impact the entire county. Within Franklin County, there are variations in the average amount of snowfall that is received because of geography and elevation differences. The higher elevations receive on average 25-50 inches, whereas the lower elevations see between 10-25 inches, as shown in **Figure 4.3.27.1.1**¹⁶⁸.

¹⁶⁸ NOAA/NWS

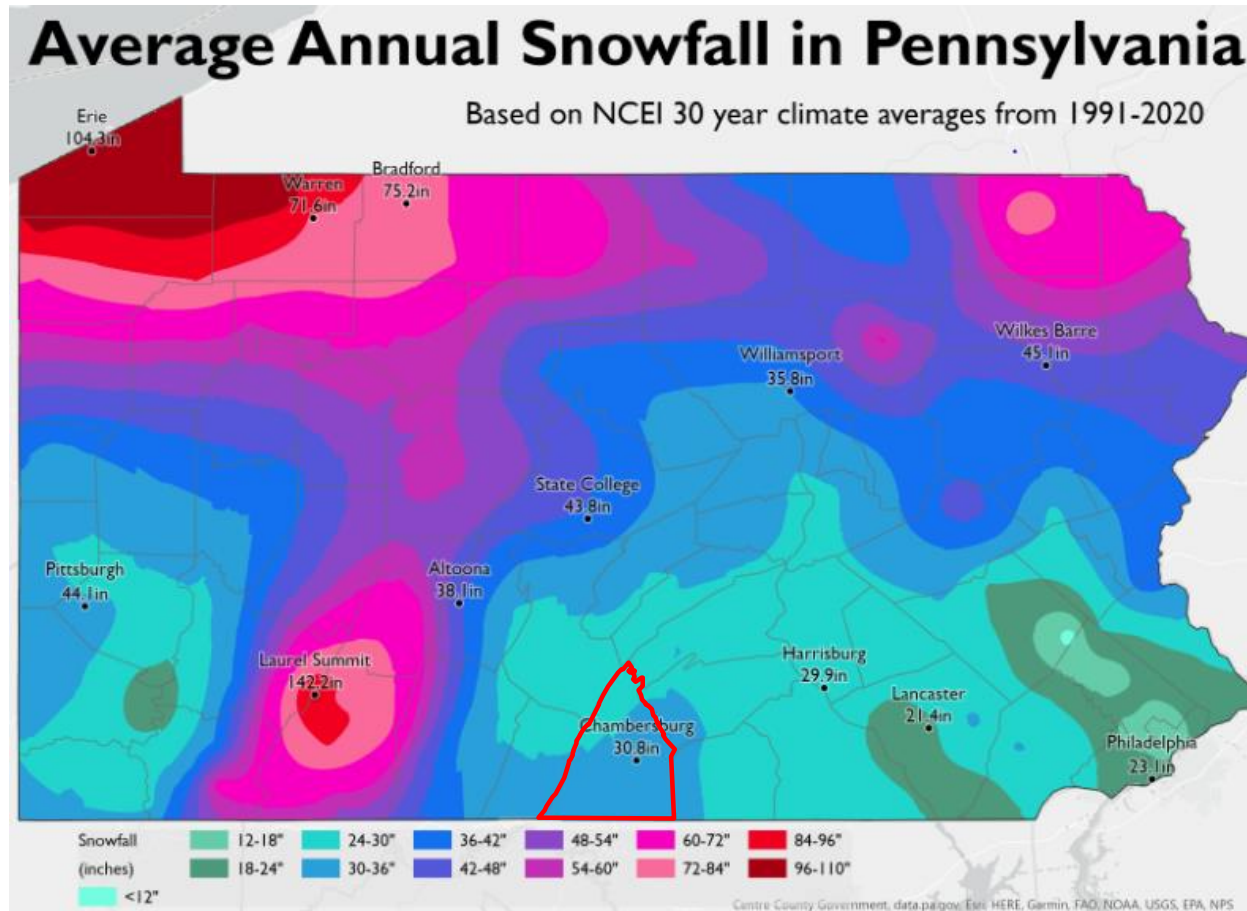


Figure4.3.27.1.1: Average Annual Snowfall for Franklin County PA (1991-2020)

4.3.27.2 Range of Magnitude

A winter storm can adversely affect roadways, utilities, business activities, and can cause hypothermia, frostbite, or loss of life. These storms may introduce heavy snow, ice, winter flooding, and extreme cold temperatures into the region¹⁶⁹. This section will only discuss heavy snow and ice conditions. Extreme cold temperatures and winter flooding are covered in **Section 4.3.8** and **Section 4.3.9** respectively.

Heavy Snow: Heavy snow can immobilize a region and paralyze a community by closing major transportation arteries, thus stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can cause roofs to collapse and knock down trees and power lines leading to humanitarian and medical crises during periods of reduced mobility. Rural homes and farms may be isolated for days and unprotected livestock may be lost. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts on our municipalities. The following are examples of snow conditions common in Franklin County¹⁷⁰:

¹⁶⁹ NOAA/NES, 2008

¹⁷⁰ NOAA/NES, 2008

- **Blizzard** – Winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ mile for 3 hours or more.
- **Blowing Snow** – Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**- Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers** – Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Snow Flurries** – Light snow falling for short durations with little or no accumulation.

Ice: Heavy accumulations of ice can bring down trees and topple utility poles and communications towers. Ice can disrupt communications and power for days while utility companies repair extensive damage. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces. The following are ice conditions that impact Franklin County:

- **Freezing Rain** - Frozen precipitation that melts upon encountering warmer air only to refreeze on cold surfaces upon reaching the ground as a sheet of ice.
- **Sleet** – Frozen precipitation that melts upon encountering warmer air but refreezes prior to hitting the ground.

4.3.27.3 Past Occurrence

Franklin County and the Commonwealth of Pennsylvania have a long history of severe winter weather. Franklin County has experienced the following types of severe winter weather events (See **Table 4.3.27.3.1** below) since 1993, according to the National Centers for Environmental Information (NCEI)¹⁷¹:

Severe Winter weather Type	Occurrences
Blizzards/Heavy Snow	25
Ice Storm	6
Winter Storm	30
Totals	61

Table 4.3.27.3.1: Severe Winter Weather Events for Franklin County (1997-2022)

¹⁷¹ NOAA/NCEI

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From this data, one can see that Franklin County has experienced 61 winter storm events, since 1997. The NCEI data on past occurrence for winter storm events is the most comprehensive list of data available for the county. The county does not have or maintain data on damages caused by winter storms at the local level.

There have been a number of key past winter storm events for Franklin County. However, the most significant one was on January 22-24, 2016. The storm, named Winter Storm Jonas by The Weather Channel, dumped over 29 inches of snow in 48 hours in parts of Franklin County¹⁷². This resulted in 21 of 22 municipalities as well as the county enacting disaster declarations. Both state and federal partners declared disasters as well. As a result of this one winter storm, Franklin County and our municipalities filed for well over \$900,000 in federal disaster relief funding to cover the manpower (overtime), equipment, and material costs required to return to normal operations.

Table 4.3.27.3.2 below specifically lists all of the Winter Weather Events as reported by NOAA from 2013-2022:

Date	Severe Weather Event	Location
3/12/2022	Winter Storm	Multiple Counties
1/6/2022	Winter Storm	Multiple Counties
2/1/2021	Winter Storm	Multiple Counties
1/31/2021	Winter Storm	Multiple Counties
12/16/2020	Winter Storm	Multiple Counties
3/3/2019	Winter Storm	Multiple Counties
2/20/2019	Winter Storm	Multiple Counties
2/11/2019	Winter Storm	Multiple Counties
11/15/2018	Winter Storm	Multiple Counties
3/20/2018	Winter Storm	Multiple Counties
2/7/2018	Winter Storm	Multiple Counties
3/13/2017	Winter Storm	Multiple Counties
2/15/2016	Winter Storm	Multiple Counties
1/22/2016	Winter Storm	Multiple Counties
11/25/2014	Heavy Snow	Multiple Counties
2/13/2014	Heavy Snow	Multiple Counties
2/4/2014	Winter Storm	Multiple Counties
2/3/2014	Heavy Snow	Adams, Bedford, Dauphin, Franklin, Fulton, Lancaster, Lebanon, Schuylkill, Somerset & York
1/5/2014	Ice Storm	Adams & Franklin
12/14/2013	Winter Storm	Multiple Counties
3/6/2013	Heavy Snow	Fulton, Cambria, Somerset, Bedford, Adams, Franklin, Blair, and Huntingdon

Table 4.3.27.3.2: Winter Weather Events in Franklin County (2013-2022)¹⁷³

¹⁷² The Herald Mail, 2016

¹⁷³ NOAA/NCEI

4.3.27.4 Future Occurrence

At the national level, the FEMA National Risk Index Map calculates a community's relative risk for Winter Weather using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience. According to FEMA, Franklin County's Expected Annual Loss for Winter Weather is classified as Relatively Moderate, the Social Vulnerability is Relatively Low and the Community Resilience is Relatively High, resulting in an overall Risk Index of Relatively Moderate as compared to other communities in the United States. Socially vulnerable populations may be affected by winter weather, especially those that are experiencing homelessness that do not have access to housing resources.

Climate Change

Even though average temperatures are expected to increase slightly, climate change could still increase the intensity and duration of winter storms within the county. The warmer atmosphere is more conducive to holding moisture, resulting in the potential for more frozen precipitation when winter storms do occur.

At the local level, winter storms are a regular annual occurrence in Franklin County and should be considered *highly likely*, based on the Risk Factor criteria (See **Section 4.4**).

Table 4.3.27.4.1 below shows the snow and sleet totals per month from January 2018 through December 2022 for Franklin County PA¹⁷⁴. There are 3 reporting locations in Franklin County; Chambersburg (USC00361354), Greencastle (US1PAFN0001) and South Mountain (USC00368308). From this table, one can see that the probability of snow/sleet related events is high, especially in December, January, February, and March. In these months, one can also see that the total accumulation varies widely, but the possibility of depths over 6 inches can be easily achieved. There is no reason to believe the winter weather trends shown in **Table 4.3.27.4.1** below will not continue.

¹⁷⁴ NOAA/NCEI, Global Summary for Months 2018 through 2022 for Franklin County PA

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Snow/Sleet in Inches per Month since 2018															% Chance on average of Snow/Sleet in Month	Average Accumulation in inches if it does Snow/Sleet per month	
Month	2018			2019			2020			2021			2022				
	Chambersburg	Greencastle	South Mountain	Chambersburg	Greencastle	South Mountain	Chambersburg	Greencastle	South Mountain	Chambersburg	Greencastle	South Mountain	Chambersburg	Greencastle	South Mountain		
January	4.0	2.8	3.7		7.0	14.7	3.7		5.4	4.3	1.0	0.8	8.8	7.0	14.0	87%	5.9
February	8.7	5.0	6.9		14.7	18.2			2.8	25.7	17.0	30.2		1.0	3.9	73%	12.2
March	17.0	10.9	18.7		8.4	10.7			1.7					3.0	6.3	53%	9.6
April	2.5		2.8						1.0						3.9	27%	2.6
May									0.2							7%	0.2
June																0%	
July																0%	
August																0%	
September																0%	
October																0%	
November			9.6							0.1						13%	4.9
December				1.0		5.4	8.9		11.9	1.2						33%	5.7

Table 4.3.27.4.1: Snow/Sleet per Month for Franklin County (2018-2022)

4.3.27.5 Vulnerability Assessment

Based on all the information available, every community in Franklin County is equally vulnerable to the direct impacts of winter storms. However residents in the mountainous areas of the county may be more susceptible to disasters during severe storms, due to hazardous road conditions on steep inclines. This is especially true when emergency medical assistance may be required during the snow event.

Figure 4.3.27.5.1 below lists the vulnerability self-assessments of each of the Franklin County municipalities for the Winter Storm hazard. One can see that 15 of 22 municipalities rated this threat as either a Catastrophic or Major event. Furthermore, 4 of the remaining 7 municipalities rated this as a Moderate threat. This is a Major threat to Franklin County ranked number 1 overall and will garner significant attention during the Mitigation Strategy in **Section 6**.

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	<div style="text-align: center;"> Winter Storm Hazard Threat Risk Assessment </div>										Risk Factor Scale		
											Catastrophic	3.0 - 4.0	
											Major	2.5 - 2.9	
											Moderate	2.0 - 2.4	
											Minor	1.5 - 1.9	
											Insignificant	1.0 - 1.4	
Municipality	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	% of County Population	Contribution to County RF
Antrim Township	3	30%	2	30%	4	20%	1	10%	3	10%	2.7	10.12%	0.27324
Chambersburg Borough	3	30%	3	30%	3	20%	2	10%	3	10%	2.9	14.05%	0.40745
Fannett Township	3	30%	1	30%	3	20%	3	10%	3	10%	2.4	1.59%	0.03816
Greencastle Borough	4	30%	3	30%	4	20%	1	10%	3	10%	3.3	2.73%	0.09009
Greene Township	3	30%	2	30%	4	20%	3	10%	3	10%	2.9	11.82%	0.34278
Guilford Township	4	30%	2	30%	4	20%	1	10%	3	10%	3.0	9.38%	0.2814
Hamilton Township	3	30%	2	30%	4	20%	2	10%	3	10%	2.8	7.29%	0.20412
Letterkenny Township	4	30%	1	30%	4	20%	2	10%	3	10%	2.8	1.58%	0.04424
Lurgan Township	1	30%	1	30%	1	20%	3	10%	3	10%	1.4	1.42%	0.01988
Mercersburg Borough	3	30%	1	30%	4	20%	2	10%	3	10%	2.5	0.97%	0.02425
Metal Township	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	1.13%	0.01356
Mont Alto Borough	3	30%	1	30%	4	20%	2	10%	3	10%	2.5	1.01%	0.02525
Montgomery Township	3	30%	2	30%	4	20%	1	10%	3	10%	2.7	3.68%	0.09936
Orrstown Borough	3	30%	1	30%	2	20%	1	10%	3	10%	2.0	0.14%	0.0028
Peters Township	2	30%	1	30%	1	20%	4	10%	3	10%	1.8	2.86%	0.05148
Quincy Township	2	30%	2	30%	2	20%	1	10%	3	10%	2.0	3.41%	0.0682
Shippensburg Borough	3	30%	1	30%	4	20%	1	10%	3	10%	2.4	0.75%	0.018
Southampton Township	2	30%	2	30%	4	20%	4	10%	3	10%	2.7	5.49%	0.14823
St Thomas Township	3	30%	2	30%	3	20%	1	10%	3	10%	2.5	3.79%	0.09475
Warren Township	4	30%	2	30%	3	20%	4	10%	3	10%	3.1	0.21%	0.00651
Washington Township	3	30%	2	30%	3	20%	1	10%	3	10%	2.5	9.55%	0.23875
Waynesboro Borough	4	30%	1	30%	4	20%	1	10%	3	10%	2.7	7.02%	0.18954
Municipal Weighted Average Risk Factor (RF)													2.682

Figure 4.3.27.5.1: Municipal Winter Storm Threat Vulnerability Self-Assessment

Because of the frequency of winter storms in Franklin County, strategies have been developed at the county and municipal level to respond to these events. Snow removal and utility repair equipment are prepositioned to respond to typical snow/ice events. Additionally, the use of auxiliary heat and electricity supplies, such as wood burning stoves, kerosene heaters, and gasoline powered generators reduce the vulnerability of the population to extreme cold temperatures commonly associated with winter storms.

Vulnerability to the effects of winter storms on buildings is dependent on the type and age of the structure. **Table 4.3.27.5.1** below lists “built on” date percentages for residences in our municipalities. It is evident that a large portion of the housing in the county was built prior to 1960 (31.2%). Due to older building codes at time of construction and the impacts of age (and/or lack of maintenance) on facilities built before 1960, one would expect to see an increase in hazards related to snow and ice loads during severe winter weather¹⁷⁵. This is especially true for residences in the Boroughs of Chambersburg, Waynesboro, Mercersburg, and Orrstown, where the percentage of houses built before 1960 is over 50%.

¹⁷⁵ US Census Bureau, American Community Survey 5-Year Estimates, 2016-2020

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Municipality	Percent of Houses built in Time Period							Estimated number of houses	Estimated number of houses built before 1960	Percent of houses built before 1960
	2020 or later	2010-2019	2000-2009	1980-1999	1960-1979	1940-1959	1939 or earlier			
Antrim Township	0.0%	5.4%	15.7%	24.1%	29.9%	10.0%	14.9%	6187	1537	24.8%
Chambersburg Borough	0.0%	4.1%	10.7%	15.4%	19.7%	24.8%	25.3%	10186	5105	50.1%
Fannett Township	0.0%	2.5%	6.4%	24.1%	33.8%	11.4%	21.8%	1059	352	33.2%
Greencastle Borough	0.0%	1.0%	15.7%	19.2%	22.2%	20.3%	21.7%	1756	737	42.0%
Greene Township	0.0%	8.9%	19.1%	31.4%	21.3%	11.6%	7.7%	8003	1547	19.3%
Guilford Township	0.1%	2.9%	18.3%	28.5%	34.2%	9.5%	6.5%	6596	1052	15.9%
Hamilton Township	1.3%	5.6%	22.3%	30.4%	3.6%	11.9%	4.1%	4304	688	16.0%
Letterkenny Township	0.0%	7.4%	7.4%	32.9%	23.2%	5.1%	24.1%	922	269	29.2%
Lurgan Township	0.0%	6.1%	9.2%	23.7%	29.0%	16.0%	16.0%	758	242	31.9%
Mercersburg Borough	0.0%	0.0%	7.5%	12.6%	14.6%	15.7%	49.5%	808	527	65.2%
Metal Township	0.2%	1.8%	7.0%	24.9%	28.6%	16.4%	21.1%	873	327	37.5%
Mont Alto Borough	0.0%	2.0%	15.5%	19.8%	25.7%	22.6%	14.3%	645	238	36.9%
Montgomery Township	0.0%	3.8%	19.9%	23.4%	23.5%	10.1%	19.4%	2206	650	29.5%
Orrstown Borough	0.0%	0.6%	0.6%	5.0%	2.5%	37.7%	53.5%	159	145	91.2%
Peters Township	0.0%	3.6%	3.3%	36.7%	25.4%	18.7%	12.3%	1855	575	31.0%
Quincy Township	0.0%	4.1%	8.5%	18.1%	31.5%	21.6%	16.2%	1957	740	37.8%
Shippensburg Borough	0.0%	0.0%	8.7%	23.0%	19.3%	43.3%	5.7%	688	337	49.0%
Southampton Township	0.0%	2.3%	20.7%	33.2%	26.9%	8.8%	8.1%	3391	573	16.9%
St Thomas Township	0.0%	5.6%	11.2%	17.2%	35.9%	12.0%	18.2%	2186	661	30.2%
Warren Township	0.0%	3.4%	12.1%	30.5%	22.4%	9.2%	22.4%	174	55	31.6%
Washington Township	0.2%	5.7%	23.6%	29.2%	16.2%	15.9%	9.1%	6581	1648	25.0%
Waynesboro Borough	0.0%	2.7%	6.3%	18.9%	17.8%	18.6%	35.7%	4828	2622	54.3%
County Totals:								66122	20627	31.20%

Table 4.3.27.5.1: Percentages of House Built Prior to 1960 per Municipality (2016-2020)¹⁷⁶

People residing in structures lacking adequate equipment to protect against cold temperatures or significant snow and ice are more vulnerable to winter storm events and contingency plans need to be developed for possible evacuation and relocation. Even for communities that are prepared to respond to winter storms, severe events involving snow accumulations that exceed 6 or more inches in a 12-hour period can cause a large number of traffic accidents, strand motorists due to drifting snow, interrupt power and communications systems, and cause failure of inadequately designed or maintained roof systems.

Additional vulnerabilities exist due to icy and snow covered roadways. This is a potential risk on all roads, even the most widely travelled routes in the county. The areas of most concern are those routes in Franklin County that are considered major arteries for traffic through the Cumberland Valley region (i.e. I-81 and I-76, The PA Turnpike).

¹⁷⁶ US Census Bureau, American Community Survey 5-Year Estimates, 2016-2020

4.3.27.6 Community Lifelines Integration

Potential impacts to the Community Lifelines for Winter Storm are shown below. There is potential for significant impacts to one lifeline (Transportation) and possible impacts for the four remaining lifelines.

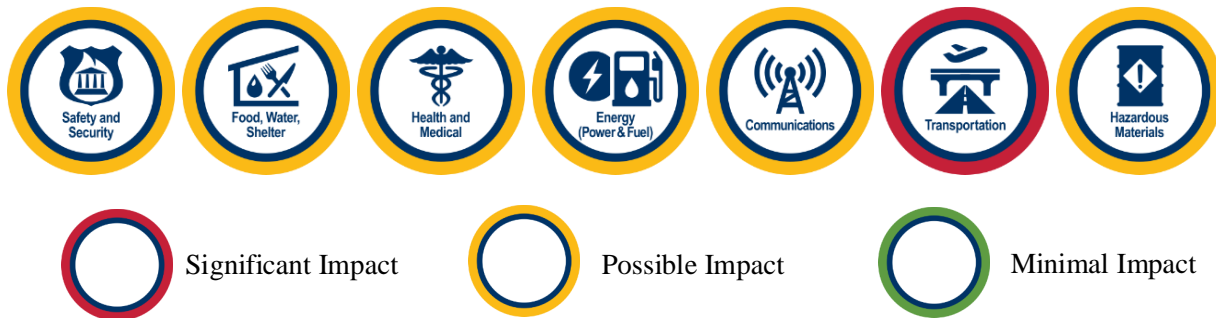


Figure 4.3.27.6.1: Winter Storm Community Lifeline Integration

4.4 Hazard Vulnerability Summary

4.4.1 Methodology

Ranking hazards helps communities set goals and priorities for mitigation based on their vulnerabilities. A Risk Factor (RF) is a tool used to measure the degree of risk for identified hazards in a particular 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 based on a variety of factors deemed important by the planning team and other stakeholders involved in the hazard mitigation planning process. The RF system relies mainly on historical data, local knowledge, general consensus opinions from the planning team and information collected through development of the hazard profiles included in **Section 4.3**. The RF approach produces numerical values that allow identified hazards to be ranked against one another; the higher the RF value, the greater the hazard risk.

RF values were obtained by assigning varying degrees of risk to 5 categories for each of the 24 hazards profiled in this Hazard Mitigation Plan update. Those categories include: *probability*, *impact*, *spatial extent*, *warning time* and *duration*. Each degree of risk was assigned a value ranging from 1 to 4. The weighting factor is shown in **Table 4.4.1.1**. To calculate the RF value for a given hazard, the assigned risk value for each category was multiplied by the weighting factor. The sum of all 5 categories equals the final RF value, as demonstrated in the example equation in **Figure 4.4.1.1** below:

Hazard Risk Factor	=	Probability Rating 30%	+	Impact Rating 30%	+	Spatial Rating 20%	+	Warning Rating 10%	+	Duration Rating 10%
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Figure 4.4.1.1: Risk Factor (RF) Equation

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Table 4.4.1.1 summarizes each of the five categories used for calculating an RF for each hazard. According to the weighting scheme applied, the highest possible value is a 4.0.

RISK ASSESSMENT CATEGORY	DEGREE OF RISK			Weight Value
	LEVEL	CRITERIA	INDEX	
PROBABILITY <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	
IMPACT <i>What, in terms of injuries, damage, death, and economic impact, would you anticipate to be minor, limited, critical, or catastrophic when a significant hazard event occurs?</i>	MINOR	VERY FEW INJURIES, IF ANY. ONLY MINOR PROPERTY DAMAGE & MINIMAL DISRUPTION ON QUALITY OF LIFE. TEMPORARY SHUTDOWN OF CRITICAL FACILITIES.	1	30%
	LIMITED	MINOR INJURIES ONLY. MORE THAN 10% OF 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 FOR 30 DAYS OR MORE.	4	
SPATIAL EXTENT <i>How large of an area could be impacted by a hazard event? Are impacts localized or regional?</i>	NEGLIGIBLE	LESS THAN 1% OF AREA AFFECTED	1	20%
	SMALL	BETWEEN 1% & 10% OF AREA AFFECTED	2	
	MODERATE	BETWEEN 10% & 50% OF AREA AFFECTED	3	
	LARGE	BETWEEN 50% AND 100% OF AREA AFFECTED	4	
WARNING TIME <i>Is there usually some lead time associated with the hazard event? Are impacts localized or regional?</i>	MORE THAN 24 HRS	SELF DEFINED	1	10%
	12 TO 24 HRS	SELF DEFINED	2	
	6 TO 12 HRS	SELF DEFINED	3	
	LESS THAN 6 HRS	SELF DEFINED	4	
DURATION <i>How long does the hazard event usually last?</i>	LESS THAN 6 HRS	SELF DEFINED	1	10%
	LESS THAN 24 HRS	SELF DEFINED	2	
	LESS THAN 1 WEEK	SELF DEFINED	3	
	MORE THAN 1 WEEK	SELF DEFINED	4	

Table 4.4.1.1: Summary of Risk Factor Approach Used to Rank Hazards at the Municipal Level

4.4.2 Ranking Results

Since our first and most important priority in emergency response is to protect the lives of Franklin County citizens, the Risk Factors for each municipality were weighed based on the 2020 Census results. This means that population density is also a factor in determining the Franklin County Risk Factor roll-up. We also expanded our Risk Factor results grading scale to five levels (See **Table 4.4.2.1** below).

Risk Factor Scale	
Catastrophic	3.0 – 4.0
Major	2.5 - 2.9
Moderate	2.0 - 2.4
Minor	1.5 – 1.9
Insignificant	1.0 – 1.4

Table 4.4.2.1: Risk Factor Scale for Hazard Assessments

This more granular scale allows for a finer distinction at the municipal level to identify those hazards that require immediate attention and those that can be more methodically mitigated.

Each municipality was sent a survey based on the methodology identified in **Section 4.4.1**. However, the municipalities were only asked to score 4 of the 5 threat characteristics. The “Duration” characteristic was standardized at the county level to make sure that a hazard occurring in one part of the county was in line with the same type of hazard occurring in another part of the county. That is, we did not want the survey data skewed because the “Duration” of the events was wildly varied. For example, if we are assessing a Winter Storm hazard threat, we know that the storm is not going to last longer in Chambersburg than in Waynesboro, on average. The numbers we used for the “Duration” of hazards characteristic were taken verbatim from the Pennsylvania 2013 Standard State All-Hazard Mitigation Plan for each threat. A copy of this Survey is included in **Appendix E** of this Hazard Mitigation Plan.

Using the methodology described in **Section 4.4.1** and the minor alterations listed above, **Figure 4.4.2.1** below lists the County roll-up weighted Risk Factors calculated for each of the 24 potential hazards identified in this Hazard Mitigation Plan Update.

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2023 Franklin County Hazard Threat Assessment Roll-Up																								
Risk Factor Scale		Antrim Township	Chambersburg Borough	Fannett Township	Greencastle Borough	Greene Township	Guilford Township	Hamilton Township	Letterkenny Township	Lurgan Township	Mercersburg Borough	Metal Township	Mont Alto Borough	Montgomery Township	Orrstown Borough	Peters Township	Quincy Township	Saint Thomas Township	Shippensburg Borough	Southampton Township	Warren Township	Washington Township	Waynesboro Borough	Municipal Weighted Average
Catastrophic	3.0 – 4.0																							
Major	2.5 - 2.9																							
Moderate	2.0 - 2.4																							
Minor	1.5 – 1.9																							
Insignificant	1.0 – 1.4																							
Winter Storm	2.7	2.9	2.4	3.3	2.9	3.0	2.8	2.8	1.4	2.5	1.2	2.5	2.7	2.0	1.8	2.0	2.5	2.4	2.7	3.1	2.5	2.7	2.682	
Pandemic and Infectious Disease	3.4	1.9	2.0	3.0	3.4	3.1	2.1	2.6	1.5	1.3	1.8	1.7	3.3	1.3	1.6	1.8	2.6	2.5	2.1	3.0	2.0	3.4	2.582	
Utility Interruption	2.6	2.9	1.9	2.3	2.7	2.7	2.1	2.4	1.2	2.3	2.3	2.6	3.2	2.1	1.7	1.8	2.9	2.1	1.4	3.0	1.8	2.7	2.420	
Hurricane, Tropical Storm, Nor'easter	2.2	2.5	1.3	2.9	2.5	2.8	2.3	2.5	1.3	2.2	1.3	1.5	2.8	1.3	1.9	2.1	2.4	2.2	1.7	2.2	2.4	2.2	2.329	
Extreme Temperatures	2.4	2.7	2.4	2.8	2.4	2.4	2.1	2.4	1.3	2.4	1.2	2.0	2.7	1.2	2.1	1.4	2.2	2.1	2.7	2.2	1.3	3.0	2.308	
Tornado, Windstorm	2.7	2.4	2.6	2.7	2.4	2.3	2.3	2.0	1.2	2.8	1.1	1.0	2.1	1.0	1.6	1.8	2.7	2.6	1.3	2.3	1.9	2.7	2.246	
Transportation Accident	2.2	2.2	2.6	2.9	1.9	2.8	2.1	2.5	1.2	1.3	2.2	1.6	3.1	1.0	1.6	1.6	2.7	1.9	1.8	2.7	1.6	2.2	2.147	
Hailstorm	2.2	2.8	2.0	2.7	2.8	2.3	2.0	1.8	1.1	2.2	1.2	1.5	2.2	1.0	1.6	1.0	2.1	1.5	1.5	2.3	1.3	2.2	2.127	
Drought	2.2	2.2	1.6	3.0	2.3	2.0	2.3	2.0	1.7	2.2	1.6	2.3	2.6	1.3	1.9	2.0	2.5	2.2	1.7	2.0	1.3	2.5	2.113	
Environmental Hazards (HAZMAT Release)	2.4	1.9	2.2	2.7	1.7	2.6	2.2	1.7	1.2	1.1	2.5	1.6	2.2	1.1	1.7	1.3	2.3	1.6	2.2	2.2	2.2	1.9	2.067	
Nuclear Incident	3.1	1.8	1.3	2.4	2.5	1.9	1.6	2.8	1.3	2.5	1.8	1.3	2.4	1.3	1.6	2.5	1.6	2.1	1.5	2.2	1.6	2.2	2.055	
Flood, Flash Flood, Ice Jam	2.2	1.8	1.2	2.3	1.8	2.5	1.8	1.7	1.7	1.2	1.2	1.2	3.1	1.2	2.1	1.5	2.2	2.1	1.9	2.1	2.3	2.0	2.019	
Cyberterrorism	1.4	2.8	1.1	2.5	3.2	2.3	1.4	2.2	1.2	1.4	1.5	2.2	1.4	1.1	1.7	1.1	2.0	2.4	1.6	1.4	1.4	1.7	1.998	
Earthquake	2.5	2.8	1.0	2.0	2.2	2.2	1.3	1.7	1.0	2.8	1.6	1.7	2.2	1.0	1.6	1.1	1.3	1.5	1.2	1.7	1.5	2.2	1.975	
Radon Exposure	1.9	2.6	1.3	2.4	1.8	1.8	1.6	2.1	1.4	1.3	1.3	1.3	3.3	1.3	1.6	1.3	1.9	1.6	1.6	1.8	1.8	1.9	1.930	
Invasive Species	2.0	2.8	1.3	2.1	2.0	2.0	1.8	2.6	1.5	2.2	1.3	1.3	2.2	1.3	1.9	1.3	2.2	1.6	1.4	2.1	1.3	1.3	1.914	
Dam Failure	1.3	2.6	1.6	1.5	1.5	2.3	1.6	1.9	3.2	1.6	1.8	1.3	1.5	1.3	1.6	1.8	1.7	1.6	1.5	2.3	2.3	2.4	1.913	
Building & Structure Collapse	1.6	1.7	1.9	2.1	1.9	2.5	1.9	2.2	1.4	1.6	1.9	1.4	2.2	1.3	1.9	1.9	1.9	1.6	1.6	2.1	1.9	2.2	1.906	
Opioid Addiction Response	1.9	1.4	1.7	2.1	2.6	1.9	1.8	2.2	1.1	1.6	1.0	1.0	3.4	1.0	1.6	1.3	1.3	1.6	1.6	2.3	1.6	2.8	1.898	
Lightning Strike	1.9	2.2	2.3	2.7	1.6	1.6	1.8	1.5	1.1	2.5	1.6	1.6	2.8	1.3	1.6	1.2	1.9	1.6	1.6	2.1	1.0	2.5	1.819	
Terrorism	1.4	1.4	1.1	2.7	2.0	2.2	1.9	2.5	1.2	2.9	1.6	1.8	2.9	1.1	1.4	1.1	2.0	1.9	1.1	1.4	1.4	2.9	1.808	
Subsidence, Sinkhole	1.3	2.1	1.8	1.6	2.2	2.2	1.6	1.3	1.1	1.9	1.3	1.0	3.1	1.0	1.3	1.2	1.6	1.6	1.6	1.6	1.6	1.9	1.805	
Urban Fire and Explosion	2.3	2.6	1.0	2.4	1.6	1.6	1.3	1.3	1.1	1.3	1.0	1.0	1.8	1.0	1.6	1.8	1.3	2.5	1.3	1.0	1.3	1.8	1.750	
Mass Food and Animal Feed Contamination	2.9	1.7	1.3	1.4	1.2	2.1	1.4	2.1	1.2	1.1	1.1	1.1	2.1	1.1	1.4	1.8	2.4	1.4	1.1	1.4	1.2	2.2	1.731	
Wildfire	2.4	1.6	2.4	1.6	1.7	1.4	2.1	1.6	1.2	1.4	1.9	1.1	2.6	1.4	1.4	1.7	1.6	1.4	1.3	2.7	1.4	1.4	1.699	
Civil Disturbance	1.3	1.7	1.3	1.9	1.6	1.6	1.4	1.9	1.1	1.6	1.2	1.2	2.0	1.1	1.7	1.1	2.0	1.2	1.1	1.8	1.4	1.4	1.513	
Landslide	1.3	1.3	1.5	1.3	1.3	1.5	1.3	1.0	1.0	2.1	1.3	1.0	1.5	1.0	1.3	1.1	1.1	1.0	1.3	2.3	1.6	1.3	1.339	
Average Score	2.14	2.20	1.71	2.34	2.14	2.21	1.85	2.05	1.33	1.90	1.51	1.51	2.50	1.23	1.66	1.54	2.03	1.84	1.61	2.12	1.66	2.21		
2020 Census Population %	10.12	14.05	1.59	2.73	11.82	9.38	7.29	1.58	1.42	0.97	1.13	1.01	3.68	0.14	2.86	3.41	3.79	0.75	5.49	0.21	9.55	7.02		

Figure 4.4.2.1: Franklin County “Roll-up” Weighted Risk Factors

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Based on the results in **Figure 4.4.2.1** above, there are 2 *Major* risks, 10 *Moderate* risks, 14 *Minor* risks, and 1 *Insignificant* risk hazard in Franklin County. Mitigation actions were developed for all risk hazards (see **Section 6.4**). You can see from **Figure 4.4.2.1** that each municipality has different priorities for each risk hazard. These priorities are being kept in this Hazard Mitigation Plan to allow for the municipalities to reference these risk assessments for use in updating their Emergency Operations Plans. This is also a means to increase HMP plan integration throughout the county.

The methodology outlined in **Sections 4.4.1 & 4.4.2** is the same process that was used in the 2018 plan update. The results, **Figure 4.4.2.1**, were briefed at the 23 February 2023 meeting for inclusion in the 2023 plan update.

When we compared our hazard rankings with the list included in the Pennsylvania State Hazard Mitigation Plan of 2018, we noticed that we had some significant differences in the priorities (see **Table 4.4.2.2** below). Specifically, we noticed that the Flood, Flash Flood and Ice Jam hazard was ranked considerably lower for our county. However, based on the information in our County Profile (see **Section 2.1, Figure 2.1.4**) and the Hazard Vulnerability Assessment in this HMP Update, one can see that we have no rivers that run through our county, unlike much of the rest of the state. We do have a couple major streams that run through the county and they do sometimes come over their banks, but not to the level to cause catastrophic damages like some other counties. Consequently, our rankings are representative of the geography, history, and prevailing trends in hazard threats for our county as assessed by each individual municipality.

Hazard Threat	County HMP 2019	County Ranking 2019	County HMP 2020	County Ranking 2020	County HMP 2021	County Ranking 2021	County HMP 2023	County Ranking 2023	State HMP 2018	State Ranking 2018
Winter Storm	2.708	1	2.656	1	2.613	1	2.682	1	3.1	2
Pandemic and Infectious Disease	1.959	14	2.275	6	2.149	10	2.582	2	2	25
Utility Interruption	2.511	2	2.402	4	2.433	4	2.420	3	2.8	3
Hurricane, Tropical Storm, Nor'easter	2.485	4	2.518	2	2.501	2	2.329	4	2.6	4
Extreme Temperatures	2.296	5	2.309	5	2.259	6	2.308	5	2.3	11
Tornado, Windstorm	2.508	3	2.427	3	2.437	3	2.246	6	2.2	20
Transportation Accident	2.221	8	2.187	10	2.212	7	2.147	7	2.4	9
Hailstorm	2.101	12	2.106	13	2.117	11	2.127	8	1.9	29
Drought	2.235	7	2.251	7	2.261	5	2.113	9	2	24
Environmental Hazards (HAZMAT Release)	2.176	10	2.138	11	2.112	12	2.067	10	2.5	6
Nuclear Incident	1.780	20	1.723	21	1.770	20	2.055	11	2.4	8
Flood, Flash Flood, Ice Jam	2.152	11	2.107	12	2.065	13	2.019	12	3.4	1
Cyberterrorism	--	--	--	--	--	--	1.998	13	2.5	5
Earthquake	2.070	13	2.042	14	1.967	15	1.975	14	1.9	28
Radon Exposure	1.750	21	1.773	20	1.751	21	1.930	15	2.1	22
Invasive Species	1.957	15	1.926	15	1.991	14	1.914	16	2.1	21
Dam Failure	2.205	9	2.189	9	2.152	9	1.913	17	2.4	7
Building and Structure Collapse	--	--	--	--	--	--	1.906	18	1.9	27
Opioid Addiction Response	--	--	--	--	--	--	1.808	19	2.2	19
Lightning Strike	2.251	6	2.204	8	2.194	8	1.819	20	2.2	18
Terrorism	1.894	17	1.881	16	1.852	16	1.808	21	2	26
Subsidence, Sinkhole	1.916	16	1.850	17	1.843	17	1.805	22	1.7	33
Urban Fire and Explosion	1.827	18	1.788	19	1.824	18	1.750	23	1.9	30
Mass Food and Animal Feed Contamination	1.586	22	1.631	22	1.602	23	1.731	24	1.7	32
Wildfire	1.789	19	1.789	18	1.794	19	1.699	25	2.4	10
Civil Disturbance	1.537	23	1.552	23	1.618	22	1.513	26	2	23
Landslide	1.351	24	1.360	24	1.343	24	1.339	24	2.2	17

Table 4.4.2.2: 2023 County versus 2018 PA State Hazard Rankings

4.4.3 Potential Loss Estimates

Based on various kinds of available data, potential loss estimates were established for flood, flash flood, and ice jam, and tornado/windstorms. Estimates provided in this section are based on information provided from the Franklin County GIS and Tax Assessment Departments as well as previous events. Estimates are considered *potential* in that they generally represent losses that could occur in a countywide hazard scenario. In events that are localized, losses may be lower, while regional events could yield higher losses.

Potential loss estimates have 4 basic components, including:

- 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 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.
- Displacement Cost: The dollar amount required for relocation of the function (business or service) to another structure following a hazard event.

The structure data used in this plan includes building values provided in the county tax assessment database (base year 1961) and the 2014 GIS structure overlay. These values are representative of Replacement Value alone; Content Loss, Functional Loss, and Displacement Cost are not included. To get an estimated value in today's dollars, the figures were multiplied by a factor of 10.53. This is the value given to the county by the state and is based on the prior year sales for the county. **Table 4.4.3.1** illustrates the range of structure assessed values in Franklin County at the parcel level.

Municipality	Total # of Residential Parcels	Assessed Value Of Residential Parcels (1961 \$)	Estimated Value of Residential Parcels (2022 \$)	Total # of Commercial Parcels	Assessed Value Of Commercial Parcels (1961 \$)	Estimated Value of Commercial Parcels (2022 \$)	Estimated Value of All Residential and Commercial Parcels (2022 \$)
Antrim Township	5314	\$135,255,850	\$1,424,244,101	168	\$51,387,920	\$541,114,798	\$1,965,358,898
Chambersburg Borough	6157	\$107,714,330	\$1,134,231,895	891	\$91,685,010	\$965,443,155	\$2,099,675,050
Fannett Township	1080	\$18,231,280	\$191,975,378	35	\$763,760	\$8,042,393	\$200,017,771
Greencastle Borough	1456	\$31,435,010	\$331,010,655	153	\$8,248,010	\$86,851,545	\$417,862,201
Greene Township	6617	\$151,841,700	\$1,598,893,101	277	\$33,494,820	\$352,700,455	\$1,951,593,556
Guilford Township	5658	\$140,983,360	\$1,484,554,781	303	\$56,661,870	\$596,649,491	\$2,081,204,272
Hamilton Township	3804	\$7,165,410	\$75,451,767	135	\$7,675,140	\$80,819,224	\$156,270,992
Letterkenny Township	1189	\$4,951,570	\$52,140,032	37	\$1,295,990	\$13,646,775	\$65,786,807
Lurgan Township	814	\$7,451,030	\$78,459,346	25	\$769,790	\$8,105,889	\$86,565,235
Mercersburg Borough	695	\$8,262,320	\$87,002,230	53	\$3,840,850	\$40,444,151	\$127,446,380
Metal Township	997	\$14,268,620	\$150,248,569	35	\$955,660	\$10,063,100	\$160,311,668
Mont Alto Borough	563	\$8,673,160	\$91,328,375	18	\$1,026,990	\$10,814,205	\$102,142,580
Montgomery Township	2337	\$54,387,700	\$572,702,481	32	\$3,817,010	\$40,193,115	\$612,895,596
Orrstown Borough	72	\$919,120	\$9,678,334	3	\$60,960	\$641,909	\$10,320,242
Peters Township	1794	\$34,359,930	\$361,810,063	72	\$2,612,320	\$27,507,730	\$389,317,793
Quincy Township	1850	\$4,704,595	\$49,539,385	50	\$6,154,350	\$64,805,306	\$114,344,691
Shippensburg Borough	467	\$9,295,030	\$97,876,666	34	\$2,130,160	\$22,430,585	\$120,307,251
Southampton Township	2634	\$59,078,720	\$622,098,922	87	\$26,866,190	\$282,900,981	\$904,999,902
St Thomas Township	1999	\$40,476,180	\$426,214,175	77	\$3,187,030	\$33,559,426	\$459,773,601
Warren Township	172	\$3,346,200	\$35,235,486	2	\$80,920	\$852,088	\$36,087,574
Washington Township	5431	\$129,333,700	\$1,361,883,861	248	\$18,682,390	\$196,725,567	\$1,558,609,428
Waynesboro Borough	1037	\$17,943,430	\$188,944,318	88	\$5,585,080	\$58,810,892	\$247,755,210
County Totals	52,137	\$990,078,245	\$10,425,523,920	2,823	\$326,982,220	\$3,443,122,777	\$13,868,646,696

Table 4.4.3.1: Franklin County Assessed Structure Values (2022)

Several of the hazards profiled in this plan can impact the entire county. From **Figure 4.4.3.1** above, it is apparent that Franklin County has in excess of \$13B in structure value alone. If Content Loss, Functional Loss, and Displacement Cost values were included, this number would be substantially larger. This means that a catastrophic loss impacting the entire county (e.g. 7.2 earthquake) could see losses approaching that of major hurricanes on the East Coast.

Thankfully, the chances of a county-wide disaster such as this are minimal.

Another way of thinking about losses for floods is to look at the number of claims and the dollar amount of loss experienced by NFIP communities. In Franklin County, there are 355 NFIP policies in force; these policies have accumulated 178 claims since 1978. The historical value of these claims exceeds \$1 million. Looking at these historical losses, Greene Township has the most losses with over \$480,000 in claims paid since 1978.

Table 4.4.3.2 illustrates the NFIP policy coverage and claims filed from 1978 to 2017. This is an incomplete representation of losses due to flooding as it does not capture uninsured losses, but it is a good indicator of loss trends due to flooding in Franklin County.

Municipality	Number of Policies	Total Coverage	Number of Claims	Value of Claims
Antrim Township	27	\$5,769,500	8	\$14,973
Chambersburg Borough	66	\$12,880,400	30	\$141,079
Fannett Township	2	\$259,600	0	\$0
Greencastle Borough	5	\$1,325,000	6	\$8,382
Greene Township	59	\$11,722,900	66	\$481,448
Guilford Township	28	\$6,363,300	4	\$17,407
Hamilton Township	15	\$3,365,000	10	\$18,343
Letterkenny Township	6	\$1,470,000	0	\$0
Lurgan Township	4	\$940,000	2	\$3,284
Mercersburg Borough	8	\$1,961,800	2	\$797
Metal Township	1	\$130,000	1	\$881
Mont Alto Borough	12	\$1,154,400	0	\$0
Montgomery Township	6	\$1,040,500	1	\$9,036
Peters Township	9	\$1,647,000	2	\$4,598
Quincy Township	18	\$3,728,700	1	\$0
Southampton Township	14	\$2,741,700	16	\$187,056
St Thomas Township	21	\$3,733,500	10	\$57,665
Warren Township	1	\$49,500	0	\$0
Washington Township	46	\$10,525,100	8	\$34,471
Waynesboro Borough	7	\$1,547,200	8	\$36,443
Total	355	\$72,355,100	175	\$1,015,873

Table 4.4.3.2: NFIP Policies and Claims (1978- 2017)

Table 4.4.3.3 lists all the critical facilities and private/commercial structures that fall with the 1% annual chance floodplain by municipality. It should be noted that the values of the buildings in the floodplain were taken from the tax assessment database (base year 1961). The values were

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multiplied by a factor of 10.53 to get the estimated current year value. This factor is given to the county by the state and is based off of sales in the previous year. Additionally, the costs only reflect land and structure value of the property. It does not include Content Loss, Functionality Loss, or Displacement Costs. Furthermore, there are some properties in the database that reflect a \$0 assessment due to their taxable status. Therefore, the value numbers below are very conservative and actual loss values could be substantially higher.

Municipality	Total Number of Critical Facilities in Municipality	Number of Critical Facilities in 1% Floodplain	Value of Critical Facilities in 1% Floodplain (1961)	Estimated (2022) Value of Critical Facilities in 1% Floodplain	Number of Private/Commercial Buildings in 1% Floodplain	Value of Private/Commercial Buildings in 1% Floodplain	Estimated (2022) Value of Private/Commercial Buildings in 1% Floodplain
Antrim Township	93	2	\$2,590	\$27,273	241	\$5,021,230	\$52,873,552
Chambersburg Borough	107	12	\$8,404,750	\$88,502,018	262	\$10,597,000	\$111,586,410
Fannett Township	31	2	\$23,540	\$247,876	93	\$590,520	\$6,218,176
Greencastle Borough	25	0	\$0	\$0	0	\$0	\$0
Greene Township	130	9	\$155,650	\$1,638,995	748	\$9,087,070	\$95,686,847
Guilford Township	108	4	\$23,420	\$246,613	181	\$6,053,580	\$63,744,197
Hamilton Township	51	2	\$6,190	\$65,181	70	\$820,170	\$8,636,390
Letterkenny Township	29	1	\$32,720	\$344,542	78	\$19,727,110	\$207,726,468
Lurgan Township	24	2	\$35,260	\$371,288	38	\$466,400	\$4,700,592
Mercersburg Borough	16	0	\$0	\$0	35	\$212,950	\$2,242,364
Metal Township	21	1	\$4,600	\$48,438	73	\$548,800	\$5,778,864
Mont Alto Borough	7	2	\$42,310	\$445,524	71	\$390,650	\$4,113,545
Montgomery Township	31	2	\$0	\$0	117	\$2,000,960	\$21,070,109
Orrstown Borough	1	0	\$0	\$0	0	\$0	\$0
Peters Township	34	2	\$7,400	\$77,922	145	\$5,876,970	\$30,998,401
Quincy Township	53	7	\$41,960	\$441,839	240	\$6,539,220	\$30,732,801
Shippensburg Borough	6	0	\$0	\$0	0	\$0	\$0
Southampton Township	45	1	\$24,040	\$253,141	120	\$1,947,050	\$20,502,437
St Thomas Township	32	2	\$2,300	\$24,219	112	\$1,548,300	\$16,303,599
Warren Township	4	0	\$0	\$0	22	\$229,610	\$2,417,793
Washington Township	58	7	\$451,670	\$4,756,085	279	\$3,988,640	\$42,000,379
Waynesboro Borough	55	0	\$0	\$0	11	\$314,980	\$3,316,739
Total	961	62	\$9,258,400	\$97,490,954	2946	\$75,994,390	\$730,649,663
Total Estimated (2022) Value of Structures in 1% Floodplain							\$828,140,617

Table 4.4.3.3: Franklin County Critical Facilities in the 1% Floodplain (2022)

For the remaining hazards where loss estimates could not be determined, loss estimates are generalized based on the historical impact of the hazard. For droughts, the losses are largely agricultural; as a result, losses are expected to be some portion of Franklin County's \$476 million in annual agricultural production (refer to **Table 4.3.15.1.2**), depending on the magnitude of the event. For nuclear incidents, losses in the 50-mile EPZ are largely crop and livestock-based; as a result, they will also be some portion of the county's agricultural production. Losses associated with Radon exposure are related to healthcare costs and lost wages, and the average mitigation cost for addressing this hazard is \$1,200 per home, according to the EPA.

Losses associated with particular natural weather-related hazard events are sometimes reported to the National Climatic Data Center (NCDC) with the event. While these historic losses give a glimpse of potential losses in hazard events, they are not reported for all events and should be considered a broad estimate. Tornado and windstorm events have had losses totaling over \$1.72 million in property loss and crop damage (refer to **Tables 4.3.22.3.1** and **4.3.22.3.2**). These events have also led to 1 death and 3 injuries. For winter storm events, only 1 of the past events had losses reported with that event; it had monetary losses estimated at over \$900,000 county-wide.

4.4.4 Future Development and Vulnerability

Risk and vulnerability to natural and human-made hazard events are not static. Risk will increase or decrease as counties and municipalities see changes in land use and development as well as changes in population. Franklin County is expected to experience a variety of factors that will, in some areas, increase vulnerability to hazards while in other areas, vulnerability may stay static or even be reduced.

Population change is perhaps the most significant indicator of changes in vulnerability in the future. As discussed in **Section 2.3**, the total population of Franklin County has grown by 20.64% from 2000 to 2020, but population change has been highly variable between jurisdictions. The population change in the county over time can be seen in **Table 4.4.4.1** below.

Municipality	Population 1970	Population 1980	% Change 1970-1980	Population 1990	% Change 1980-1990	Population 2000	% Change 1990-2000	Population 2010	% Change 2000-2010	Population 2020	% Change 2010-2020	% Change 1970-2020
Southampton Township	3,292	4,604	39.9%	5,484	19.1%	6,138	11.9%	7,987	30.1%	8,566	7.2%	160.2%
Hamilton Township	4,921	6,504	32.2%	7,745	19.1%	8,949	15.5%	10,788	20.5%	11,374	5.4%	131.1%
Antrim Township	7,378	9,326	26.4%	10,107	8.4%	12,504	23.7%	14,893	19.1%	15,778	5.9%	113.9%
Greene Township	9,504	11,470	20.7%	11,930	4.0%	12,284	3.0%	16,700	35.9%	18,436	10.4%	94.0%
Montgomery Township	3,221	4,252	32.0%	4,558	7.2%	4,949	8.6%	6,116	23.6%	5,740	-6.1%	78.2%
Washington Township	8,514	9,616	12.9%	11,119	15.6%	11,559	4.0%	14,009	21.2%	14,897	6.3%	75.0%
Letterkenny Township	1,419	1,960	38.1%	2,251	14.8%	2,074	-7.9%	2,318	11.8%	2,462	6.2%	73.5%
Guilford Township	9,291	10,567	13.7%	11,893	12.5%	13,100	10.1%	14,531	10.9%	14,627	0.7%	57.4%
Fannett Township	1,640	2,016	22.9%	2,309	14.5%	2,309	0.0%	2,548	10.4%	2,483	-2.6%	51.4%
St. Thomas Township	3,931	5,711	45.3%	5,861	2.6%	5,775	-1.5%	5,935	2.8%	5,917	-0.3%	50.5%
Metal Township	1,205	1,576	30.8%	1,612	2.3%	1,721	6.8%	1,866	8.4%	1,768	-5.3%	46.7%
Lurgan Township	1,649	1,986	20.4%	2,026	2.0%	2,014	-0.6%	2,151	6.8%	2,207	2.6%	33.8%
Greencastle Borough	3,293	3,679	11.7%	3,600	-2.1%	3,722	3.4%	3,996	7.4%	4,251	6.4%	29.1%
Chambersburg Borough	17,315	16,174	-6.6%	16,647	2.9%	17,862	7.3%	20,268	13.5%	21,903	8.1%	26.5%
Warren Township	262	269	2.7%	310	15.2%	334	7.7%	369	10.5%	328	-11.1%	25.2%
Peters Township	3,838	4,060	5.8%	4,090	0.7%	4,251	3.9%	4,430	4.2%	4,462	0.7%	16.3%
Waynesboro Borough	10,011	9,726	-2.8%	9,578	-1.5%	9,617	0.4%	10,568	9.9%	10,951	3.6%	9.4%
Mont Alto Borough	1,532	1,592	3.9%	1,395	-12.4%	1,357	-2.7%	1,705	25.6%	1,580	-7.3%	3.1%
Quincy Township	5,264	5,792	10.0%	5,704	-1.5%	5,846	2.5%	5,541	-5.2%	5,318	-4.0%	1.0%
Mercersburg Borough	1,727	1,617	-6.4%	1,640	1.4%	1,540	-6.1%	1,561	1.4%	1,507	-3.5%	-12.7%
Shippensburg Borough	1,364	885	-35.1%	1,003	13.3%	1,119	11.6%	1,076	-3.8%	1,163	8.1%	-14.7%
Orrstown Borough	262	247	-5.7%	220	-10.9%	231	5.0%	262	13.4%	214	-18.3%	-18.3%
County Totals	100,833	113,629	12.7%	121,082	6.6%	129,255	6.7%	149,618	15.8%	155,932	4.2%	54.6%

Table 4.4.4.1: Franklin County Population Percentage Changes (1970-2020)

From 1970 to 2020 only 3 municipalities lost a portion of their population, but it is clear that a trend exists showing a more rapid growth of the Townships immediately surrounding our most populous Boroughs. This population reallocation also impacts land use as farms and forests are being replaced with suburban developments to make room for this population transfer within the county.

Franklin County has grown moderately in the last 10 years (significantly over the last 50 years), but the county expects to remain largely rural due to our roots in an agricultural based economy. Hazard vulnerability and loss potential will still be most prevalent in the places with higher population densities, but sustained suburban growth may increase overall loss potential as residential development extends outward from the city centers into previously rural areas of the county. The increase in loss potential would be most prevalent in Antrim, Greene, Guilford, Hamilton, and Washington Townships for hazards such as subsidence, utility interruptions, winter storms and wildfires. In addition, the increases in commercial growth within the county will likely result in an uptick in transportation accidents, especially in those municipalities along the I-81 corridor, due to increased commercial truck traffic.

5. Capability Assessment

5.1. Update Process Summary

Franklin County has a number of resources it can access to implement hazard mitigation initiatives including emergency response measures, local planning and regulatory tools, administrative assistance and technical expertise, fiscal capabilities, and participation in local, regional, state, and federal programs. The presence of these resources enables community resiliency through actions taken before, during, and after a hazard event.

During the 2018 update, our team worked with Columbia County to create a combined capabilities survey to be used for our data collection; this survey collects capabilities data as well as floodplain management data together in one form. That form was modified slightly for this update based on feedback from FEMA so as to determine what resources our municipalities may need to implement tools that will help them reduce risk. It also seeks to determine if some of the existing capabilities can be improved and what resources would be required. From the municipal responses to this *Capability Assessment Survey*, we were able to assemble an inventory of the most critical local planning tools available. It also identifies emergency management capabilities and the processes used for implementation of the National Flood Insurance Program.

While the capability assessment serves as a good instrument for identifying local capabilities, it also provides a means for recognizing gaps and weaknesses that can be resolved through future Mitigation Actions. The results of this assessment provide critical information for developing an effective Mitigation Strategy.

FCDES sent out the *Municipal Capability Survey* to all 22 municipalities in the county. We received survey responses from every municipality in the county, again giving us a 100% participation rate.

5.2. Capability Assessment Findings

5.2.1. Planning and Regulatory Capability

Some of the most important planning and regulatory capabilities that can be utilized for hazard mitigation include Comprehensive Plans, Building Codes, Floodplain Ordinances, Subdivision and Land Development Ordinances (SALDOs), and Zoning Regulations. These tools provide mechanisms for the implementation of adopted hazard mitigation strategies.

Table 5.2.1.1 briefly summarizes the local government capabilities of the Franklin County municipalities that will facilitate implementation of the mitigation strategy. Franklin County has 15 townships and 7 boroughs within its boundaries that have a very important relationship in which they share resources to ensure effective implementation of ordinances and codes. As a special note, Shippensburg Borough offices are located in Cumberland County, but a portion of this municipality does lie within Franklin County. This is a split municipality that has support from and responsibilities to 2 counties (Franklin and Cumberland). Also, Greene Township adopted a hydrant ordinance in 2021.

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Municipality	Comprehensive Plan	Building Code	Floodplain Regulations – NFIP Participant	Subdivision & Land Development Regulations	Zoning Regulations
Antrim Township	Yes	Yes	Yes	Yes	Yes
Chambersburg Borough	Yes	Yes	Yes	Yes	Yes
Fannett Township	Yes	Yes	Yes	Yes	No
Greencastle Borough	Yes	Yes	Yes	Yes	Yes
Greene Township	Yes	Yes	Yes	Yes	Yes
Guilford Township	No	Yes	Yes	Yes	Yes
Hamilton Township	No	Yes	Yes	Yes	No
Letterkenny Township	Yes	Yes	Yes	Yes	No
Lurgan Township	Yes	Yes	Yes	Yes	No
Mercersburg Borough	No	Yes	Yes	Yes	Yes
Metal Township	No	Yes	Yes	Yes	No
Mont Alto Borough	No	Yes	Yes	Yes	Yes
Montgomery Township	Yes	Yes	Yes	Yes	No
Orrstown Borough	No	Yes	No	No	No
Peters Township	Yes	Yes	Yes	Yes	No
Quincy Township	No	Yes	Yes	Yes	Yes
Shippensburg Borough	Yes	Yes	Yes	Yes	Yes
Southampton Township	Yes	Yes	Yes	Yes	Yes
St Thomas Township	Yes	Yes	Yes	Yes	No
Warren Township	No	Yes	Yes	Yes	No
Washington Township	Yes	Yes	Yes	Yes	Yes
Waynesboro Borough	Yes	Yes	Yes	Yes	Yes

Table 5.2.1.1: Franklin County Municipality Planning/Regulatory Capabilities

Comprehensive Plans promote sound land use and regional cooperation among local governments to address planning issues. These plans serve as the official policy guide for influencing the location, type and extent of future development by establishing the basis for decision-making and review processes on zoning matters, subdivision and land development, land uses, public facilities and housing needs over time. Of our 22 municipalities, 16 have local comprehensive land-use plans. County governments are required by law to adopt a comprehensive plan, while local municipalities may do so at their option. The existing countywide Comprehensive Plan for Franklin County was developed in 2012, but is currently

being updated as well. Future comprehensive plan updates and improvements will consider the 2023 HMP findings.

Franklin County also has a Greenway and Open Space Plan, written in 2007. This plan is an advisory document that provides strategies for the enhancement of parks, recreational opportunities and services, greenways, trails, and open space countywide. The plan also provides direction and initiatives for protecting open space and natural resources.

Building codes regulate construction standards for new construction and substantially renovated buildings. Standards can be adopted that require resistant or resilient building design practices to address hazard impacts common to a given community. In 2003, the Commonwealth of Pennsylvania implemented Act 45 of 1999, the Uniform Construction Code (UCC), a comprehensive building code that establishes minimum regulations for most new construction, including additions and renovations to existing structures. All municipalities in Franklin County are required to adhere to the UCC. On December 10, 2009 the Commonwealth adopted regulations of the 2009 International Code Council's codes. The effective date of the regulations is December 31, 2009. Since all municipalities in Franklin County are required to abide by the UCC they also are required to enforce the 2009 building code regulations for all building permits submitted after December 31, 2009.

Through administration of floodplain ordinances, municipalities can ensure that all new construction or substantial improvements to existing structures located in the floodplain are flood-proofed, dry-proofed, or built above anticipated flood elevations. Floodplain ordinances may also prohibit development in certain areas altogether. The National Flood Insurance Program (NFIP) establishes minimum ordinance requirements which must be met in order for that community to participate in the program. However, a community is permitted and in fact, encouraged, to adopt standards which exceed NFIP requirements. Twenty-one (21) of 22 municipalities participate in the NFIP program; see **Section 5.2.1.1** below for details.

Subdivision and Land Development Ordinances (SALDOs) are intended to regulate the development of housing, commercial, industrial or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Within these ordinances, guidelines on how land will be divided, the placement and size of roads and the location of infrastructure can reduce exposure of development to hazard events. Twenty-one (21) of the 22 municipalities have adopted and enforce their own subdivision and land development ordinance.

Zoning ordinances allow for local communities to regulate the use of land in order to protect the interests and safety of the general public. Zoning ordinances can be designed to address unique conditions or concerns within a given community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development and/or require land development to consider specific hazard vulnerabilities. Twelve (12) of the 22 municipalities in Franklin County have zoning regulations.

The Pennsylvania legislature enacted the Stormwater Management Act (Act 167 of 1978), commonly called Act 167. The Act enables the regulation of development and activities that

cause accelerated runoff and encourages watershed-based planning and management of stormwater. The Pennsylvania Department of Environmental Protection (DEP) is the public agency charged with overseeing implementation of the Act 167 plans. Act 167 Stormwater Management Plans are intended to improve stormwater management practices, mitigate potential negative impacts from future land uses, and to improve the condition of impaired waterways. Sixteen (16) of our 22 municipalities have a Stormwater Management Plan in place.

Figure 5.2.1.1 shows the percentage of the various categories of Planning & Regulatory Capabilities that are possessed by the municipalities in Franklin County.

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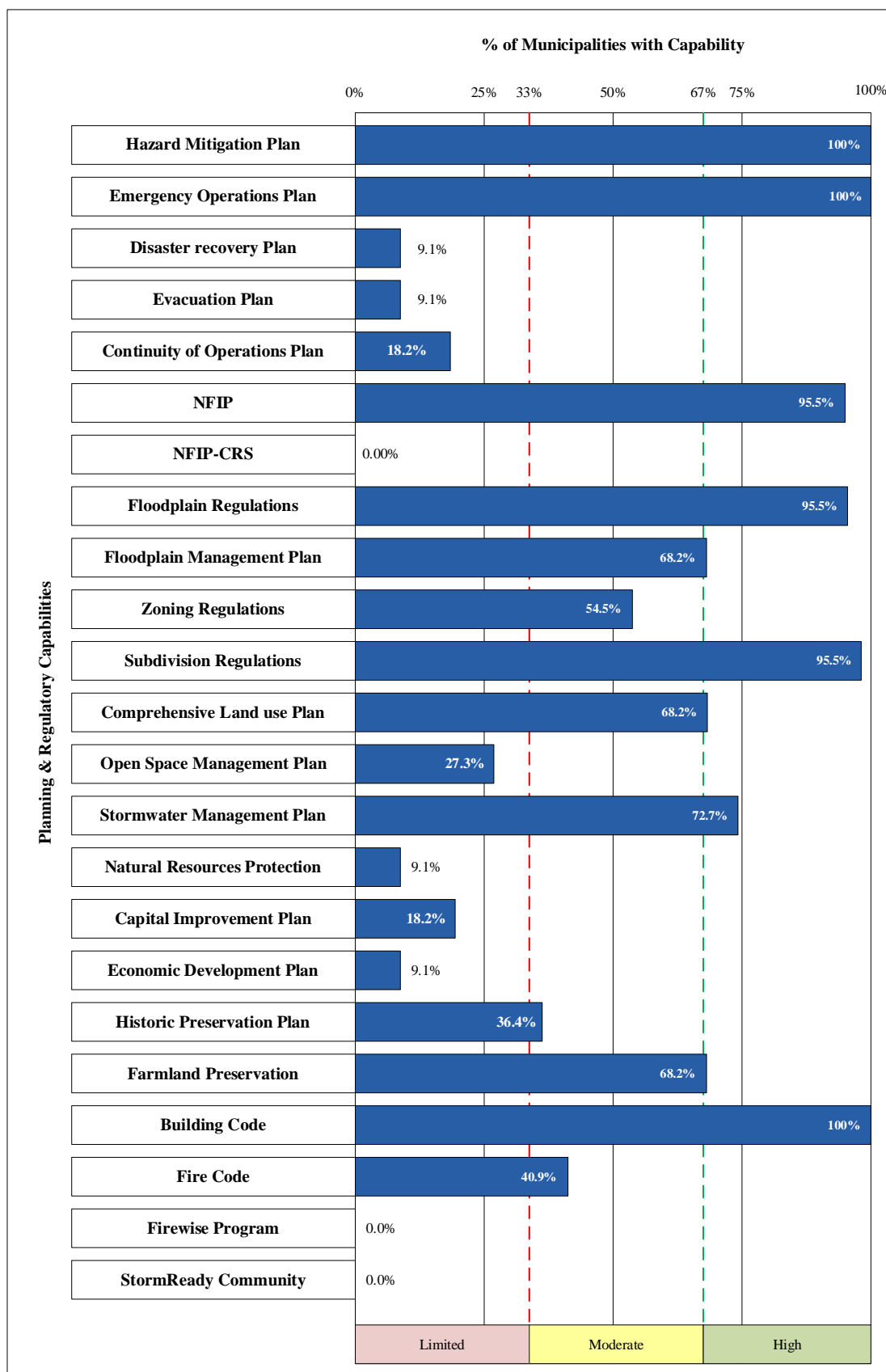


Figure 5.2.1.1: Franklin County Municipal Planning & Regulatory Capabilities

5.2.1.1 Participation in the National Flood Insurance Program (NFIP)

Twenty (21) of 22 municipalities in Franklin County have at least one NFIP insured property. The only municipality that does not have any flood insurance policies is Orrstown Borough. Even though the report below does not include Shippensburg Borough (Franklin County), we were able to verify that this municipality is compliant with NFIP through *FEMA Community Status Report*, dated 11 July 2023. The program is managed by local municipalities participating in the program through ordinance adoption and floodplain regulation. A table summarizing the NFIP claims as reported by FEMA is shown in **Table 5.2.1.1.1**. The NFIP capabilities at the municipal level are shown in **Figure 5.2.1.1.1** below.

CID	Community	Sum of Total Losses	Sum of Cumulative Building Payment	Sum of Cumulative Contents Payment	Sum of Total Paid
421233	ANTRIM, TOWNSHIP OF	3	\$26,770.39	\$0.00	\$26,770.39
421233	SINGLE FMLY (OLD METHODOLOGY)	3	\$26,770.39	\$0.00	\$26,770.39
421649	GREENE, TOWNSHIP OF	11	\$67,803.22	\$15,420.26	\$83,223.48
421649	SINGLE FMLY (OLD METHODOLOGY)	11	\$67,803.22	\$15,420.26	\$83,223.48
421657	SOUTHAMPTON, TOWNSHIP OF	2	\$11,042.84	\$0.00	\$11,042.84
421657	SINGLE FMLY (OLD METHODOLOGY)	2	\$11,042.84	\$0.00	\$11,042.84
421156	WASHINGTON, TOWNSHIP OF	2	\$7,654.58	\$105.00	\$7,759.58
421156	SINGLE FMLY (OLD METHODOLOGY)	2	\$7,654.58	\$105.00	\$7,759.58
	Grand Total	18	\$113,271.03	\$15,525.26	\$128,796.29

Table 5.2.1.1.1: Franklin County NFIP Claims as of 05.31.2023

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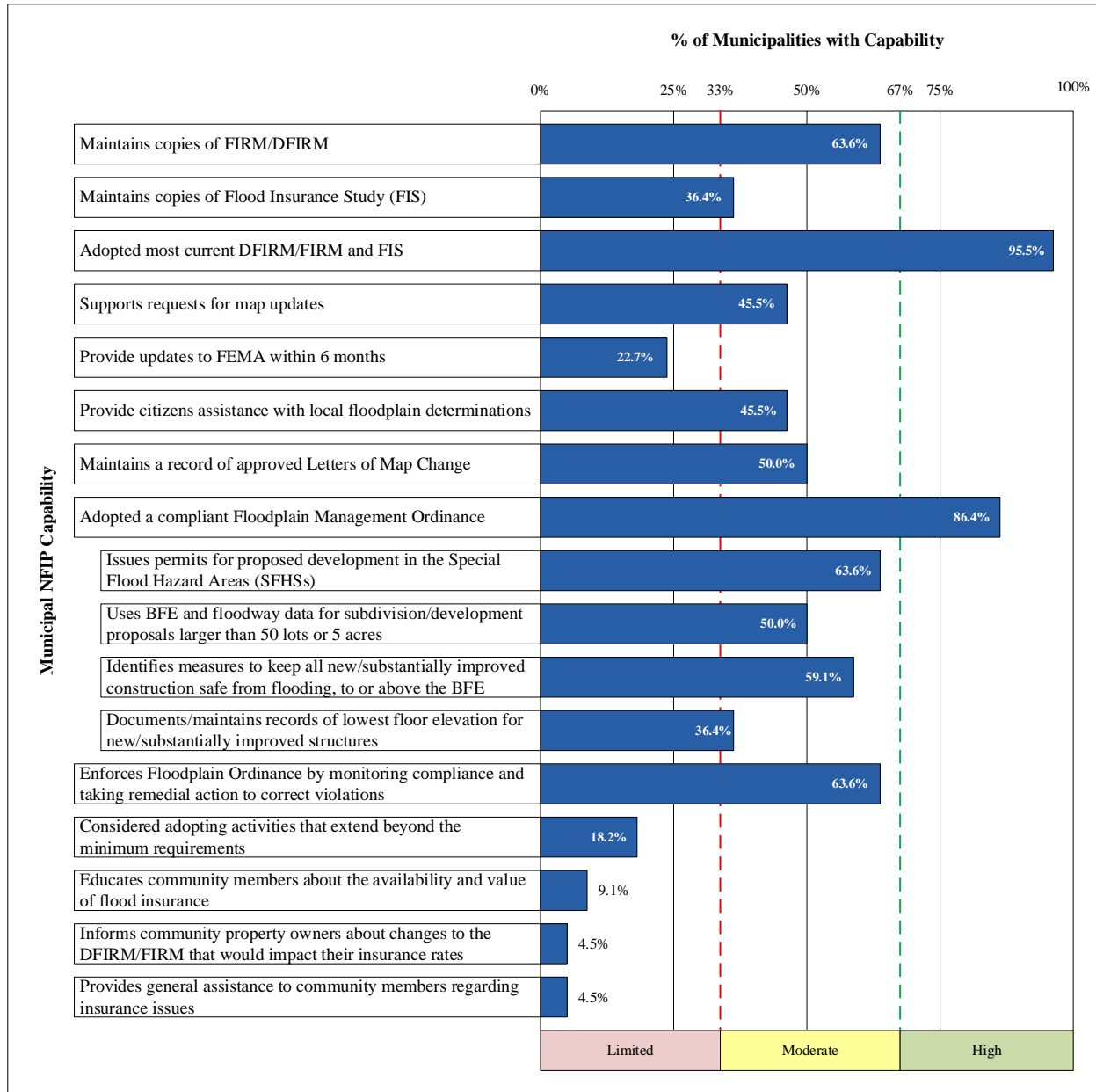


Figure 5.2.1.1.1: Summary of Franklin County NFIP Capabilities

Permitting processes for building construction and development in a Special Flood Hazard Area (SFHA) are implemented at the municipal level through local Ordinances (e.g. Zoning, Subdivision and Land Development, and Floodplain Ordinances).

FEMA Region III makes available to all communities, an Ordinance review checklist which lists the minimum requirements for Floodplain Management Ordinances. This checklist helps communities to develop an effective Floodplain Management Ordinance that meets Federal requirements for participation in the NFIP.

The Pennsylvania Department of Community and Economic Development (DCED), provides communities, based on their CFR, Title 44, Section 60.3 level of regulations, with a model

ordinance document to assist them in meeting the minimum requirements established in the NFIP and Act 166. These model ordinances contain provisions that are more restrictive than State and Federal requirements. These provisions include, but are not limited to:

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

Act 166 mandates municipal participation in and compliance with the NFIP if SFHA has been mapped. It also establishes higher regulatory standards for new or substantially improved structures which are used for the production or storage of dangerous materials as defined by the Act, by prohibiting them in the floodway. Additionally, the Act establishes the requirement that a Special Permit be obtained prior to any construction or expansion of any manufactured home park, hospital, nursing home, jail and prison if said structure is located within a special flood hazard area.

As new DFIRMS are published, the Pennsylvania State NFIP Coordinator housed at DCED, works with communities to ensure the timely and successful adoption of an updated Floodplain Management Ordinance by reviewing and providing feedback on existing and draft ordinances. In addition, DCED provides guidance and technical support through Community Assistance Contacts and Community Assistance Visits.

Franklin County municipalities are currently using 2012 DFIRMs (published 18 Jan 2012). These digital maps greatly enhance mitigation capabilities, as they relate to identifying flood hazards. They are a significant improvement to the previously implemented paper Flood Insurance Rate Maps. Residents and municipal officials can receive mapping assistance from the Franklin County GIS department upon request.

The NFIP's Community Rating System (CRS) was implemented in 1990 to recognize and encourage community floodplain management activities that exceed the minimum NFIP standards. Section 541 of the 1994 Act amends Section 1315 of the 1968 Act to codify the CRS in the NFIP, and expands the CRS goals to specifically include incentives to reduce the risk of flood-related erosion and to encourage measures that protect natural and beneficial floodplain functions. These goals have been incorporated into the CRS, and communities now receive credit toward premium reductions for activities that contribute to them. Franklin County currently has **no** municipalities participating in the CRS program. Based on the threat rankings in **Section 4** and the fact that Franklin County does not have a river within our borders, it is not too surprising that our communities have not yet looked at these increased mitigation measures for the flooding hazard. Even though our municipalities do not participate in the CRS program,

we do need to address our hazards and mitigation actions in a priority order. The 2018 HMP contained a number of municipal floodplain management projects, including some that have been completed (**Tables 6.5.1 and 6.5.2**). In addition, additional municipal floodplain management mitigation action items have been added for this update. The county will continue to support our municipalities as they work toward floodplain mitigation measures.

5.2.2. Administration and Technical Capability

Administrative capability is described as an adequacy of departmental and personnel resources for the implementation of mitigation-related activities. Technical capability relates to an adequacy of knowledge and technical expertise of local government employees or the ability to contract outside resources for this expertise in order to effectively execute mitigation activities. Common examples of skill sets and technical personnel needed for hazard mitigation include:

- Planners with knowledge of land development/management practices.
- Engineers or professionals trained in construction practices related to buildings and/or infrastructure (e.g. building inspectors).
- Planners or engineers with an understanding of natural and/or human caused hazards.
- Emergency managers.
- Floodplain managers.
- Land surveyors.
- Scientists or staff familiar with hazards in the community.
- Staff with the education or expertise to assess community vulnerability to hazards.
- Personnel skilled in geographic information systems.
- Resource development staff or grant writers.
- Fiscal staff to handle complex grant application processes.

Based on assessment results, municipalities in Franklin County have moderate to high administrative and technical staff levels needed to conduct hazard mitigation activities. Specifically, we are well staffed in emergency management and planning capabilities. In general, the larger, more populated, jurisdictions have the most technical capabilities. However, there are some areas that we do need to strengthen. Of the 22 municipalities in Franklin County: only 14 of the municipalities have access to personnel for floodplain management; 6 for grant writing; 4 have access to personnel who might assist with land surveying, 8 have GIS capabilities; and 5 with personnel who could assist with scientific work related to community hazards. See **Figure 5.2.2.1** for a chart representing the total percentage of each Administrative & Technical capability that is found within the responding municipalities.

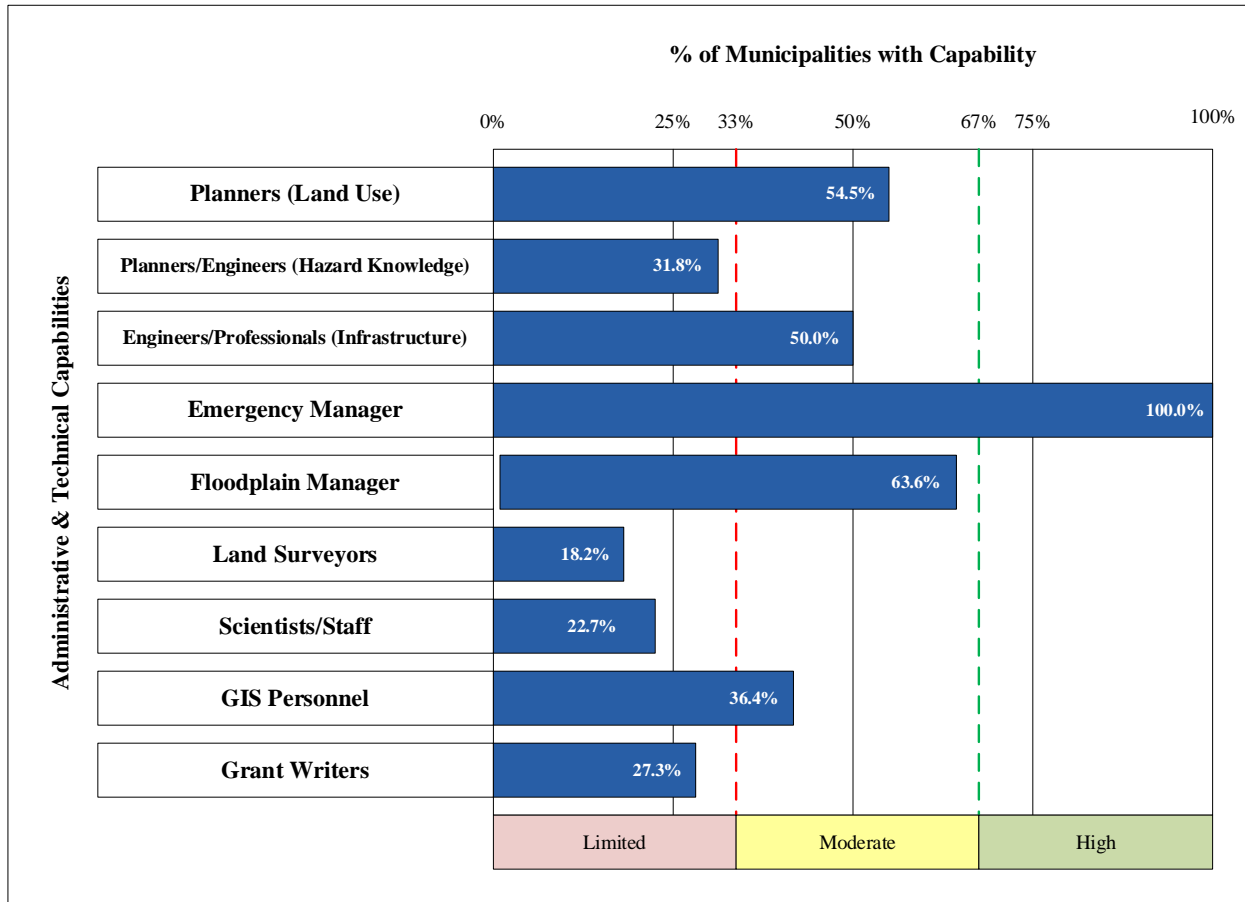


Figure 5.2.2.1: Franklin County Municipal Administrative & Technical Capabilities

5.2.2.1 Emergency Management

The Franklin County Department of Emergency Services (FCDES) coordinates countywide emergency management efforts. Each municipality has a designated local emergency management coordinator (Local EMC) who possesses a unique knowledge of the impact hazard events have on their community. The Emergency Management Services Code (PA Title 35) requires that all municipalities in the Commonwealth have a Local Emergency Operations Plan (EOP) which is recommended to be updated every 2 years. According to the Capability Assessment Surveys completed by participating municipal leaders and information from emergency management personnel, all of the jurisdictions in the county have an EOP, but the majority of these plans are dated 2003 (14 of 22). The update of this HMP will drive an update at the local level for their EOPs. The manner in which the *Hazard Vulnerability Analysis (HVA)* was completed provides every municipality in the county the first step in updating their EOP by essentially completing the required hazard analysis (Section 2) for them. A countywide EOP also exists and was updated immediately following acceptance and approval of this HMP. Additionally, FCDES provides major training exercises and instructional workshops to emergency personnel, elected officials, and the general population in order to ensure that personnel are properly trained.

The Franklin County GIS Department provides mapping and technical assistance to municipalities. Other local organizations that could act as partners in mitigating natural and human-made hazards include the Penn State Cooperative Agriculture Extension, environmental advocacy groups, and watershed associations.

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

- Pennsylvania Emergency Management Agency (PEMA)
- Pennsylvania Department of Community and Economic Development (DCED)
- Pennsylvania Department of Conservation and Natural Resources (DCNR)
- Pennsylvania Department of Environmental Protection (DEP)
- Pennsylvania Department of Transportation (PennDOT)

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

- Federal Emergency Management Agency (FEMA)
- United States Army Corp of Engineers (USACE)
- Department of Housing and Urban Development (HUD)
- Department of Agriculture
- Economic Development Administration
- FEMA Emergency Management Institute (EMI)
- Environmental Protection Agency (EPA)
- Small Business Administration

5.2.2.2 Municipal Political Capability and Self-Assessment

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and implement projects designed to mitigate hazard events. The adoption of *Hazard Mitigation Actions* may be seen as an impediment to growth and economic development. In many cases, mitigation may not generate interest among local officials when compared with competing priorities. Therefore, the local political climate must be considered when designing mitigation strategies, as it could be the most difficult hurdle to overcome in accomplishing the adoption or implementation of specific actions.

The *Capability Assessment Survey* (included in **Appendix E**) was used to capture information on each jurisdiction's political capability. Survey respondents were asked to identify examples of political capability, such as guiding development away from hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum state or federal requirements (i.e. building codes, floodplain management ordinances, etc...). These examples were used to guide respondents in scoring their community on a scale of "unwilling" (0) to "very willing" (5) to adopt policies and programs that reduce hazard vulnerabilities. **Figure 5.2.2.1** below shows the results of the municipal political will assessments for all Franklin County municipalities.

Franklin County Hazard Mitigation Plan - 2023

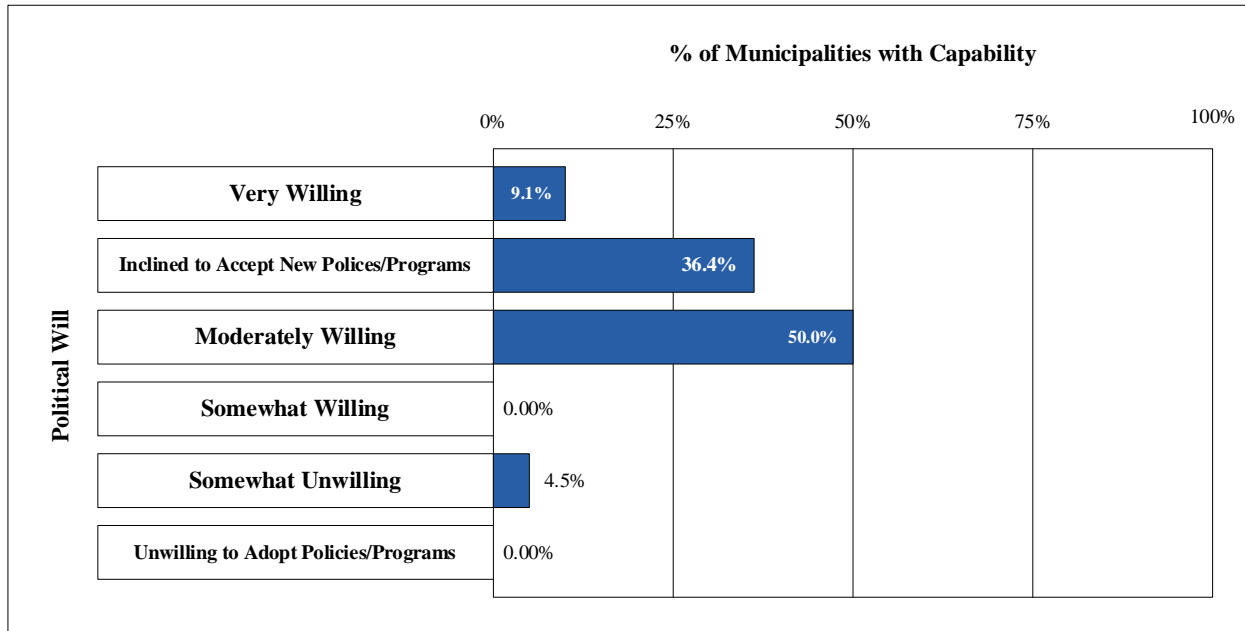


Figure 5.2.2.2.1: Franklin County Community Political Capability

In addition to the inventory and analysis of specific local capabilities, the *Capability Assessment Survey* required each local jurisdiction to conduct its own self-assessment of its capability to effectively implement hazard mitigation activities. As part of this process, municipal officials were encouraged to consider the barriers to implementing proposed mitigation strategies in addition to the mechanisms that could enhance or further such strategies. In response to the survey questionnaire, local officials classified each of the capabilities as either “limited (1),” “moderate (2)” or “high (3).” **Figure 5.2.2.2.2** summarizes the results of the self-assessment survey as a percentage of the responses received.

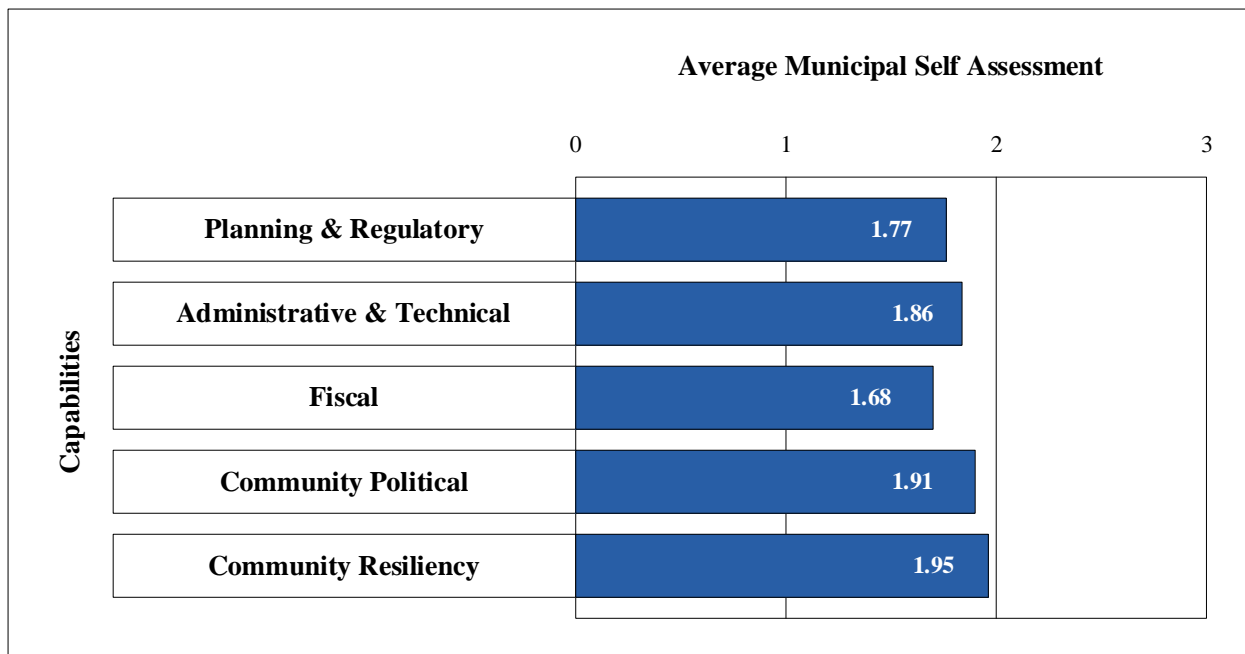


Figure 5.2.2.2.2: Franklin County Municipal Capabilities Self-Assessment

Combined, these two factors indicate that we are willing to embrace new initiatives even though we are confident in our existing capabilities, which creates a good environment for hazard mitigation.

5.2.3. Financial Capability

The decision and capacity to implement mitigation-related activities is often strongly dependent on the presence of local financial resources. While some mitigation actions are less costly than others, it is important that money is available locally to implement policies and projects. Financial resources are particularly important if communities are trying to take advantage of state or federal mitigation grant funding opportunities that require local-match contributions. Based on survey results, most municipalities within the County perceive fiscal capability to be extremely limited. Two (2) types of fiscal capabilities are more common in Franklin County. The first is Community Development Block Grant (CDBG) Funding; all jurisdictions in Franklin County are eligible for CDGB funding. Chambersburg, Waynesboro, and Shippensburg receive independent CDBG funding, whereas the rest of the municipalities work through the County Planning Department for access to a consolidated grouping of CDGB funds. The second is not a funding source but rather partnering agreements between municipalities that enable resource sharing.

State programs which may provide financial support for mitigation activities include, but are not limited to:

- Community Conservation Partnerships Program
- Community Revitalization Program
- Floodplain Land Use Assistance Program
- Growing Greener Program
- Keystone Grant Program
- Local Government Capital Projects Loan Program
- Land Use Planning and Technical Assistance Program
- Pennsylvania Heritage Areas Program
- Pennsylvania Recreational Trails Program
- Shared Municipal Services
- Technical Assistance Program

Federal programs which may provide financial support for mitigation activities include, but are not limited to:

- Disaster Housing Program
- Emergency Conservation Program
- Emergency Management Performance Grants
- Emergency Watershed Protection Program
- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA) Program

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- Non-insured Crop Disaster Assistance Program
- Pre-Disaster Mitigation (PDM) Program
- Section 108 Loan Guarantee Programs
- Severe Repetitive Loss Grant Program (SRL)
- Weatherization Assistance Program

Figure 5.2.3.1 below shows the Fiscal Capabilities of Municipalities relating to availability of funds specifically for Hazard Mitigation.

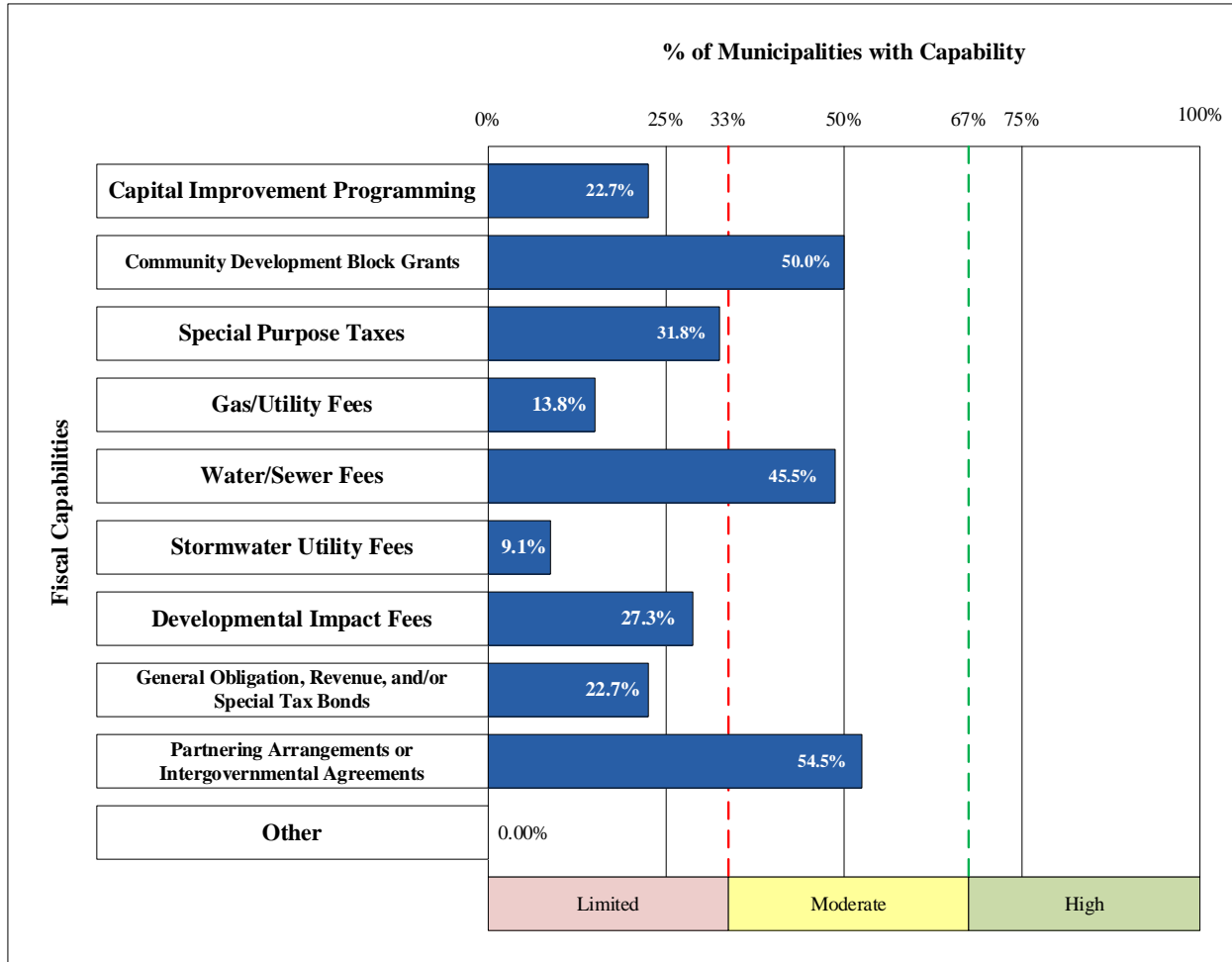


Figure 5.3.2.1: Franklin County Municipal Fiscal Capabilities

The analysis of this data, along with the population statistics in **Section 2**, shows that we are continually growing community in the state, but the sizes of our municipalities are still small enough that the revenue generating efforts are not sufficient to support major mitigation action project implementation independent of federal funding.

5.2.4. Education and Outreach

Franklin County is a member of the StormReady Program sponsored by the National Weather Service (NWS). **Figure 5.2.4.1** below is a map of all StormReady communities in Pennsylvania.

Table 5.2.4.1 lists all the Pennsylvania StormReady Communities. A StormReady community provides early warning information, public outreach, and education to the general public to increase awareness and preparedness for all types of weather related events.

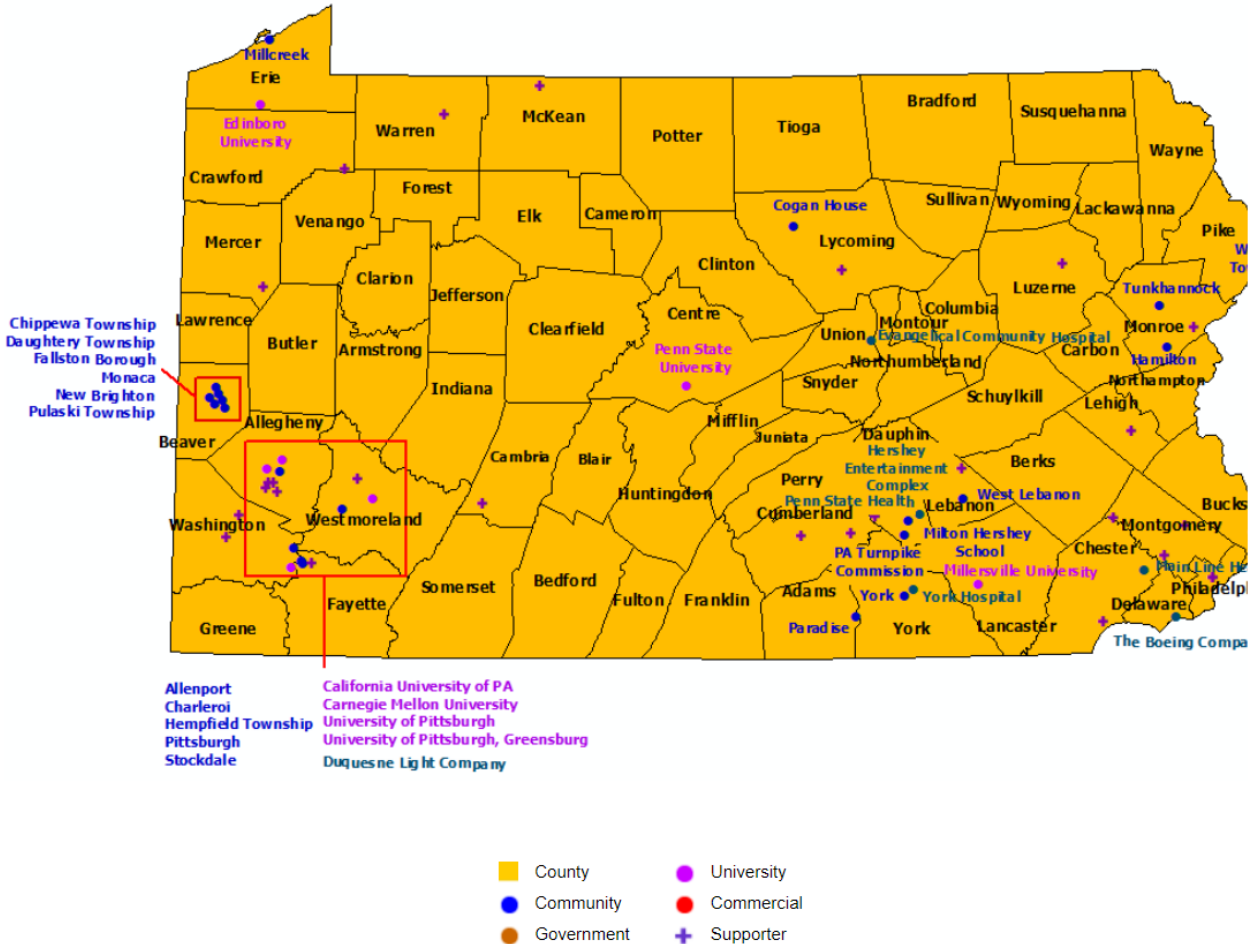


Figure 5.2.4.1: Map of PA Storm Ready Sites (2023)

Franklin County Hazard Mitigation Plan - 2023

Counties				Communities
<ul style="list-style-type: none"> ▪ Adams ▪ Allegheny ▪ Armstrong ▪ Beaver ▪ Bedford ▪ Berks ▪ Blair ▪ Bradford ▪ Bucks ▪ Butler ▪ Cambria ▪ Cameron ▪ Carbon ▪ Centre ▪ Chester ▪ Clarion ▪ Clearfield 	<ul style="list-style-type: none"> ▪ Clinton ▪ Columbia ▪ Crawford ▪ Cumberland ▪ Dauphin ▪ Delaware ▪ Elk ▪ Erie ▪ Fayette ▪ Forest ▪ Franklin ▪ Fulton ▪ Greene ▪ Huntingdon ▪ Indiana ▪ Jefferson ▪ Juniata 	<ul style="list-style-type: none"> ▪ Lackawanna ▪ Lancaster ▪ Lawrence ▪ Lebanon ▪ Lehigh ▪ Luzerne ▪ Lycoming ▪ McKean ▪ Mercer ▪ Mifflin ▪ Monroe ▪ Montgomery ▪ Montour ▪ Northampton ▪ Northumberland ▪ Perry ▪ Philadelphia 	<ul style="list-style-type: none"> ▪ Pike ▪ Potter ▪ Schuylkill ▪ Snyder ▪ Somerset ▪ Sullivan ▪ Susquehanna ▪ Tioga ▪ Union ▪ Venango ▪ Warren ▪ Washington ▪ Wayne ▪ Westmoreland ▪ Wyoming ▪ York 	<ul style="list-style-type: none"> ▪ Charleroi ▪ Chippewa ▪ Cogan House ▪ Daughtery Township ▪ Fallston Borough ▪ Hamilton ▪ Hempfield Township ▪ Millcreek ▪ Milton Hershey School ▪ Monaca ▪ New Brighton ▪ Paradise ▪ Pittsburgh ▪ Pulaski Township ▪ Tunkhannock ▪ West Lebanon ▪ Westfall Township ▪ York
Commercial				Universities
<ul style="list-style-type: none"> ▪ The Boeing Company ▪ Duquesne Light Company ▪ Hershey Entertainment Complex ▪ Main Line Health System ▪ Pennsylvania Turnpike Commission ▪ York Hospital ▪ Evangelical Community Hospital ▪ Penn State Health 				<ul style="list-style-type: none"> ▪ California University of Pennsylvania ▪ Carnegie Mellon University ▪ Edinboro University ▪ Millersville University ▪ Penn State University ▪ University of Pittsburgh ▪ University of Pittsburgh, Greensburg
Supporters				
<ul style="list-style-type: none"> ▪ Bridgestone Allentown ▪ Bridgestone, Fredericksburg ▪ Dickinson College ▪ Dormont Borough ▪ Hempfield Township ▪ Longwood Gardens ▪ Mountain Productions Inc. ▪ Mt. Lebanon ▪ North Strabane Township ▪ PA Emergency Management Agency ▪ Peters Township 	<ul style="list-style-type: none"> ▪ Salem Township ▪ St. Christopher's Hospital for Children ▪ Stockdale Borough ▪ Univ. of Pittsburgh, Bradford ▪ Univ. of Pittsburgh, Johnstown ▪ Univ. of Pittsburgh, Titusville Campus ▪ Warren State Hospital ▪ Williamsport 	<ul style="list-style-type: none"> ▪ Shopping Centers: ▪ Grove City Premium Outlets ▪ King Of Prussia Mall ▪ Lehigh Valley Mall ▪ Montgomery Mall ▪ Oxford Valley Mall 	<ul style="list-style-type: none"> ▪ Philadelphia Mills ▪ Philadelphia Premium Outlets ▪ Ross Park Mall ▪ South Hills Village ▪ Tanger Outlets ▪ The Crossings Premium Outlets 	

Table 5.2.4.1: List of PA Storm Ready Sites (2023)¹⁷⁷

Franklin County also partners with the Franklin County Public Safety Training Center (FCPSTC) to provide a wide range of emergency preparedness, management, and response courses for elected officials, emergency management personnel (county and local), first responder communities, and the general public. The FCPSTC is an organization founded under the Franklin County Fire Chiefs Association (FCFCA) and is primarily focused on providing first responder training. Through this partnership, Franklin County is able to offer most of this training to our citizens free of charge.

FCDES is also implementing a community outreach program. We provide informational and preparedness briefings to community organizations, schools, daycares, and local medical facilities. These outreach sessions cover topics such as: fire safety, severe weather preparedness, disaster preparedness & recovery, and hazard mitigation. Our program is small, but growing. **Table 5.2.4.2** lists some of the outreach events we have held since 2019.

¹⁷⁷ NOAA/NWS, 2023

Date	Organization	Discussion Topic
7/9/2019	Menno Haven Northgate	General Preparedness and Weather Warning
8/22/2019	Kiwanis	DES Duties, Responsibilities, and Capabilities
9/2/2020	Franklin County Mental Health Association	General Preparedness, Fire, Shelter in Place, and Weather Warning
11/17/2020	Penn State Mont Alto	DES Duties, Responsibilities, and Capabilities
8/19/2021	ARC/FEMA Corps	DES Duties, Responsibilities, and Capabilities
4/23/2022	MMPW Fire Department	General Preparedness and Fire
4/28/2022	Greencastle Rescue Hose Company	DES Duties, Responsibilities, and Capabilities
10/25/2022	Mont Alto Fire Department	DES Duties, Responsibilities, and Capabilities
2/16/2023	James Buchanan High School	DES Structure, Capabilities & Mission

Table 5.2.4.2: Franklin County Outreach Events (2019-2023)

5.2.5. Plan Integration

There are numerous existing regulatory and planning mechanisms in place at the state, county, and municipal level of government which support hazard mitigation planning efforts. These tools include the Commonwealth of Pennsylvania Standard All-Hazard Mitigation Plan, Franklin County Comprehensive Plan, Franklin County Emergency Operations Plan, Franklin County Long-Range Transportation Plan, Franklin County Greenway and Open Spaces Plan, local Emergency Operation Plans, and various local Administrative and Regulatory Plans.

Information from several of these documents has been incorporated into this plan and mitigation actions have been developed to further integrate these planning mechanisms into the hazard mitigation planning process. In particular, this plan uses information on identified land use patterns and land development priorities from the Franklin County Comprehensive Plan in order to establish vulnerability pertaining to future development. The Franklin County Greenway and Open Spaces Plan provided valuable information relating to the land use and development, particularly of the forested and recreations areas of the county.

Section 4 of this HMP was repackaged as a stand-alone updated Hazard Vulnerability Analysis (HVA) for Franklin County. It provides extensive information on past occurrences, vulnerabilities, and risks. Additionally, **Section 4** was constructed to retain the municipal threat priorities that we collected. This was done to allow for a jump off point for all county municipalities to update their Emergency Operations Plans (EOPs) creating an HMP plan integration linkage to the municipal level. This information essentially completes Section 2 of their EOPs for them. Most of our municipal EOPs are dated circa 2003, so this provides them some momentum to make those updates in the short-term.

The Pennsylvania State Hazard Mitigation Plan was used extensively throughout the update to ensure uniformity with the state plan as well as concurrence with particular hazard information.

Data and technical information from the Franklin County GIS System was incorporated into the plan in the form of flood plain data, building envelopes, hazard area overlays, and critical infrastructure. Floodplain management ordinance information was used to aid in the establishment of local capabilities in addition to the municipal participation in the NFIP.

Franklin County is in the process of updating all of our Continuity of Operations Plans for governmental facilities and operations. The threat assessment completed in **Section 4** is being used to establish the threat environment for these plans. Based on the comprehensive nature of this plan, the HMPT believes that this document will be highly useful when updating and developing other planning initiatives in the county. **Figure 5.2.5.1** below highlights where these plan integration linkages already exist and where we envision further integration to come to light.

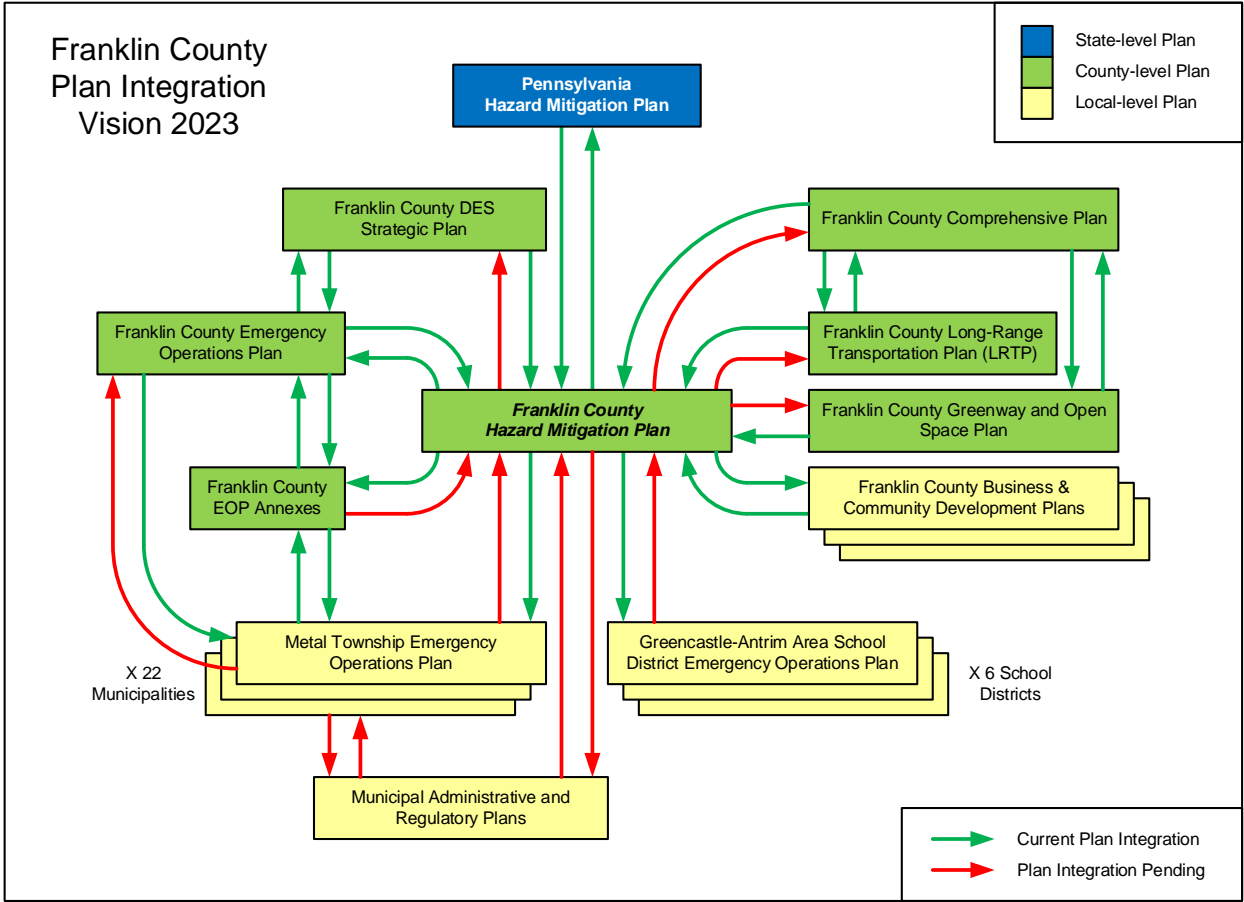


Figure 5.2.5.1: Franklin County Vision for Plan Integration

Figure 5.2.5.2 provides a further illustration of these plan linkages

Pennsylvania HMP												C	Currently In Place
Franklin County Strategic Plan												P	Partially In Place
Franklin County EOP			C									F	Pending/Future Capability
Franklin County EOP Annexes				C									
Franklin County HMP	C	P	P	P									
Franklin County Comprehensive Plan					P								
Franklin County Long -Range Transportation Plan					P	C							
Franklin County Greenway and Open Spaces Plan					P	C							
Franklin County Business and Community Development Plans					C								
Municipal EOPs			P	C	P								
Municipal Administrative and Regulatory Plans					F						F		
Franklin County School EOPs					P								
	Pennsylvania HMP	Franklin County Strategic Plan	Franklin County EOP	Franklin County EOP Annexes	Franklin County HMP	Franklin County Comprehensive Plan	Franklin County Long -Range Transportation Plan	Franklin County Greenway and Open Spaces Plan	Franklin County Business and Community Development Plans	Municipal EOPs	Municipal Administrative and Regulatory Plans	Franklin County School EOPs	

Figure 5.2.5.2: Franklin County Existing and Planned Integration Linkages

Franklin County Hazard Mitigation Plan - 2023

Figure 5.2.5.3 below provides detailed information as to what is needed to complete the plan integration linkages that are envisioned.

[illegible]

Figure 5.2.5.3: Actions Needed to Complete Plan Integration Linkages

Franklin County Hazard Mitigation Plan - 2023

One can see that the process of updating the Franklin County Hazard Mitigation Plan has already initiated several plan integration linkages. The task of the HMPT is to continue these efforts during our annual update meetings as well as being participating members on the planning processes for all the plans being developed or updated at the state, county, and local levels.

6. Mitigation Strategy

Mitigation Goals are general guidelines that explain what the county wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results. Mitigation Objectives describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date.

6.1. Update Process Summary

For the 2023 update, the HMPT decided to retain the Mitigation Strategy established in the 2018 update in order to still have a robust and integrated plan that achieves meaningful hazard mitigation. The goals (**Figure 6.1.1**) were established with associated objectives to better identify a manageable Mitigation Strategy. Furthermore, the Goals/Objectives identified in this plan are specifically cross-walked to link them to one or more of the Goals/Objectives identified in the *Franklin County Department of Emergency Services Strategic Plan*. This was done to help fully integrate the HMP into the overall emergency planning process for Franklin County. The goals identified in this 2023 plan are still crucial in order to continue this integration and maintain continuity as the identified mitigation strategies are implemented.

GOAL 1: Protect the lives, health, safety, and property of the citizens of Franklin County from the impacts of all hazards.
GOAL 2: Increase public awareness regarding all hazards, preparedness, and mitigation.
GOAL 3: Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of all hazards.
GOAL 4: Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.

Figure 6.1.1: 2023 Franklin County Hazard Mitigation Goals

6.2. Mitigation Goals and Objectives

Based on the discussion in **Section 6.1** above, **Figure 6.2.1** below captures our Goals and their associated linkages to the FCDES Strategic Plan.

Franklin County Hazard Mitigation Plan - 2023

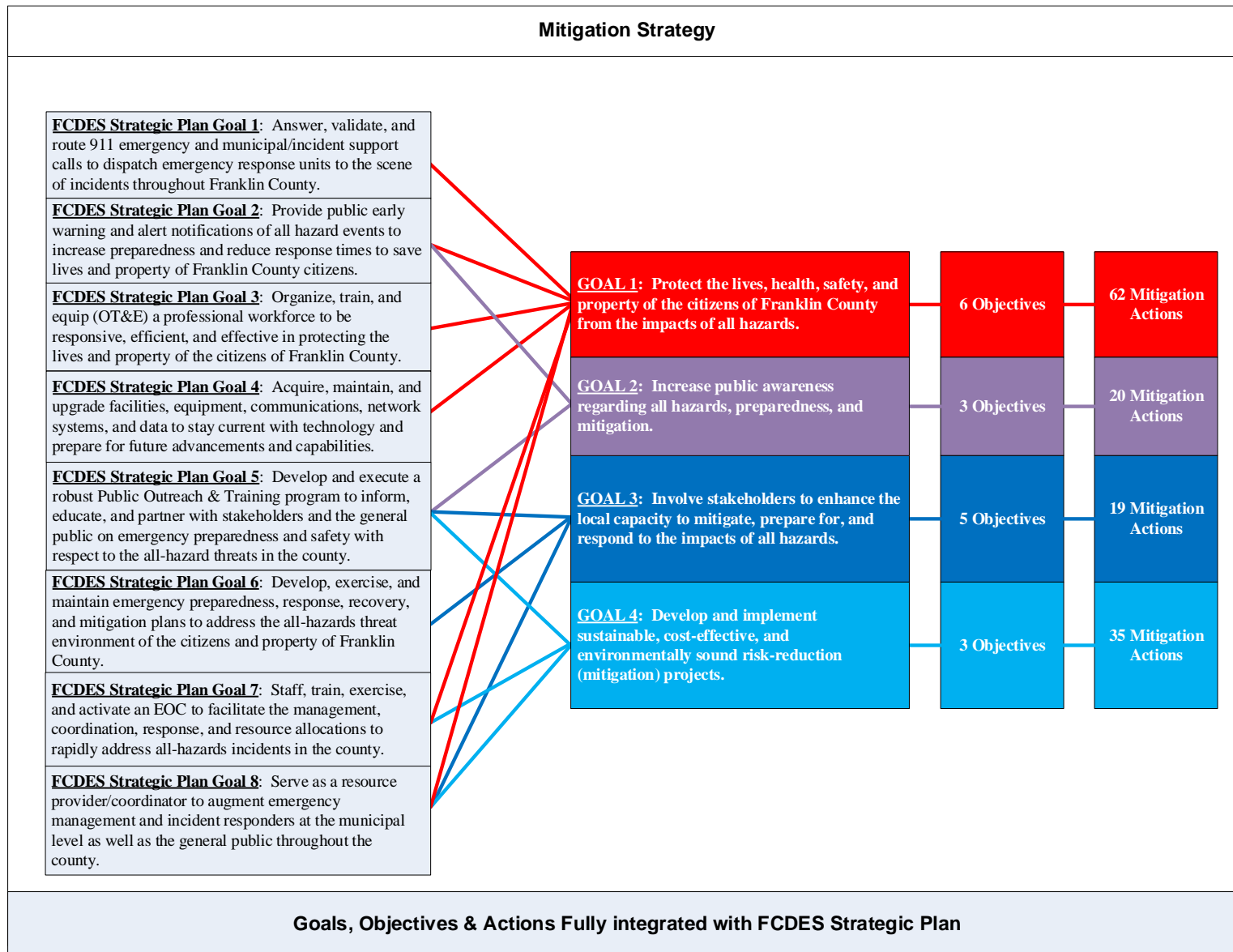


Figure 6.2.1: HMP Goals and Linkages to FCDES Strategic Plan

Figures 6.2.2 below shows the 4 Mitigation Strategy Goals and their associated Objectives. It also shows the linkages to the Objectives in the FCDES Strategic Plan.

Franklin County Hazard Mitigation Plan - 2023

GOAL 1: Protect the lives, health, safety, and property of the citizens of Franklin County from the impacts of all hazards.	FCDES Strategic Plan Objective Linkages	GOAL 3: Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of all hazards.	FCDES Strategic Plan Objective Linkages
OBJECTIVE 1A: Develop, improve, and protect systems that provide early warnings, emergency response communications, and evacuation procedures.	Objectives: 1.1, 1.2, 3.3, 3.4, 3.6, 4.1, 4.2 & 6.1	OBJECTIVE 3A: Strengthen codes and land use planning/enforcement, so that new construction or redevelopment can avoid or withstand the impacts of all hazards.	Objectives: 4.2, 5.1 & 6.1
OBJECTIVE 1B: Provide adequate, safe, and efficient evacuation routes and shelters during hazard events.	Objectives: 4.2, 6.1, 6.3	OBJECTIVE 3B: Regulate construction/development in the county to prevent increases in runoff and subsequent increases in flood flows.	Objective: 5.1
OBJECTIVE 1C: Protect public services and critical facilities, including infrastructure, from loss of use during all hazard events and potential damage from such events.	Objectives: 6.1, 6.2 & 6.3	OBJECTIVE 3C: Provide information to municipal officials regarding available funding for mitigation projects.	Objectives: 5.1 & 7.1
OBJECTIVE 1D: Establish partnerships among all levels of local government, the private sector and/or non-governmental organizations to improve and implement methods to protect people and property.	Objectives: 3.1, 3.5, 5.1, 5.2 & 7.1	OBJECTIVE 3D: Improve the participation rate in the National Flood Insurance Program (NFIP).	Objective: 5.1
OBJECTIVE 1E: Reduce all hazard-related risks/vulnerabilities to potentially isolated populations within the county.	Objectives: 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, 6.3 & 7.1	OBJECTIVE 3E: Encourage mitigation through incentive-based programs, such as the Community Rating System (CRS), Firewise, and Storm Ready programs.	Objective: 5.1
OBJECTIVE 1F: Support first responder agencies to augment/increase/enhance the recruitment and retention of their volunteer service members.	Objectives: 5.1 & 5.2	GOAL 4: Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.	FCDES Strategic Plan Objective Linkages
GOAL 2: Increase public awareness regarding all hazards, preparedness, and mitigation.	FCDES Strategic Plan Objective Linkages	OBJECTIVE 4A: Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged.	Objectives: 5.1 & 6.1
OBJECTIVE 2A: Use the best available data, science, and technologies to educate the public and improve understanding of the location and potential impacts of all hazards, the vulnerability of building types/community development patterns, and the measures needed to protect life safety.	Objectives: 5.1 & 5.2	OBJECTIVE 4B: Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.	Objective: 5.1 & 6.1
OBJECTIVE 2B: Develop preparedness information/outreach programs to disseminate information on all hazard disaster response.	Objective: 5.1 & 5.2	OBJECTIVE 4C: Encourage hazard mitigation measures that result in the least adverse effect on the natural environment and the use of natural processes.	Objectives: 5.1 & 6.1
OBJECTIVE 2C: Ensure that all citizens and stakeholders are well trained (or offered training) regarding all hazards and appropriate prevention and mitigation activities.	Objectives: 3.3, 3.4, 5.1 & 6.3		

Figure 6.2.2: 2023 HMP Goals/Objectives and DES Strategic Plan Linkages

6.3. Identification and Analysis of Mitigation Techniques

Appendix 11 of the Pennsylvania All-Hazard Mitigation Planning Standard Operating Guide (SOG), developed by PEMA, prescribes 4 mitigation techniques: Local Plans and Regulations, Structural and Infrastructure Projects, Natural Systems Protection, and Education and Awareness. Franklin County used this guide to identify mitigation techniques, and develop/evaluate mitigation actions. These mitigation techniques are defined below:

Local Plans and Regulations: These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.

Structure and Infrastructure Projects: These actions involve modifying existing structures and infrastructure or constructing new structures to reduce hazard vulnerability.

Natural Systems Protection: These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.

Education and Awareness: These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them, and may also include participation in national programs.

Table 6.3.1 provides a matrix identifying the mitigation techniques used for the hazards identified in the county. The specific actions associated with these techniques are included in **Section 6.4** of this document.

Franklin County Hazard Mitigation Plan - 2023

Hazard Threat	Local Plans and Regulations	Structure and Infrastructure Projects	Natural Systems Protection	Education and Awareness Programs
All Hazards	X	X		X
Winter Storm	X	X		X
Pandemic & Infectious Disease	X			
Utility Interruption	X	X		X
Hurricane, Tropical Storm, Nor'easter	X	X		X
Extreme Temperatures	X	X		X
Tornado/Windstorm	X	X		X
Transportation Accident	X	X		X
Hailstorm	X			X
Drought	X			X
Environmental Hazards	X	X		X
Nuclear Incident	X			X
Flood, Flash Flood, Ice Jam	X	X	X	X
Cyber-Terrorism	X	X		X
Earthquake	X	X		X
Radon Exposure				X
Invasive Species				X
Dam Failure	X			X
Building & Structure Collapse	X			X
Opioid Addiction Response	X			X
Lightning Strike	X			X
Terrorism	X			X
Subsidence/Sinkhole	X			
Urban Fire & Explosion	X	X		X
Mass Food & Animal Feed Contamination	X			X
Wildfire			X	X
Civil Disturbance	X			X
Landslide	X	X		

Table 6.3.1: Mitigation Techniques Used to Address Hazards in Franklin County

We added a category of hazard threat to **Table 6.3.1** above, “All Hazards”. This was done to allow for mitigation actions that addressed all of the hazards by their implementation, but not pollute the rest of the data in the table that applies to individual hazards. An example of this type of action would be: “To incorporate local data in HAZUS models.” This type of action would improve our preparedness and response posture for all hazards, not just a single or small group of hazards. There are several mitigation actions of this type in **Section 6.4**.

6.4. Mitigation Action Plan

In the 23 Mar 2023 HMP Planning Meeting, the HMPT and all municipalities were tasked to provide mitigation actions to cover projects that could mitigate hazards in their jurisdiction as well as cover gaps identified in their responses to the Municipal Capabilities survey (see **Appendix B** for meeting information). Each Mitigation Action is tied to the Goals/Objectives discussed in **Section 6.2**. **Tables 6.4.1- 6.4.17** present the Mitigation Actions that were developed by the HMPT for this update. The tables are color-coded to match with the Strategic Plan linkages in **Figure 6.2.2**. Incomplete Mitigation Actions from the 2018 HMP were carried over for the 2023 update.

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1A1	All Hazards	Assign and train additional County employees and volunteers to assist the Emergency Operations Center (EOC) staff, so they can be called upon in the event of major emergencies.	Staff Time	Within 2 years	FC
1A2	All Hazards	Incorporate local data in HAZUS models.	Staff Time	Within 2 years	FC
1A3	All Hazards	Conduct routine (monthly) inspections, regular maintenance, and annual tests on all emergency communications equipment, public address systems, and alert sirens to ensure unhindered operation during an emergency.	Staff Time; County/Municipal General Account; DHS – HSGP; FEMA Hazard Mitigation Assistance Programs	Continuous	ALL
1A4	All Hazards	Improve emergency management warning and response capabilities and procedures to better protect the public through continued implementation of early warning or alert systems that utilize cloud based communications technologies to distribute texts, phone calls, email alerts, or social media messages.	Staff Time; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs	Continuous	ALL
1A5	All Hazards	Design and implement an Mass Emergency Notification System for Greene Township. Township emergency notification system would contact residents within a geographical area of emergencies such as flooding, hazardous materials incidents, evacuations, police and fire related incidents.	DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
1A6	Flood, Flash Flood & Ice Jam	Research and coordinate with PEMA and NWS on installation of an Integrated Flood Observation and Warning System (IFLOWS) Stream Gauge on the Conococheague Creek near the Chambersburg Waste Treatment facility to provide early warning of Flash Flood Conditions for Franklin County.	Staff Time; USGS Grants; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs	Within 2 years	FC
1B1	All Hazards	Evaluate and update evacuation and sheltering plans throughout Franklin County annually.	Staff Time; US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grant (ESG) Program	Continuous	ALL
1B2	Extreme Temperatures; Winter Storm; Hurricane, Tropical Storm, Nor'easter; Flood, Flash Flood & Ice Jam	Identify and promote awareness of community shelters. These facilities would provide temporary refuge for the county's vulnerable populations during extreme cold or heat.	Staff Time; US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grants (ESG) Program	Continuous	ALL
1B3	Winter Storm; Extreme Temperatures	Review and assess for the need to upgrade insulation in commercial or residential buildings that currently house or will house high-risk populations during extreme winter weather events.	DHS – Homeland Security Grant Program (HSGP); US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grant (ESG) Program; FEMA Hazard Mitigation Assistance Programs	Within 2 years	ALL

Table 6.4.1: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1B4	All Hazards	Develop, staff, fund, and exercise a robust County Animal Response Team (CART) capability to provide care and shelter for a wide variety of animals from livestock to exotic pets during a mass relocation event.	American Society for the Prevention of Cruelty to Animals (ASPCA) – Emergency and Disaster Grants; FEMA Hazard Mitigation Assistance Programs	Within 3 years	FC
1B5	Winter Storm	Develop and implement a snow emergency plan in Greene Township.	Greene Township General Fund	Within 2 years	GRE
1B6	Winter Storm	Develop and implement a snow emergency plan in Saint Thomas Township.	Saint Thomas Township General Fund	Within 2 years	STT
1C1	All Hazards	Review and evaluate facilities, equipment, personnel, and other resources needed to support emergency responses annually and update County/Municipal Resource Books.	Staff Time	Continuous	ALL
1C2	Environmental Hazards	Develop a comprehensive assessment and safety exam of all SARA facilities every two years.	Staff Time; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account	Continuous	FC
1C3	Tornado/ Windstorm; Earthquake; Hurricane, Tropical Storm & Nor'easter; Flood, Flash Flood & Ice Jam	Develop a Debris Management Plan to include quick "Help Sheets/checklists" built upon various types of incidents and events.	Staff Time	Within 2 years	ALL
1C4	Environmental Hazards; Nuclear Incident	Ensure and expand the capabilities of regional decontamination team to include providing mass, emergency, and technical decontamination.	Seek Prioritization in SCTF Funding	Within 3 years	FC
1C5	Environmental Hazards	Develop and maintain a cache of hazardous materials mitigation supplies for deployment as needed.	Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account	Continuous	FC
1C6	All Hazards	Conduct hazard response practice drills and emergency management exercises on an annual basis.	Staff Time; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; County/Municipal General Account	Continuous	ALL

Table 6.4.2: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1C7	Utility Interruption; Transportation Accident	Work with utility companies to improve right-of-way tree management and encourage the burying of utility lines, especially in high frequency outage areas.	Federal Transportation Enhancements Program – Transportation Enhancements (TE) Funds – Transportation Equity Act of the 21st Century (TEA-21); DCED – Downtown and Communities Opportunity Grants; FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL
1C8	Nuclear Incident	Upgrade/maintain Radiological Emergency Preparedness activities, Radiological Testing/Response Equipment, and Franklin County Annex E for the Three Mile Island Power Station to ensure they comply with FEMA's 2016 Radiological Emergency Preparedness Program guidance.	Staff Time; Radiological Emergency Response Fund (RERF) Grant; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account	Continuous	FC
1C9	Dam Failure; Flood, Flash Flood & Ice Jam	Foster increased cooperation and communication between Franklin County EMC and the owners of privately held dams that might impact downstream communities through outreach, education, and dam failure scenarios or exercises, as appropriate.	Staff Time; National Dam Safety Program; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA Grant Program; Growing Greener; Dam Owners	Within 2 years	FC
1C10	Winter Storm; Tornado/Windstorm, Hurricane, Tropical Storm & Nor'easter; Extreme Temperatures; Utility Interruption	Identify a source of back-up power for all critical facilities including schools, government buildings, medical facilities, and emergency services (police, Fire, and EMS).	USDA Rural Development Grants; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL+
1C11	Urban Fire & Explosion	Demolish abandoned or collapsed structures and clean up junk and debris.	DCED – Community Development Block Grant – Disaster Recovery (CDBG-DR); US Department and Housing and Urban Development (HUD) - Housing Preservation Grants; FEMA Hazard Mitigation Assistance Programs	Within 5 years	MUN
1C12	Hurricane, Tropical Storm & Nor'easter; Tornado/ Windstorm; Winter Storm; Transportation Accident; Utility Interruption	Township Road Crews and Borough Public Works Departments partner with PennDOT and County Maintenance to identify, manage, and if warranted clear (to limits of the right-of-way) roadside brush and trees that could block roadways following a severe storm.	Department of Conservation of Natural Resources; USDA Natural Resources Conservation Service; FEMA Hazard Mitigation Assistance Programs	Continuous	MUN

Table 6.4.3: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1C13	Earthquake; Urban Fire & Explosion	Perform an engineering analysis to determine the feasibility of mandatory or voluntary installation of seismic shutoff valves on natural gas meters at commercial and residential buildings.	FEMA National Earthquake Hazards Reduction Program (NEHRP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL
1C14	Dam Failure; Flood, Flash Flood & Ice Jam	Develop plans and coordinate the breaching of the W. H. Walker Dam in Fannettsburg. Work with DEP and Army Corps of Engineers to breach dam due to abandonment and disrepair to prevent inundation to the Path Valley area.	Staff Time; Municipal General Account; National Dam Safety Program Grant; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA – High Hazard Unsafe Dam Projects; Growing Greener; Dam Owners; American Rivers Association; Ducks Unlimited; USACE Silver Jackets	Within 5 years	MET
1C15	Drought	Improve tracking and collection of boil water advisories throughout the county to identify potential problem areas for mitigation project development.	Staff Time	Within 2 years	FC
1C16	Cyber Terrorism	Continue to maintain existing threat protection software for Franklin County and evaluate for improvement.	Staff Time	Continuous	FC
1C17	Transportation Accident	Collect data and engineer a solution to reduce congestion and number of accidents at critical intersection (Kohler Rd. at Walker Rd.).	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE

Table 6.4.4: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1C18	Transportation Accident	Widen I-81 to 6 lanes (3 each direction) between Exit 17 and 20 to assist in reduction of traffic congestion.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE
1C19	Transportation Accident	Perform a traffic study on SR 997 (Black Gap Road) to Scotland, PA to determine if reduction in speed limit could reduce accidents. Multiple accidents in the area with at least 1 fatality.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE
1C20	Transportation Accident	Work with PennDOT to analyze traffic patterns at the I-81 Northbound Exit 20 off-ramp to determine if the deceleration lane is of sufficient length. Engineer, plan, and implement a solution to address the deficiencies found. Multiple accidents in this area.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE

Table 6.4.5: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1C21	Transportation Accident	Partner with PennDOT to evaluate the need for new turning lanes and traffic signals at intersection (Coffee Ave, SR 433, and SR 997) (Letterkenny Army Depot Main Gate). Engineer, plan, and implement solutions to address the deficiencies found.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE
1C22	Transportation Accident	Perform traffic study to determine if traffic signals are warranted at intersection (Siloam Rd, SR 11 (Philadelphia Ave), and Chancellor Dr) (2 fatal accidents at this intersection). Engineer, plan, and implement solutions to address the deficiencies found.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE
1C23	Transportation Accident	Perform a study on the bridge overpasses at Pine Stump Rd. and Woodstock Rd. to determine if width and height could be increased to reduce accidents. Engineer, plan, and implement solutions to address the deficiencies found.	Federal Railroad Administration Grants; FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
1C24	Transportation Accident	Procure battery back-up for all traffic signals in Greene Township. Battery back-up would assist in traffic flow during a power outage. This would reduce the need for emergency personnel at an intersection to direct traffic.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating	Within 5 years	GRE
1C25	All Hazards	Procure a generator for the Greene Township Emergency Management Agency Office. This generator will need to be 30,000 KW, fuel source will be Natural Gas.	DHS – Homeland Security Grant Program (HSGP); DCED – Local Government Capital Project Loan Program (LGCPL); USDA Rural Development Grants; FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
1C26	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Hamilton Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	Staff Time	Within 2 years	HAM
1C27	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Waynesboro Borough to assure the continuous operations of critical facilities and services during disasters/emergencies.	Staff Time	Within 2 years	WAY

Table 6.4.6: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1C28	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Quincy Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	Staff Time	Within 2 years	QUI
1C29	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Guilford Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	Staff Time	Within 2 years	GUI
1C30	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Washington Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	Staff Time	Within 2 years	WAS
1C31	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Antrim Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	Staff Time	Within 2 years	ANT
1C32	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Montgomery Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	Staff Time	Within 2 years	MON
1C33	All Hazards	Research and develop a Continuity of Operations Plan (COOP) for Warren Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	Staff Time	Within 2 years	WAR
1C34	Transportation Accident	Design and engineer the Walker/Kohler Road intersection to include additional lanes, traffic control devices, and possibly a traffic signal.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	GRE
1C35	Cyber Terrorism	Coordinate with Franklin County to increase cyber-security awareness within and between municipalities in order to reduce the risk of cyber attacks.	Staff Time	Continuous	ALL
1D1	All Hazards	Review Mutual Aid Agreements annually and recommend changes/updates as required.	Staff Time	Continuous	ALL
1D2	All Hazards	Assist municipalities in the preparation and maintenance of Municipal Emergency Operations Plans (EOPs).	Staff Time	Continuous	FC
1D3	All Hazards	Foster relationships with other counties so that Franklin County may utilize mutual aid in Emergency Operations Center (EOC) positions.	Staff Time	Continuous	FC
1D4	Mass Food & Animal Feed Contamination	Coordinate with Local USDA, PSU Agriculture Extension, and municipal representatives to develop a Mass Food Contamination annex to the Franklin County Emergency Operations Plan.	Staff Time	Within 2 years	ALL

Table 6.4.7: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
1D5	Terrorism; Utility Interruption	Encourage Utility and Pipeline companies to prepare vulnerability studies to identify and remediate potential exploitable threats and problems.	Staff Time; Federal Transportation Enhancements Program – Transportation Enhancements (TE) Funds – Transportation Equity Act of the 21st Century (TEA-21); DCED – Downtown and Communities Opportunity Grants	Within 3 years	ALL
1D6	Civil Disturbance; Terrorism	Work with local Police Departments, Pennsylvania State Police, and First Responders to provide civil disturbance response training. Provide police presence at controversial events with large crowd gatherings as a means of discouraging conflict.	Staff Time; County/Municipal General Account; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs	Within 1 year	ALL
1D7	Landslide; Transportation Accident	Work with Public Works and PennDOT to identify high hazard roads in mountain passes and cut-areas to identify potential initiatives for cut backs off the right-of-way, fence, or wall/barrier projects to mitigate the damage of rockslide or falling debris hazards.	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Continuous	MUN
1D8	Earthquake; Tornado/Winds storm; Hurricane, Tropical Storm, Nor'easter; Terrorism	Work with local industry partners to assess the capacity of landfills to accommodate earthquake debris. Develop coordination plans for disposal of debris in the aftermath of an earthquake.	Staff Time	Within 2 years	ALL
1D9	Environmental Hazards	Assess the possibility of forming a Township/County Hazardous Materials Team. Analyze the number of trained volunteers or career persons in the county versus the required staff needed to form a hazardous materials team.	Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account	Within 5 years	GRE/ ALL
1D10	Opioid Addiction Response	Coordinate with local municipalities and other community partners to increase awareness of Opioid Addiction.	Staff Time	Continuous	ALL
1E1	All Hazards	Provide assistance to municipalities in implementing individual hazard mitigation actions supporting high risk communities.	Staff Time; County/Municipal General Account; FEMA Hazard Mitigation Assistance Programs	Continuous	ALL
1E2	Transportation Accident	Maintain/develop traffic re-route plans and coordinate them with neighboring municipalities for traffic accidents that impact major arteries in the County.	Staff Time	Within 2 years	MUN

Table 6.4.8: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
2A8	Hailstorm; Tornado/ Windstorm; Hurricane, Tropical Storm, Nor'easter	Promote public awareness of hail-resistant building and construction practices including the use of structural bracing, window shutters, laminated glass in window panes, and hail resistant roof shingles.	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs	Within 2 years	FC
2A9	Subsidence/ Sinkholes	Map abandoned mine shafts, caves, and potentially vulnerable areas to cave ins or subsidence, including coordination with municipalities regarding newly identified features or risks.	Staff Time	Continuous	FC/ ALL
2A10	Lightning Strike	Work with PSU Agriculture Extension to develop an information pamphlet on lightning arrestors and implementation of these devices on barns and out-buildings to protect against lightning strike fires and livestock deaths.	Staff Time; County General Account; PEMA Sponsored training, FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs; USDA Grants	Within 1 year	FC/ PSU
2B1	All Hazards	Continue to maintain webpages where presentations, training documentation, and webinars can be posted. This will allow municipal officials to access the information at their own schedule and pace.	Staff Time	Continuous	FC
2B2	All Hazards	Increase funding and resources for public outreach and education with focused programs designed to address the highest risks in the community with the goal of reducing community risk and the cost of emergencies in the community.	Staff Time; County General Account; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs	Within 1 year	FC
2B3	Urban Fire & Explosion	Continue and/or develop programs to increase home safety and disaster prevention (some CO detector installs) for citizens that are members of high risk populations.	Staff Time; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs	Continuous	ALL
2B4	Invasive Species	Develop, maintain, and disseminate an Invasive Species Plants and Animals listing for citizen education and future Land Use development planning at the county and municipal level.	Staff Time; USDA Grant and Partnership Programs for Invasive Species	Within 2 years	FC/ PSU/ ALL

Table 6.4.9: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
2C1	All Hazards	On an annual basis, conduct Municipal Officials training and/or state sponsored training courses to address hazard mitigation topics, such as Damage Assessment, Storm Water Management, Mutual Aid Agreements, Public Disaster Assistance, and the Hazard Mitigation Grant Program.	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs	Continuous	FC
2C2	Urban Fire & Explosion	Identify and implement incentives to encourage municipal officials to participate in fire prevention and response training.	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs	Within 1 year	ALL
2C3	Terrorism	Promote inter and intra-agency coordination on potential terrorist activity. This can be accomplished through training, exercises, and networked information systems.	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs	Continuous	ALL
2C4	Dam Failure; Flood, Flash Flood & Ice Jam	Work with privately held dam owners, DEP, and Fish and Boat Commission to determine inspection dates or trigger new inspections for all dams in Franklin County. Seek mitigation actions for deficiencies uncovered in the data collection.	Staff Time; Municipal General Account; National Dam Safety Program Grant; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA – High Hazard Unsafe Dam Projects; Growing Greener; Dam Owners; American Rivers Association; Ducks Unlimited; USACE Silver Jackets	Within 2 years	FC
2C5	All Hazards	Establish program to educate residents on emergency management.	Staff Time; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs	Within 2 years	GRE
2C6	Flood, Flash Flood & Ice Jam	Research, develop, and execute an annual Floodplain Management Outreach Program to educate the municipalities on NFIP, DFIRM, and their associated requirements and regulations to assure a common understanding across the county.	Staff Time	Within 1 year	FC
2C7	Flood, Flash Flood & Ice Jam	Request Substantial Improvement/Substantial Damage training be delivered to all communities in Franklin County.	Staff Time; FEMA Region 3 Floodplain Branch	Within 1 year	ALL
3A1	All Hazards	Map new housing developments as plans are approved for the purpose of emergency and land use planning.	Staff Time	Continuous	FC

Franklin County Hazard Mitigation Plan - 2023

Table 6.4.10: Franklin County HMP – 2023 Mitigation Actions

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
3A2	Flood, Flash Flood & Ice Jam	Utilize most recent hazard assessment, including the National Flood Plain reports and historical records, when planning or authorizing building projects, including significant renovations.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Continuous	ALL
3A3	All Hazards	Adopt and support codes that restrict building and developing in areas identified as being high risk for natural and man-made incidents.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Within 3 years	ALL
3A4	All Hazards	Continue to stringently enforce all building codes in effect.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Continuous	ALL
3A5	All Hazards	Work with municipalities to integrate County Hazard Mitigation Plan into municipal Comprehensive Plans, Subdivision and Land Use Development Ordinances, and Zoning Ordinances.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Within 1 year	ALL
3A6	Flood, Flash Flood & Ice Jam	Research and development of land use regulations in St Thomas Township that regulate the placement (SFHA restrictions), bulk (or density), and the elevation of structures (to or above the BFE).	Staff Time	Within 5 years	STT
3A7	All Hazards	Coordinate between Lurgan Township, Letterkenny Township, and Fannett Township to update their Joint Comprehensive Plan, last update was in 2007.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	FAN/ LET/ LUR

Table 6.4.11: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
3A8	All Hazards	Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Greencastle Borough.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	GRC
3A9	All Hazards	Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Mont Alto Borough.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	MOA
3A10	All Hazards	Research, assess, and if feasible, develop an Evacuation Plan for Shippensburg Borough (Franklin County) to address large scale disaster scenarios.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	SHI
3A11	Flood, Flash Flood & Ice Jam	Research and develop a Stormwater Management Plan for Mercersburg Borough in compliance with DEP's Act 167.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	MER
3A12	Flood, Flash Flood & Ice Jam	Research and develop a Stormwater Management Plan for Orrstown Borough in compliance with DEP's Act 167.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)	Within 2 years	ORR
3B1	Flood, Flash Flood & Ice Jam	Utilize engineered solutions to slow or alter streams to limit damage to the built environment.	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL

Franklin County Hazard Mitigation Plan - 2023

Table 6.4.12: Franklin County HMP – 2023 Mitigation Actions

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
3C1	All Hazards	Advocate for municipalities to find alternative methods of funding to the Hazard Mitigation Program.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE)	Within 2 years	FC
3D1	Flood, Flash Flood & Ice Jam	Encourage municipal compliance with NFIP and PA Act 166 Floodplain development regulations and/or encourage more restrictive requirements, as appropriate by conducting training and inspection workshops.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Within 3 years	FC
3D2	Flood, Flash Flood & Ice Jam	Research and develop a Floodplain Management Plan for Peters Township to meet the requirements of the National Flood Insurance Program (NFIP).	Staff Time	Within 2 years	PET
3D3	Flood, Flash Flood & Ice Jam	Research and develop a Floodplain Management Plan for Chambersburg Borough to meet the requirements of the National Flood Insurance Program (NFIP).	Staff Time	Within 2 years	CHA
3E1	Wildfire	Renew/start Franklin County/Municipal Firewise program and encourage municipalities to reduce the vulnerability of critical facilities to wildfire by methods such as: increasing buffers and introduction of defensive spaces, identifying potential fire breaks, and providing assistance to FCDES to identify vulnerable structures.	Staff Time; County General Account; FEMA Hazard Mitigation Assistance Programs	Within 1 year	ALL
3E2	Winter Storm; Hurricane Tropical Storm, Nor'easter; Tornado/ Windstorm; Lightning Strike; Hail Storm; Flood, Flash Flood & Ice Jam	Continue participation in the National Weather Service StormReady Program.	Staff Time	Continuous	ALL
4A1	Flood, Flash Flood & Ice Jam	Evaluate the property of Mickey's Inn Trailer Park for possible acquisition and repurpose under the Flood Mitigation Program.	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4A2	Flood, Flash Flood & Ice Jam	Evaluate the property of Lincoln Dell Camping Area for possible acquisition and repurpose under the Flood Mitigation Program.	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4A3	Flood, Flash Flood & Ice Jam	Identify underdeveloped floodplain and wetland areas through the enforcement of county or municipal Subdivision and Land Development Ordinances (SALDOs), and when available, seek grants to acquire public open space for passive recreational uses in an effort to minimize/prevent potential flooding damages and enhance the regional environment.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population); FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL

Franklin County Hazard Mitigation Plan - 2023

Table 6.4.13: Franklin County HMP – 2023 Mitigation Actions

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
4A4	Flood, Flash Flood & Ice Jam	Establish a voluntary acquisition program of floodway properties (McClays Mill Rd, along the Conodoquinet Creek) based on Fair Market Value. Retain in public ownership and rezone as a conservation area.	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs	Within 5 years	SOH
4A5	Flood, Flash Flood & Ice Jam	Research, identify, and pursue acquisition of land parcels/structures in floodplains for demolition and relocation to reduce exposure to flood damage losses, to include options for mitigation reconstruction for homeowners that are reluctant to relocate.	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	ALL/CHA
4B1	Flood, Flash Flood & Ice Jam	Encourage municipalities to update their storm water regulations as needed. A model PADEP Ordinance is available online that can be used.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Within 2 years	ALL
4B2	Flood, Flash Flood & Ice Jam	Ensure proper enforcement of municipal Floodplain Ordinances.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Continuous	FC
4B3	Drought	Update and implement a comprehensive water resources management plan that analyzes the County's anticipated water use in an effort to identify suspected water supply shortages and potential new water supply sources.	Staff Time; FEMA Hazard Mitigation Assistance Programs	Within 3 years	ALL
4B4	Flood, Flash Flood & Ice Jam	Ensure municipal compliance with local watershed-specific Act 167 Storm Water Management Plan 2001 and Ordinances.	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)	Continuous	ALL
4B5	Flood, Flash Flood & Ice Jam	Conduct drainage system and ditch line maintenance & upgrades throughout the county to prevent roadway flooding. Ensure existing drainage systems are adequate and functioning properly in order to reduce impacts related to flash flooding and storm water runoff.	Community Development Block Grant (CDBG); DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	Within 5 years	MUN
4B6	Flood, Flash Flood & Ice Jam	Perform preliminary/conceptual design work and permitting for the upgrade to the Antietam Dam spillway to meet the required capacity for 100% of the Probable Maximum Flood level.	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs	Within 5 years	WAY
4B7	Flood, Flash Flood & Ice Jam	Replace an existing culvert pipe at 7288 Ebenezer Road with a larger one.	Franklin County Conservation District Dirt & Gravel Road Program	Within 1 year	LUR
4B8	Flood, Flash Flood & Ice Jam	Replace an existing box culvert in the 14000 block of Shimpstown Road.	American Rescue Plan Act (ARPA) Funding	Within 2 years	MON

Franklin County Hazard Mitigation Plan - 2023

Table 6.4.14: Franklin County HMP – 2023 Mitigation Actions

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
4B9	Flood, Flash Flood & Ice Jam	Stabilize the stream and relocate Shmipstown Road between Corner Road and Punch Bowl Road.	Chesapeake Bay Foundation; American Rescue Plan Act (ARPA) Funding	Within 2 years	MON
4C1	All Hazards	Monitor and evaluate mitigation actions annually and update the Hazard Mitigation Plan every five years.	Staff Time; FEMA Hazard Mitigation Assistance Programs	Continuous	FC
4C2	All Hazards	Continue to refine the Hazard Mitigation Planning Committee list to broaden participation throughout the entire Franklin County community. Conduct biannual meetings to discuss current trends in risk and/or required HMP updates.	Staff Time	Continuous	FC
4C3	Hailstorm; Winter Storm; Tornado/ Windstorm, Hurricane, Tropical Storm, Nor'easter; Flood, Flash Flood & Ice Jam; Extreme Temperatures; Drought	Partner with the local PSU Agriculture Extension to look into crop insurance saturation rates in the county to determine the availability of insurance and any cost prohibitive factors that may be present.	Staff Time	Within 3 years	FC/PSU
4C4	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Chambersburg Borough to SR 11).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C5	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 11 to Cornertown Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C6	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Cornertown Rd. to Sycamore Grove Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C7	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Sycamore Grove Rd. to Scotland Main St. at rail road overpass).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE

Table 6.4.15: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
4C8	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Scotland Rd. to Interstate I-81).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C9	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Interstate I-81 to Brindle Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C10	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Woodstock Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C11	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Main St. Fayetteville).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C12	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Woodstock Rd. to Mt Pleasant Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C13	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Area East of Mt Shadow Subdivision).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C14	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Brookens Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE

Table 6.4.16: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Action #	Hazard Assessed	Mitigation Action Description	Possible Funding	Performance Period	MUN
4C15	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brookens Rd. to Ridge Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C16	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Coldspring Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C17	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 997 (Black Gap Road)).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C18	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 30 (Lincoln Way East)).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C19	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Road) to Houser Rd.).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C20	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Rd) to SR 30 (Lincoln Way East)).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE
4C21	Flood, Flash Flood & Ice Jam	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 30 (Lincoln Way East) to South of SR 30 (Lincoln Way East)).	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	Within 5 years	GRE

Table 6.4.17: Franklin County HMP – 2023 Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

These 136 Mitigation Actions will require substantial time commitments from staff at the county and local municipalities. Those that participated in the development of the 2023 HMP Update believe that these actions are attainable and can be implemented over the next 5-year cycle. While all activities will be pursued over the next 5 years, the reality of limited time and resources requires the identification of high-priority mitigation actions. Prioritization allows the individuals and organizations involved to focus their energies and ensure progress on mitigation activities.

As such, these Mitigation Actions were evaluated using 5 criteria/factors. The criteria were directly taken from the *PEMA PA Hazard Mitigation Plan Standard Operating Guide*. These feasibility criteria/factors are listed in **Table 6.4.18**.

MULTI-OBJECTIVE MITIGATION ACTION PRIORITIZATION METHOD		
Mitigation Action Ranking Criteria	Criteria Description	Weight Value
Effectiveness	The extent to which an action reduces the vulnerability of people and property.	20%
Efficiency	The extent to which time, effort, and cost is well used as a means of reducing vulnerability.	30%
Multi-Hazard Mitigation	The action reduces vulnerability for more than one hazard.	20%
Addresses High Risk Hazard	The action reduces vulnerability for people and property from a hazard(s) identified as high risk.	15%
Addresses Critical Communications/Critical Facilities	The action pertains to the maintenance of critical functions and structures such as transportation, supply chain management, data circuits, etc.	15%

Table 6.4.18: Evaluation Factors for Proposed Mitigation Actions

Each mitigation action was evaluated on each of the factors outlined in **Table 6.4.1.18**. Applying these mitigation action assessment criteria will result in an overall score between 0 and 3 where a score of 0 is of the lowest priority and a score of 3 is of the highest priority. These responses are listed and explained in **Table 6.4.19** below.

Prioritization Category	Prioritization Score
High	2.5 - 3.0
Medium	1.9 - 2.4
Low	0 - 1.8

Table 6.4.19: Possible Scoring Response to Evaluate Mitigation Action Factors

Each of these responses was multiplied by their associated factor weight to produce a factor score. These factor scores (for each mitigation) were added together to achieve a cumulative total for the mitigation action evaluation. These composite numbers were then ranked based on highest score being the most important mitigation action and the lowest score being the least important. The results of this scoring are outlined in **Tables 6.4.21-6.4.3.32** below.

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
1	1A3	Conduct routine (monthly) inspections, regular maintenance, and annual tests on all emergency communications equipment, public address systems, and alert sirens to ensure unhindered operation during an emergency.	3	3	2	3	3	2.8	ALL
2	3D3	Research and develop a Floodplain Management Plan for Chambersburg Borough to meet the requirements of the National Flood Insurance Program (NFIP).	3	3	1	3	3	2.6	CHA
3	3D2	Research and develop a Floodplain Management Plan for Peters Township to meet the requirements of the National Flood Insurance Program (NFIP).	3	3	1	3	3	2.6	PET
4	1C6	Conduct hazard response practice drills and emergency management exercises on an annual basis.	3	3	2	2	2	2.5	ALL
5	3A3	Adopt and support codes that restrict building and developing in areas identified as being high risk for natural and man-made incidents.	3	3	2	3	1	2.5	ALL
6	1D2	Assist municipalities in the preparation and maintenance of Municipal Emergency Operations Plans (EOPs).	3	3	1	2	3	2.45	FC
7	1C2	Develop a comprehensive assessment and safety exam of all SARA facilities every two years.	3	3	1	3	2	2.45	FC
8	1A4	Improve emergency management warning and response capabilities and procedures to better protect the public through continued implementation of early warning or alert systems that utilize cloud based communications technologies to distribute texts, phone calls, email alerts, or social media messages.	3	2	2	3	2	2.35	ALL
9	2A5	Conduct outreach to residents of mobile home parks or trailers on how and why to anchor trailers to protect against severe weather conditions.	3	3	1	3	1	2.3	ALL
10	2C3	Promote inter and intra-agency coordination on potential terrorist activity. This can be accomplished through training, exercises, and networked information systems.	3	3	1	3	1	2.3	ALL
11	1C9	Foster increased cooperation and communication between Franklin County EMC and the owners of privately held dams that might impact downstream communities through outreach, education, and dam failure scenarios or exercises, as appropriate.	3	3	1	3	1	2.3	FC
12	2B2	Increase funding and resources for public outreach and education with focused programs designed to address the highest risks in the community with the goal of reducing community risk and the cost of emergencies in the community.	2	3	2	2	2	2.3	FC

Table 6.4.20: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
13	2C5	Establish program to educate residents on emergency management.	1	3	3	2	2	2.3	GRE
14	1D7	Work with Public Works and PennDOT to identify high hazard roads in mountain passes and cut-areas to identify potential initiatives for cut backs off the right-of-way, fence, or wall/barrier projects to mitigate the damage of rockslide or falling debris hazards.	3	3	1	2	2	2.3	MUN
15	4B4	Ensure municipal compliance with local watershed-specific Act 167 Storm Water Management Plan 2001 and Ordinances.	2	3	2	3	1	2.3	ALL
16	1C10	Identify a source of back-up power for all critical facilities including schools, government buildings, medical facilities, and emergency services (police, Fire, and EMS).	2	3	1	3	2	2.25	ALL+
17	1A5	Design and implement an Mass Emergency Notification System for Greene Township. Township emergency notification system would contact residents within a geographical area of emergencies such as flooding, hazardous materials incidents, evacuations, police and fire related incidents.	3	2	2	3	1	2.2	GRE
18	3A10	Research, assess, and if feasible, develop an Evacuation Plan for Shippensburg Borough (Franklin County) to address large scale disaster scenarios.	3	3	2	1	1	2.2	SHI
19	1E1	Provide assistance to municipalities in implementing individual hazard mitigation actions supporting high risk communities.	3	2	1	3	2	2.15	ALL
20	1C7	Work with utility companies to improve right-of-way tree management and encourage the burying of utility lines, especially in high frequency outage areas.	2	2	2	3	2	2.15	ALL
21	2C2	Identify and implement incentives to encourage municipal officials to participate in fire prevention and response training.	3	3	1	2	1	2.15	ALL
22	3A2	Utilize most recent hazard assessment, including the National Flood Plain reports and historical records, when planning or authorizing building projects, including significant renovations.	3	2	1	3	2	2.15	ALL
23	3A5	Work with municipalities to integrate County Hazard Mitigation Plan into municipal Comprehensive Plans, Subdivision and Land Use Development Ordinances, and Zoning Ordinances.	2	2	2	3	2	2.15	ALL
24	2A7	Create information pamphlets and outreach programs to discuss the older building codes and subsequent deficiencies in snow load capabilities for citizens with older homes in the County.	3	3	1	2	1	2.15	FC

Table 6.4.21: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
25	2B1	Continue to maintain webpages where presentations, training documentation, and webinars can be posted. This will allow municipal officials to access the information at their own schedule and pace.	2	3	2	2	1	2.15	FC
26	2C1	On an annual basis, conduct Municipal Officials training and/or state sponsored training courses to address hazard mitigation topics, such as Damage Assessment, Storm Water Management, Mutual Aid Agreements, Public Disaster Assistance, and the Hazard Mitigation Grant Program.	2	3	2	2	1	2.15	FC
27	4B2	Ensure proper enforcement of municipal Floodplain Ordinances.	3	3	1	2	1	2.15	FC
28	4C2	Continue to refine the Hazard Mitigation Planning Committee list to broaden participation throughout the entire Franklin County community. Conduct biannual meetings to discuss current trends in risk and/or required HMP updates.	1	3	2	3	1	2.1	FC
29	1D5	Encourage Utility and Pipeline companies to prepare vulnerability studies to identify and remediate potential exploitable threats and problems.	2	2	1	3	3	2.1	ALL
30	2B3	Continue and/or develop programs to increase home safety and disaster prevention (some/CO detector installs) for citizens that are members of high risk populations.	2	3	1	3	1	2.1	ALL
31	3A4	Continue to stringently enforce all building codes in effect.	2	3	1	3	1	2.1	ALL
32	1A1	Assign and train additional County employees and volunteers to assist the Emergency Operations Center (EOC) staff, so they can be called upon in the event of major emergencies.	2	3	1	2	2	2.1	FC
33	1D3	Foster relationships with other counties so that Franklin County may utilize mutual aid in Emergency Operations Center (EOC) positions.	1	3	1	3	2	2.05	FC
34	1A6	Research and coordinate with PEMA and NWS on installation of an Integrated Flood Observation and Warning System (IFLOWS) Stream Gauge on the Conococheague Creek near the Chambersburg Waste Treatment facility to provide early warning of Flash Flood Conditions for Franklin County.	3	2	1	3	1	2	FC
35	2C4	Work with privately held dam owners, DEP, and Fish and Boat Commission to determine inspection dates or trigger new inspections for all dams in Franklin County. Seek mitigation actions for deficiencies uncovered in the data collection.	3	2	1	3	1	2	FC

Table 6.4.22: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
36	3D1	Encourage municipal compliance with NFIP and PA Act 166 Floodplain development regulations and/or encourage more restrictive requirements, as appropriate by conducting training and inspection workshops.	3	2	1	3	1	2	FC
37	1C17	Collect data and engineer a solution to reduce congestion and number of accidents at critical intersection (Kohler Rd. at Walker Rd.).	3	2	1	3	1	2	GRE
38	4C10	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Interstate I-81 to Brindle Rd.).	3	2	1	3	1	2	GRE
39	4C11	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Woodstock Rd.).	3	2	1	3	1	2	GRE
40	4C12	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Main St. Fayetteville).	3	2	1	3	1	2	GRE
41	4C13	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Woodstock Rd. to Mt Pleasant Rd.).	3	2	1	3	1	2	GRE
42	4C14	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Area East of Mt Shadow Subdivision).	3	2	1	3	1	2	GRE
43	4C15	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Brookens Rd.).	3	2	1	3	1	2	GRE
44	4C16	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brookens Rd. to Ridge Rd.).	3	2	1	3	1	2	GRE
45	4C17	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Coldspring Rd.).	3	2	1	3	1	2	GRE

Table 6.4.23: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
46	4C18	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 997 (Black Gap Road)).	3	2	1	3	1	2	GRE
47	4C19	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 30 (Lincoln Way East)).	3	2	1	3	1	2	GRE
48	4C20	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Road) to Houser Rd.).	3	2	1	3	1	2	GRE
49	4C21	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Rd) to SR 30 (Lincoln Way East)).	3	2	1	3	1	2	GRE
50	4C22	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 30 (Lincoln Way East) to South of SR 30 (Lincoln Way East)).	3	2	1	3	1	2	GRE
51	4C4	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Chambersburg Borough to SR 11).	3	2	1	3	1	2	GRE
52	4C5	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 11 to Cornertown Rd.).	3	2	1	3	1	2	GRE
53	4C6	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Cornertown Rd. to Sycamore Grove Rd.).	3	2	1	3	1	2	GRE
54	4C7	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Sycamore Grove Rd. to Scotland Main St. at rail road overpass).	3	2	1	3	1	2	GRE

Table 6.4.24: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
55	4C8	Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Scotland Rd. to Interstate I-81).	3	2	1	3	1	2	GRE
56	1C14	Develop plans and coordinate the breaching of the W. H. Walker Dam in Fannettsburg. Work with DEP and Army Corps of Engineers to breach dam due to abandonment and disrepair to prevent inundation to the Path Valley area.	3	2	1	3	1	2	MET
57	4B6	Perform preliminary/conceptual design work and permitting for the upgrade to the Antietam Dam spillway to meet the required capacity for 100% of the Probable Maximum Flood level.	3	2	1	2	2	2	WAY
58	2A3	Identify metrics for measuring community risk to establish benchmarks. Utilize these benchmarks when implementing risk reduction strategies and develop reporting mechanism for progress.	2	2	2	3	1	2	ALL
59	3A11	Research and develop a Stormwater Management Plan for Mercersburg Borough in compliance with DEP's Act 167.	2	2	2	3	1	2	MER
60	3A12	Research and develop a Stormwater Management Plan for Orrstown Borough in compliance with DEP's Act 167.	2	2	2	3	1	2	ORR
61	1C31	Research and develop a Continuity of Operations Plan (COOP) for Antrim Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	1	2	2	2	3	1.95	ANT
62	2A1	Train additional personnel on the use of GIS systems to support emergency operations.	1	2	2	3	2	1.95	FC
63	1C29	Research and develop a Continuity of Operations Plan (COOP) for Guilford Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	1	2	2	2	3	1.95	GUI
64	1C26	Research and develop a Continuity of Operations Plan (COOP) for Hamilton Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	1	2	2	2	3	1.95	HAM
65	1C32	Research and develop a Continuity of Operations Plan (COOP) for Montgomery Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	1	2	2	2	3	1.95	MON

Table 6.4.25: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
66	1C28	Research and develop a Continuity of Operations Plan (COOP) for Quincy Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	1	2	2	2	3	1.95	QUI
67	1C33	Research and develop a Continuity of Operations Plan (COOP) for Warren Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.	1	2	2	2	3	1.95	WAR
68	1C30	Research and develop a Continuity of Operations Plan (COOP) for Washington Township to assure the continuous operations of critical facilities and services during disasters/emergencies.	1	2	2	2	3	1.95	WAS
69	1C27	Research and develop a Continuity of Operations Plan (COOP) for Waynesboro Borough to assure the continuous operations of critical facilities and services during disasters/emergencies.	1	2	2	2	3	1.95	WAY
70	3E1	Renew/start Franklin County/Municipal Firewise program and encourage municipalities to reduce the vulnerability of critical facilities to wildfire by methods such as: increasing buffers and introduction of defensive spaces, identifying potential fire breaks, and providing assistance to FCDES to identify vulnerable structures.	2	2	1	3	2	1.95	ALL
71	3B1	Utilize engineered solutions to slow or alter streams to limit damage to the built environment.	2	2	1	3	2	1.95	ALL
72	1C8	Upgrade/maintain Radiological Emergency Preparedness activities, Radiological Testing/Response Equipment, and Franklin County Annex E for the Three Mile Island Power Station to ensure they comply with FEMA's 2016 Radiological Emergency Preparedness Program guidance.	2	2	1	3	2	1.95	FC
73	1D4	Coordinate with Local USDA, PSU Agriculture Extension, and municipal representatives to develop a Mass Food Contamination annex to the Franklin County Emergency Operations Plan.	2	2	1	3	2	1.95	FC/ USDA/ PSU/ ALL
74	1F1	Partner with the Franklin County Public Safety Training Center (FCPSTC), the Franklin County Fire Chiefs Association (FCFCA), the Emergency Alliance, and other first responder groups in the county to organize and execute outreach programs and open houses to educate the community on responder capabilities and showcase opportunities for community service.	1	3	2	2	1	1.95	FC

Table 6.4.26: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
75	1B5	Develop and implement a snow emergency plan in Greene Township.	2	2	1	3	2	1.95	GRE
76	1C20	Work with PennDOT to analyze traffic patterns at the I-81 Northbound Exit 20 off-ramp to determine if the deceleration lane is of sufficient length. Engineer, plan, and implement a solution to address the deficiencies found. Multiple accidents in this area.	2	2	1	3	2	1.95	GRE
77	1C21	Partner with PennDOT to evaluate the need for new turning lanes and traffic signals at intersection (Coffee Ave, SR 433, and SR 997) (Letterkenny Army Depot Main Gate). Engineer, plan, and implement solutions to address the deficiencies found.	2	2	1	3	2	1.95	GRE
78	1C22	Perform traffic study to determine if traffic signals are warranted at intersection (Siloam Rd, SR 11 (Philadelphia Ave), and Chancellor Dr) (2 fatal accidents at this intersection). Engineer, plan, and implement solutions to address the deficiencies found.	2	2	1	3	2	1.95	GRE
79	1C25	Procure a generator for the Greene Township Emergency Management Agency Office. This generator will need to be 30,000 KW, fuel source will be Natural Gas.	2	2	1	3	2	1.95	GRE
80	1C12	Township Road Crews and Borough Public Works Departments partner with PennDOT and County Maintenance to identify, manage, and if warranted clear (to limits of the right-of-way) roadside brush and trees that could block roadways following a severe storm.	2	2	1	3	2	1.95	MUN
81	4B5	Conduct drainage system and ditch line maintenance & upgrades throughout the county to prevent roadway flooding. Ensure existing drainage systems are adequate and functioning properly in order to reduce impacts related to flash flooding and storm water runoff.	2	2	1	3	2	1.95	MUN
82	1B6	Develop and implement a snow emergency plan in Saint Thomas Township.	2	2	1	3	2	1.95	STT
83	3A6	Research and development of land use regulations in St Thomas Township that regulate the placement (SFHA restrictions), bulk (or density), and the elevation of structures (to or above the BFE).	2	2	1	3	2	1.95	STT
84	3E2	Continue participation in the National Weather Service StormReady Program.	2	3	1	2	1	1.95	ALL

Table 6.4.27: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
85	1D1	Review Mutual Aid Agreements annually and recommend changes/updates as required.	2	3	1	2	1	1.95	ALL
86	2A10	Work with PSU Agriculture Extension to develop an information pamphlet on lightning arrestors and implementation of these devices on barns and out-buildings to protect against lightning strike fires and livestock deaths.	2	3	1	2	1	1.95	FC/ PSU
87	1C4	Ensure and expand the capabilities of regional decontamination team to include providing mass, emergency, and technical decontamination.	3	2	1	2	1	1.85	FC
88	2A2	Where acquisition is not feasible, advise homeowners/businesses of preferred mitigation alternatives.	3	2	1	3	0	1.85	FC
89	1C24	Procure battery back-up for all traffic signals in Greene Township. Battery back-up would assist in traffic flow during a power outage. This would reduce the need for emergency personnel at an intersection to direct traffic.	3	2	1	2	1	1.85	GRE
90	1C34	Design and engineer the Walker/Kohler Road intersection to include additional lanes, traffic control devices, and possibly a traffic signal.	3	1	1	3	2	1.85	GRE
91	4C1	Monitor and evaluate mitigation actions annually and update the Hazard Mitigation Plan every five years.	2	2	2	2	1	1.85	FC
92	1C13	Perform an engineering analysis to determine the feasibility of mandatory or voluntary installation of seismic shutoff valves on natural gas meters at commercial and residential buildings.	2	2	1	2	2	1.8	ALL
93	4B3	Update and implement a comprehensive water resources management plan that analyzes the County's anticipated water use in an effort to identify suspected water supply shortages and potential new water supply sources.	2	2	1	2	2	1.8	ALL
94	1B4	Develop, staff, fund, and exercise a robust County Animal Response Team (CART) capability to provide care and shelter for a wide variety of animals from livestock to exotic pets during a mass relocation event.	1	2	2	3	1	1.8	FC
95	1C19	Perform a traffic study on SR 997 (Black Gap Road) to Scotland, PA to determine if reduction in speed limit could reduce accidents. Multiple accidents in the area with at least 1 fatality.	2	2	1	2	2	1.8	GRE

Table 6.4.28: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
96	1C23	Perform a study on the bridge overpasses at Pine Stump Rd. and Woodstock Rd. to determine if width and height could be increased to reduce accidents. Engineer, plan, and implement solutions to address the deficiencies found.	2	2	1	2	2	1.8	GRE
97	1B2	Identify and promote awareness of community shelters. These facilities would provide temporary refuge for the county's vulnerable populations during extreme cold or heat conditions.	2	2	1	3	1	1.8	ALL
98	1B3	Review and assess for the need to upgrade insulation in commercial or residential buildings that currently house or will house high-risk populations during extreme winter weather events.	2	2	1	3	1	1.8	ALL
99	2A4	Improve communications between the public and emergency management services through social media.	2	3	1	2	0	1.8	ALL
100	2A6	Create and distribute electronic and print information on Radon exposure and Radon mitigation systems to homeowners throughout the county, especially those in areas with elevated Radon test levels.	2	2	1	3	1	1.8	ALL
101	4B1	Encourage municipalities to update their storm water regulations as needed. A model PADEP Ordinance is available online that can be used.	2	2	1	3	1	1.8	ALL
102	4A5	Research, identify, and pursue acquisition of land parcels/structures in floodplains for demolition and relocation to reduce exposure to flood damage losses, to include options for mitigation reconstruction for homeowners that are reluctant to relocate.	2	2	1	3	1	1.8	ALL/ CHA
103	1C15	Improve tracking and collection of boil water advisories throughout the county to identify potential problem areas for mitigation project development.	2	2	1	3	1	1.8	FC
104	1C5	Develop and maintain a cache of hazardous materials mitigation supplies for deployment as needed.	2	2	1	3	1	1.8	FC
105	2A8	Promote public awareness of hail-resistant building and construction practices including the use of structural bracing, window shutters, laminated glass in window panes, and hail resistant roof shingles.	2	2	1	3	1	1.8	FC

Table 6.4.29: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
106	2C6	Research, develop, and execute an annual Floodplain Management Outreach Program to educate the municipalities on NFIP, DFIRM, and their associated requirements and regulations to assure a common understanding across the county.	2	2	1	3	1	1.8	FC
107	1E3	Develop and implement a Pandemic Response Plan early and in a coordinated effort with layered approach - individuals, community, county, and regional measures.	2	2	1	3	1	1.8	FC/MED COMM
108	4A1	Evaluate the property of Mickey's Inn Trailer Park for possible acquisition and repurpose under the Flood Mitigation Program.	2	2	1	3	1	1.8	GRE
109	4A2	Evaluate the property of Lincoln Dell Camping Area for possible acquisition and repurpose under the Flood Mitigation Program.	2	2	1	3	1	1.8	GRE
110	4A4	Establish a voluntary acquisition program of floodway properties (McClays Mill Rd, along the Conodoquinet Creek) based on Fair Market Value. Retain in public ownership and rezone as a conservation area.	2	2	1	3	1	1.8	SOH
111	1C18	Widen I-81 to 6 lanes (3 each direction) between Exit 17 and 20 to assist in reduction of traffic congestion.	1	2	1	3	2	1.75	GRE
112	4B7	Replace an existing culvert pipe at 7288 Ebenezer Road with a larger one.	1	2	1	3	2	1.75	LUR
113	4B8	Replace an existing boxculvert in the 14000 block of Shimpstown Road.	1	2	1	3	2	1.75	MON
114	1C1	Review and evaluate facilities, equipment, personnel, and other resources needed to support emergency responses annually and update County/Municipal Resource Books.	1	3	1	2	1	1.75	ALL
115	1D10	Coordinate with local municipalities and other community partners to increase awareness of Opioid Addiction.	2	3	0	2	1	1.75	ALL
116	1A2	Incorporate local data in HAZUS models.	2	1	2	2	2	1.7	FC
117	1B1	Evaluate and update evacuation and sheltering plans throughout Franklin County annually.	2	2	1	2	1	1.65	ALL
118	1D6	Work with local Police Departments, Pennsylvania State Police, and First Responders to provide civil disturbance response training. Provide police presence at controversial events with large crowd gatherings as a means of discouraging conflict.	2	2	1	2	1	1.65	FC
119	2A9	Map abandoned mine shafts, caves, and potentially vulnerable areas to cave ins or subsidence, including coordination with municipalities regarding newly identified features or risks.	2	2	1	2	1	1.65	FC/ALL

Table 6.4.30: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
120	3A1	Map new housing developments as plans are approved for the purpose of emergency and land use planning.	2	2	1	2	1	1.65	FC
121	1D9	Assess the possibility of forming a Township/County Hazardous Materials Team. Analyze the number of trained volunteers or career persons in the county versus the required staff needed to form a hazardous materials team.	2	2	1	2	1	1.65	GRE/ ALL
122	4B9	Stabilize the stream and relocate Shmipstown Road between Corner Road and Punch Bowl Road.	2	1	1	3	2	1.65	MON
123	1E4	Survey, document, and incorporate private well locations in Franklin County into the GIS database for analyses of available water resources.	1	2	1	2	2	1.6	FC
124	1E2	Maintain/develop traffic re-route plans and coordinate them with neighboring municipalities for traffic accidents that impact major arteries in the County.	1	2	1	2	2	1.6	MUN
125	1C3	Develop a Debris Management Plan to include quick "Help Sheets/checklists" built upon various types of incidents and events.	1	2	1	3	1	1.6	ALL
126	4A3	Identify underdeveloped floodplain and wetland areas through the enforcement of county or municipal Subdivision and Land Development Ordinances (SALDOs), and when available, seek grants to acquire public open space for passive recreational uses in an effort to minimize/prevent potential flooding damages and enhance the regional environment.	1	2	1	3	1	1.6	ALL
127	3C1	Advocate for municipalities to find alternative methods of funding to the Hazard Mitigation Program.	1	2	1	3	1	1.6	FC
128	1C35	Coordinate with Franklin County to increase cyber-security awareness within and between municipalities in order to reduce the risk of cyber attacks.	2	2	1	1	1	1.5	ALL
129	3A7	Coordinate between Lurgan Township, Letterkenny Township, and Fannett Township to update their Joint Comprehensive Plan, last update was in 2007.	1	2	1	1	2	1.45	FAN/ LET/ LUR
130	2B4	Develop, maintain, and disseminate an Invasive Species Plants and Animals listing for citizen education and future Land Use development planning at the county and municipal level.	1	2	1	2	1	1.45	FC/ PSU/ ALL
131	3A8	Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Greencastle Borough.	1	2	1	1	2	1.45	GRC
132	3A9	Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Mont Alto Borough.	1	2	1	1	2	1.45	MOA

Table 6.4.31: Scoring of Mitigation Actions

Franklin County Hazard Mitigation Plan - 2023

Rank	Number	Mitigation Action Description	Effectiveness (20%)	Efficiency (30%)	Multi-Hazard Mitigation (20%)	Address High Risk Hazard (15%)	Address Critical Communication Facilities (15%)	Total Score	MUN
133	1C11	Demolish abandoned or collapsed structures and clean up junk and debris.	1	2	1	2	1	1.45	MUN
134	1C16	Continue to maintain existing threat protection software for Franklin County and evaluate for improvement.	2	2	0	1	1	1.3	FC
135	1D8	Work with local industry partners to assess the capacity of landfills to accommodate earthquake debris. Develop coordination plans for disposal of debris in the aftermath of an earthquake.	0	2	1	2	1	1.25	ALL
136	4C3	Partner with the local PSU Agriculture Extension to look into crop insurance saturation rates in the county to determine the availability of insurance and any cost prohibitive factors that may be present.	0	2	1	2	1	1.25	FC/PSU
137	2C7	Request Substantial Improvement/Substantial Damage training be delivered to all communities in Franklin County.	2	1	1	2	0	1.2	ALL

Table 6.4.32: Scoring of Mitigation Actions

Each of the actions in **Figures 6.4.1-6.4.137** below document the community or communities participating in the action, the overall ranking for the action, action description, mitigation technique(s), hazard(s) addressed, the lead agency or department, implementation schedule, and potential funding sources.

COMMUNITY: Franklin County & All	ACTION 1A3: Conduct routine (monthly) inspections, regular maintenance, and annual tests on all emergency communications equipment, public address systems, and alert sirens to ensure unhindered operation during an emergency event.
ACTION # 1	
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Communications/911 Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; County/Municipal General Account; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.1: Mitigation Action 1

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Chambersburg Borough ACTION # 2	ACTION 3D3: Research and develop a Floodplain Management Plan for Chambersburg Borough to meet the requirements of the National Flood Insurance Program (NFIP).
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Chambersburg Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.2: Mitigation Action 2

COMMUNITY: Peters Township ACTION # 3	ACTION 3D2: Research and develop a Floodplain Management Plan for Peters Township to meet the requirements of the National Flood Insurance Program (NFIP).
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Peters Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.3: Mitigation Action 3

COMMUNITY: Franklin County & All Municipalities ACTION # 4	ACTION 1C6: Conduct hazard response practice drills and emergency management exercises on an annual basis.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; County/Municipal General Account

Figure 6.4.4: Mitigation Action 4

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County & All Municipalities ACTION # 5	ACTION 3A3: Adopt and support codes that restrict building and developing in areas identified as being high risk for natural and man-made incidents.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.5: Mitigation Action 5

COMMUNITY: Franklin County ACTION # 6	ACTION 1D2: Assist municipalities in the preparation and maintenance of Municipal Emergency Operations Plans (EOPs).
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.6: Mitigation Action 6

COMMUNITY: Franklin County ACTION # 7	ACTION 1C2: Develop a comprehensive assessment and safety exam of all SARA facilities every two years.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Environmental Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, HAZMAT Coordinator
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account

Figure 6.4.7: Mitigation Action 7

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 8	<u>ACTION 1A4:</u> Improve emergency management warning and response capabilities and procedures to better protect the public through continued implementation of early warning or alert systems that utilize cloud-based (Everbridge, IPAWS, Wireless Emergency Alerts) communications technologies to distribute texts, phone calls, email alerts, or social media messages.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.8: Mitigation Action 8

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 9	<u>ACTION 2A5:</u> Conduct outreach to residents of mobile home parks or trailers on how and why to anchor trailers to protect against severe weather conditions.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Tornado/Windstorm, Hurricane, Tropical Storm, Nor'easter, Winter Storm
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Operations & Training Officer; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.9: Mitigation Action 9

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 10	<u>ACTION 2C3:</u> Promote inter and intra-agency coordination on potential terrorist activity. This can be accomplished through training, exercises, and networked information systems.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Terrorism
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.10: Mitigation Action 10

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County	ACTION 1C9: Foster increased cooperation and communications between Franklin County EMC and the owners of privately held dams that might impact downstream communities through outreach, education, and dam failure scenarios or exercises, as appropriate.
ACTION # 11	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Dam Failure; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; National Dam Safety Program; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA Grant Program; Growing Greener; Dam Owners

Figure 6.4.11: Mitigation Action 11

COMMUNITY: Franklin County	ACTION 2B2: Increase funding and resources for public outreach and education with focused programs designed to address the highest risks in the community with the goal of reducing community risk and the cost of emergencies in the community.
ACTION # 12	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Director
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; County General Account; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.12: Mitigation Action 12

COMMUNITY: Greene Township	ACTION 2C5: Establish program to educate residents on emergency management.
ACTION # 13	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRP) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.13: Mitigation Action 13

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Municipalities	<u>ACTION 1D7:</u> Work with Public Works and PennDOT to identify high hazard roads in mountain passes and cut-areas to identify potential initiatives for cut-backs off the right-of-way, fence, or wall/barrier projects to mitigate the damage of rockslide or falling debris hazards.
ACTION # 14	
MITIGATION TECHNIQUE(S):	Structure and Infrastructure Projects; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Landslide; Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Local Government, Public Works Supervisor
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.14: Mitigation Action 14

<u>COMMUNITY:</u> Franklin County & All Municipalities	<u>ACTION 4B4:</u> Ensure municipal compliance with local watershed-specific Act 167 Storm water Management Plan 2001 and Ordinances.
ACTION # 15	
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.15: Mitigation Action 15

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County; All Municipalities; School Districts; Summit Health; Private Medical Providers; Utility Companies; First Responder Agencies ACTION # 16	<u>ACTION 1C10:</u> Identify a source of back-up power for a critical facilities including schools, government buildings, medical facilities, and emergency services (police, fire & EMS).
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Winter Storm; Tornado/Windstorm, Hurricane, Tropical Storm & Nor'easter; Extreme Temperatures; Utility Interruption
LEAD AGENCY/ DEPARTMENT:	Franklin County Plans Department; Local Governments Leaders; Utilities Owners; Medical Providers; School Superintendents, Franklin County Fire & EMS Chiefs; Franklin County Police Chiefs
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDA Rural Development Grants; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.16: Mitigation Action 16

<u>COMMUNITY:</u> Greene Township ACTION # 17	<u>ACTION 1A5:</u> Design and implement an Mass Emergency Notification System for Greene Township. Township emergency notification system would contact residents within a geographical area of emergencies such as flooding, hazardous materials incidents, evacuations, police and fire related incidents.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.17: Mitigation Action 17

<u>COMMUNITY:</u> Shippensburg Borough ACTION # 18	<u>ACTION 3A10:</u> Research, assess, and if feasible, develop an Evacuation Plan for Shippensburg Borough (Franklin County) to address large scale disaster scenarios.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Shippensburg Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.18: Mitigation Action 18

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County & All ACTION # 19	ACTION 1E1: Provide assistance to municipalities in implementing individual hazard mitigation actions supporting high risk communities.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC, Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; County/Municipal General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.19: Mitigation Action 19

COMMUNITY: Franklin County & All Municipalities ACTION # 20	ACTION 1C7: Work with utility companies to improve right-of-way tree management and encourage the burying of utility lines, especially in high frequency outage areas.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Utility Interruption; Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Franklin County Plans Department; Local Governments
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Federal Transportation Enhancements Program – Transportation Enhancements (TE) Funds – Transportation Equity Act of the 21st Century (TEA-21); DCED – Downtown and Communities Opportunity Grants; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.20: Mitigation Action 20

COMMUNITY: Franklin County & All Municipalities ACTION # 21	ACTION 2C2: Identify and implement incentives to encourage municipal officials to participate in fire prevention and response training.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Urban Fire & Explosion
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.21: Mitigation Action 21

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County & All Municipalities ACTION # 22	ACTION 3A2: Utilize most recent hazard assessment, including the National Flood Plain Reports and historical records, when planning or authorizing building projects, including significant renovations.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.22: Mitigation Action 22

COMMUNITY: Franklin County & All Municipalities ACTION # 23	ACTION 3A5: Work with municipalities to integrate County Hazard Mitigation Plan into Municipal Comprehensive Plans, Subdivision and Land Use Ordinances, and Zoning Ordinances.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.23: Mitigation Action 23

COMMUNITY: Franklin County ACTION # 24	ACTION 2A7: Create information pamphlets and outreach programs to discuss the older building codes and subsequent deficiencies in snow load capabilities for citizens with older homes in the County.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Winter Storm
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.24: Mitigation Action 24

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COMMUNITY: Franklin County	ACTION 2B1: Continue to maintain webpages where presentations, training documentation, and webinars can be posted. This will allow municipal officials to access the information at their own schedule and pace.
ACTION # 25	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County ITS, Application Support Specialist
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.25: Mitigation Action 25

COMMUNITY: Franklin County	ACTION 2C1: On an annual basis, conduct Municipal Officials training and/or state sponsored training courses to address hazard mitigation topics, such as Damage Assessment, Storm Water Management, Mutual Aid Agreements, Public Disaster Assistance, and the Hazard Mitigation Grant Program.
ACTION # 26	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Operations & Training Officer
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.26: Mitigation Action 26

COMMUNITY: Franklin County	ACTION 4B2: Ensure proper enforcement of municipal Floodplain Ordinances.
ACTION # 27	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.27: Mitigation Action 27

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County	<u>ACTION 4C2:</u> Continue to refine the Hazard Mitigation Planning Committee list to broaden participation throughout the entire Franklin County Community. Conduct biannual meetings to discuss current trends in risk and/or required HMP updates.
ACTION # 28	
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.28: Mitigation Action 28

<u>COMMUNITY:</u> Franklin County & All Municipalities	<u>ACTION 1D5:</u> Encourage Utility and Pipeline companies to prepare vulnerability studies to identify and remediate potential exploitable threats and problems.
ACTION # 29	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Terrorism; Utility Interruption
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time; Federal Transportation Enhancements Program – Transportation Enhancements (TE) Funds – Transportation Equity Act of the 21st Century (TEA-21); DCED – Downtown and Communities Opportunity Grants

Figure 6.4.29: Mitigation Action 29

<u>COMMUNITY:</u> Franklin County	<u>ACTION 2B3:</u> Continue and/or develop programs to increase home safety and disaster prevention (e.g. smoke/CO detector installs) for citizens that are members of high risk populations.
ACTION # 30	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Urban Fire & Explosion
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, IMT Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.30: Mitigation Action 30

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COMMUNITY: Franklin County & All Municipalities ACTION # 31	ACTION 3A4: Continue to stringently enforce all building codes in effect.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.31: Mitigation Action 31

COMMUNITY: Franklin County ACTION # 32	ACTION 1A1: Assign and train additional County employees and volunteers to assist the Emergency Operations Center (EOC) staff so they can be called upon on the event of major emergencies.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EOC Manager
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.32: Mitigation Action 32

COMMUNITY: Franklin County ACTION # 33	ACTION 1D3: Foster relationships with other counties so that Franklin County may utilize mutual aid in Emergency Operations Center (EOC) positions.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.33: Mitigation Action 33

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County	ACTION 1A6: Research and coordinate with PEMA and NWS on installation of an Integrated Flood Observation and Warning System (IFLOWS) Stream Gauge on the Conococheague Creek near the Chambersburg Waste Treatment facility to provide early warning of Flash Flood Conditions for Franklin County.
ACTION # 34	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; USGS Grants; DHS – Homeland Security Grant Program (HSGP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.34: Mitigation Action 34

COMMUNITY: Franklin County	ACTION 2C4: Work with privately held dam owners, DEP, and Fish and Boat Commission to determine inspection dates or trigger new inspections for all dams in Franklin County. Seek mitigation actions for deficiencies uncovered in the data collection.
ACTION # 35	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Dam Failure; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Municipal General Account; National Dam Safety Program Grant; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA – High Hazard Unsafe Dam Projects; Growing Greener; Dam Owners; American Rivers Association; Ducks Unlimited; USACE Silver Jackets

Figure 6.4.35: Mitigation Action 35

COMMUNITY: Franklin County	ACTION 3D1: Encourage municipal compliance with NFIP and PA Act 166 Floodplain development regulations and/or encourage more restrictive requirements, as appropriate by conducting training and inspection workshops.
ACTION # 36	
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.36: Mitigation Action 36

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township ACTION # 37	ACTION 1C17: Collect data and engineer a solution to reduce congestion and number of accidents at critical intersection (Kohler Rd. at Walker Rd.)
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.37: Mitigation Action 37

COMMUNITY: Greene Township ACTION # 38	ACTION 4C10: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed. (From Interstate I-81 to Brindle Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.38: Mitigation Action 38

COMMUNITY: Greene Township ACTION # 39	ACTION 4C11: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Woodstock Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.39: Mitigation Action 39

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township	ACTION # 40	ACTION 4C12: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brindle Rd. to Woodstock Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection	
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam	
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC	
IMPLEMENTATION SCHEDULE:	Within 5 years	
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	

Figure 6.4.40: Mitigation Action 40

COMMUNITY: Greene Township	ACTION # 41	ACTION 4C13: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Woodstock Rd. to Mt Pleasant Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection	
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam	
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC	
IMPLEMENTATION SCHEDULE:	Within 5 years	
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	

Figure 6.4.41: Mitigation Action 41

COMMUNITY: Greene Township	ACTION # 42	ACTION 4C14: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed. (From Mt Pleasant Rd. to Area East of Mt Shadow Subdivision).
MITIGATION TECHNIQUE(S):	Natural Systems Protection	
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam	
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC	
IMPLEMENTATION SCHEDULE:	Within 5 years	
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs	

Figure 6.4.42: Mitigation Action 42

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COMMUNITY: Greene Township	ACTION # 43
ACTION # 43	ACTION 4C15: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Brookens Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.43: Mitigation Action 43

COMMUNITY: Greene Township	ACTION # 44
ACTION # 44	ACTION 4C16: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Brookens Rd. to Ridge Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.44: Mitigation Action 44

COMMUNITY: Greene Township	ACTION # 45
ACTION # 45	ACTION 4C17: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Mt Pleasant Rd. to Coldspring Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.45: Mitigation Action 45

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COMMUNITY: Greene Township	ACTION # 46
ACTION # 46	ACTION 4C18: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 997 (Black Gap Road)).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.46: Mitigation Action 46

COMMUNITY: Greene Township	ACTION # 47
ACTION # 47	ACTION 4C19: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Coldspring Rd. to SR 30 (Lincoln Way East)).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.47: Mitigation Action 47

COMMUNITY: Greene Township	ACTION # 48
ACTION # 48	ACTION 4C20: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Road) to Houser Rd.).
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.48: Mitigation Action 48

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<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C21:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 997 (Black Gap Rd) to SR 30 (Lincoln Way East)).
ACTION # 49	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.49: Mitigation Action 49

<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C22:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 30 (Lincoln Way East) to South of SR 30 (Lincoln Way East)).
ACTION # 50	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.50: Mitigation Action 50

<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C4:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Chambersburg Borough to SR 11).
ACTION # 51	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.51: Mitigation Action 51

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<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C5:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From SR 11 to Cornertown Rd.).
ACTION # 52	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.52: Mitigation Action 52

<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C6:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Cornertown Rd. to Sycamore Grove Rd.).
ACTION # 53	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.53: Mitigation Action 53

<u>COMMUNITY:</u> Greene Township	<u>ACTION 4C7:</u> Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Sycamore Grove Rd. to Scotland Main St. at rail road overpass).
ACTION # 54	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.54: Mitigation Action 54

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COMMUNITY: Greene Township	ACTION 4C8: Stream Restoration – Watershed Protection. Clean stream beds of debris, such as trees, tires, brush, etc. Elevate all stream banks if needed to keep flow in stream bed (From Scotland Rd. to Interstate I-81).
ACTION # 55	
MITIGATION TECHNIQUE(S):	Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.55: Mitigation Action 55

COMMUNITY: Metal Township	ACTION 1C14: Develop plans and coordinate the breaching of the W. H. Walker Dam in Fannettsburg. Work with DEP and Army Corps of Engineers to breach dam due to abandonment and disrepair to prevent inundation to the Path Valley area.
ACTION # 56	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Dam Failure; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Metal Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Municipal General Account; National Dam Safety Program Grant; Pennsylvania Infrastructure Investment Authority (PENNVEST) Loan and Grant Program; H2O PA – High Hazard Unsafe Dam Projects; Growing Greener; Dam Owners; American Rivers Association; Ducks Unlimited; USACE Silver Jackets

Figure 6.4.56: Mitigation Action 56

COMMUNITY: Washington Township	ACTION 4B6: Perform preliminary/conceptual design work and permitting for the upgrade to the Antietam Dam spillway to meet the required capacity for 100% of the Probable Maximum Flood level.
ACTION # 57	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Waynesboro Borough Authority
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.57: Mitigation Action 57

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COMMUNITY: Franklin County ACTION # 58	ACTION 2A3: Identify metrics for measuring community risk to establish benchmarks. Utilize these benchmarks when implementing risk reduction strategies and develop reporting mechanism for progress.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.58: Mitigation Action 58

COMMUNITY: Mercersburg Borough ACTION # 59	ACTION 3A11: Research and develop a Stormwater Management Plan for Mercersburg Borough in compliance with DEP's Act 167.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Mercersburg Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.59: Mitigation Action 59

COMMUNITY: Orrstown Borough ACTION # 60	ACTION 3A12: Research and develop a Stormwater Management Plan for Orrstown Borough in compliance with DEP's Act 167.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Orrstown Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.60: Mitigation Action 60

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COMMUNITY: Antrim Township ACTION # 61	ACTION 1C31: Research and develop a Continuity of Operations Plan (COOP) for Antrim Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Antrim Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.61: Mitigation Action 61

COMMUNITY: Franklin County ACTION # 62	ACTION 2A1: Train additional personnel on the use of GIS systems to support emergency operations.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County IS, GIS Specialist
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.62: Mitigation Action 62

COMMUNITY: Guilford Township ACTION # 63	ACTION 1C29: Research and develop a Continuity of Operations Plan (COOP) for Guilford Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Guilford Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.63: Mitigation Action 63

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Hamilton Township ACTION # 64	ACTION 1C26: Research and develop a Continuity of Operations Plan (COOP) for Hamilton Township to assure the continuous operations of critical facilities and services during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Hamilton Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.64: Mitigation Action 64

COMMUNITY: Montgomery Township ACTION # 65	ACTION 1C32: Research and develop a Continuity of Operations Plan (COOP) for Montgomery Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Montgomery Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.65: Mitigation Action 65

COMMUNITY: Quincy Township ACTION # 66	ACTION 1C28: Research and develop a Continuity of Operations Plan (COOP) for Quincy Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Quincy Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.66: Mitigation Action 66

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Warren Township ACTION # 67	ACTION 1C33: Research and develop a Continuity of Operations Plan (COOP) for Warren Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Warren Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.67: Mitigation Action 67

COMMUNITY: Washington Township ACTION # 68	ACTION 1C30: Research and develop a Continuity of Operations Plan (COOP) for Washington Township to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Washington Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.68: Mitigation Action 68

COMMUNITY: Waynesboro Borough ACTION # 69	ACTION 1C27: Research and develop a Continuity of Operations Plan (COOP) for Waynesboro Borough to assure the continuous operations of critical facilities and services facilities during disasters/emergencies.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Waynesboro Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.69: Mitigation Action 69

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County & All Municipalities	<u>ACTION 3E1:</u> Renew/start Franklin County/Municipal Firewise programs and encourage municipalities to reduce the vulnerability of critical facilities to wildfire by methods such as: increasing buffers and introduction of defensive spaces, identifying potential fire breaks, and providing assistance to FCDES to identify vulnerable structures.
ACTION # 70	
MITIGATION TECHNIQUE(S):	Natural Systems Protection; Education and Awareness Programs
HAZARD(S) ADDRESSED:	Wildfire
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, IMT Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; County General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.70: Mitigation Action 70

<u>COMMUNITY:</u> Franklin County & All Municipalities	<u>ACTION 3B1:</u> Utilize engineered solutions to slow or alter streams to limit damage to the built environment.
ACTION # 71	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.71: Mitigation Action 71

<u>COMMUNITY:</u> Franklin County	<u>ACTION 1C8:</u> Upgrade/maintain Radiological Emergency Preparedness activities, Radiological Testing/Response Equipment, and Franklin County Annex E for the Three Mile Island Power Station to ensure they comply with FEMA's 2016 Radiological Preparedness Program guidance.
ACTION # 72	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Nuclear Incident
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Radiological Officer
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; Radiological Emergency Response Fund (RERF) Grant; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account

Figure 6.4.72: Mitigation Action 72

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County; USDA; PSU & All Municipalities ACTION # 73	ACTION 1D4: Coordinate with Local USDA, PSU Agriculture Extension, and municipal representatives to develop a Mass Food Contamination annex to the Franklin County Emergency Operations Plan.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Mass Food & Animal Feed Contamination
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.73: Mitigation Action 73

COMMUNITY: Franklin County ACTION # 74	ACTION 1F1: Partner with the Franklin County Public Safety Training Center (FCPSTC), the Franklin County Fire Chiefs Association (FCFCA), the Emergency Alliance, and other first responder groups in the county to organize and execute outreach programs and open houses to educate the community on responder capabilities and showcase opportunities for community service.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Operation & Training Officer
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; FCFCA/FCPSTC Training Account; County General Account

Figure 6.4.74: Mitigation Action 74

COMMUNITY: Greene Township ACTION # 75	ACTION 1B5: Develop and implement a snow emergency plan in Greene Township.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Winter Storm
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Greene Township General Fund

Figure 6.4.75: Mitigation Action 75

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township	ACTION 1C20: Work with PennDOT to analyze traffic patterns at the I-81 Northbound Exit 20 off-ramp to determine if the deceleration lane is of sufficient length. Engineer, plan, and implement a solution to address the deficiencies found. Multiple accidents in this area.
ACTION # 76	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.76: Mitigation Action 76

COMMUNITY: Greene Township	ACTION 1C21: Partner with PennDOT to evaluate the need for new turning lanes and traffic signals at intersection (Coffee Ave, SR 433, and SR 997). (Letterkenny Army Depot Main Gate). Engineer, plan, and implement solutions to address the deficiencies found.
ACTION # 77	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.77: Mitigation Action 77

COMMUNITY: Greene Township	ACTION 1C22: Perform traffic study to determine if traffic signals are warranted at intersection. (Siloam Rd, SR 11 (Philadelphia Ave), and Chancellor Dr) (2 fatal accidents at this intersection). Engineer, plan, and implement solutions to address the deficiencies found.
ACTION # 78	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.78: Mitigation Action 78

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township	ACTION # 79	ACTION 1C25: Procure a generator for the Greene Township Emergency Management Agency Office. This generator will need to be 30,000 KW, fuel source will be Natural Gas.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects	
HAZARD(S) ADDRESSED:	All Hazards	
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC	
IMPLEMENTATION SCHEDULE:	Within 5 years	
FUNDING SOURCE:	DHS – Homeland Security Grant Program (HSGP); DCED – Local Government Capital Project Loan Program (LGCPL); USDA Rural Development Grants; FEMA Hazard Mitigation Assistance Programs	

Figure 6.4.79: Mitigation Action 79

COMMUNITY: All Municipalities	ACTION # 80	ACTION 1C12: Township Road Crews and Borough Public Works Departments partner with PennDOT and County Maintenance to identify, manage, and if warranted clear (to limits of the right-of-way) roadside brush and trees that could block roadways following a severe storm.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Education and Awareness Programs; Local Plans and Regulations	
HAZARD(S) ADDRESSED:	Hurricane, Tropical Storm & Nor'easter; Tornado/Windstorm; Winter Storm; Transportation Accident; Utility Interruption	
LEAD AGENCY/ DEPARTMENT:	Local Government, Public Works Departments	
IMPLEMENTATION SCHEDULE:	Continuous	
FUNDING SOURCE:	Department of Conservation of Natural Resources; USDA Natural Resources Conservation Service; FEMA Hazard Mitigation Assistance Programs	

Figure 6.4.80: Mitigation Action 80

COMMUNITY: All Municipalities	ACTION # 81	ACTION 4B5: Conduct drainage system and ditch line maintenance & upgrades throughout the county to prevent roadway flooding. Ensure existing drainage systems are adequate and functioning properly in order to reduce impacts related to flash flooding and storm water runoff.
MITIGATION TECHNIQUE(S):	Structure and Infrastructure Projects; Natural Systems Protection	
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam	
LEAD AGENCY/ DEPARTMENT:	Municipal Public Works, Roadway Supervisors	
IMPLEMENTATION SCHEDULE:	Within 5 years	
FUNDING SOURCE:	Community Development Block Grant (CDBG); DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)	

Figure 6.4.81: Mitigation Action 81

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> St Thomas Township ACTION # 82	<u>ACTION 1B6:</u> Develop and implement a snow emergency plan in Saint Thomas Township.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Winter Storm
LEAD AGENCY/ DEPARTMENT:	Saint Thomas Township EMC; Saint Thomas Township Roadmaster
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Saint Thomas Township General Fund

Figure 6.4.82: Mitigation Action 82

<u>COMMUNITY:</u> St Thomas Township ACTION # 83	<u>ACTION 3A6:</u> Research and development of land use regulations in St Thomas Township that regulate the placement (SFHA restrictions), bulk (or density), and the elevation of structures (to or above the BFE).
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	St Thomas Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time

Figure 6.4.83: Mitigation Action 83

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 84	<u>ACTION 3E2:</u> Continue/start participation in the National Weather Service StormReady Program.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Winter Storm; Hurricane Tropical Storm, Nor'easter; Tornado/Windstorm; Lightning Strike; Hail Storm; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.84: Mitigation Action 84

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 85	<u>ACTION 1D1:</u> Review Mutual Aid Agreements annually and recommend changes/updates as required.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.85: Mitigation Action 85

<u>COMMUNITY:</u> Franklin County; PSU Agriculture Extension ACTION # 86	<u>ACTION 2A10:</u> Work with PSU Agriculture Extension to develop an information Pamphlet on lightning arrestors and implementation of these devices on barns and out-buildings to protect against lightning strike fires and livestock deaths.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Lightning Strike
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; PSU Ag Extension Representative
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; County General Account; PEMA Sponsored training, FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs; USDA Grants

Figure 6.4.86: Mitigation Action 86

<u>COMMUNITY:</u> Franklin County ACTION # 87	<u>ACTION 1C4:</u> Ensure and expand the capabilities of regional decontamination team to include providing mass, emergency, and technical decontamination.
MITIGATION	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Environmental Hazards; Nuclear Incident
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Radiological Officer
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Seek Prioritization in SCTF Funding

Figure 6.4.87: Mitigation Action 87

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County ACTION # 88	ACTION 2A2: Where acquisition is not feasible, advise homeowners/businesses of preferred mitigation alternatives (e.g. elevation & floodproofing).
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; County General Account; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.88: Mitigation Action 88

COMMUNITY: Greene Township ACTION # 89	ACTION 1C24: Procure battery back-up for all traffic signals in Greene Township. Battery back-up would assist in traffic flow during a power outage. This would reduce the need for emergency personnel at an intersection to direct traffic.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.89: Mitigation Action 89

COMMUNITY: Greene Township ACTION # 90	ACTION 1C34: Design and engineer the Walker/Kohler Road intersection to include additional lanes, traffic control devices, and possibly a traffic signal.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.90: Mitigation Action 90

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County ACTION # 91	ACTION 4C1: Monitor, evaluate, and update mitigation actions annually and execute a full document update of the Hazard Mitigation Plan every five years.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.91: Mitigation Action 91

COMMUNITY: All Municipalities ACTION # 92	ACTION 1C13: Perform an engineering analysis to determine the feasibility of mandatory or voluntary installation of seismic shutoff valves on natural gas meters at commercial and residential buildings.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Earthquake; Urban Fire & Explosion
LEAD AGENCY/ DEPARTMENT:	Local Government, Leadership & Public Works Departments
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	FEMA National Earthquake Hazards Reduction Program (NEHRP); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.92: Mitigation Action 92

COMMUNITY: Franklin County & All Municipalities ACTION # 93	ACTION 4B3: Update and implement a comprehensive water resources management plan that analyzes the County's anticipated water use in an effort to identify suspected water supply shortages and potential new water supply sources.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Drought
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.93: Mitigation Action 93

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County	ACTION 1B4: Develop, staff, fund, and exercise a robust County Animal Response Team (CART) capability to provide care and shelter for a wide variety of animals from livestock to exotic pets during an mass relocation event.
ACTION # 94	
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Operations & Training Officer
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	American Society for the Prevention of Cruelty to Animals (ASPCA) – Emergency and Disaster Grants; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.94: Mitigation Action 94

COMMUNITY: Greene Township	ACTION 1C19: Execute a traffic analysis survey on SR 997 (Black Gap Rd) to Scotland, PA to determine if reduction in speed limit could reduce accidents. Multiple accidents in the area with at least 1 fatality.
ACTION # 95	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.95: Mitigation Action 95

COMMUNITY: Greene Township	ACTION 1C23: Perform a study on the bridge overpasses at Pine Stump Rd. and Railroad Rd. to determine if width and height could be increased to reduce accidents. Engineer, plan, and implement solutions to address the deficiencies found.
ACTION # 96	
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Federal Railroad Administration Grants; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.96: Mitigation Action 96

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 97	<u>ACTION 1B2:</u> Identify and promote awareness of community shelters. These facilities would provide temporary refuge for the county's vulnerable populations during periods of extreme cold or heat.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Extreme Temperatures; Winter Storm; Hurricane, Tropical Storm, Nor'easter; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grants (ESG) Program

Figure 6.4.97: Mitigation Action 97

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 98	<u>ACTION 1B3:</u> Review and assess for the need to upgrade insulation in commercial or residential buildings that currently house or will house high-risk populations during extreme winter weather events.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Winter Storm; Extreme Temperatures
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	DHS – Homeland Security Grant Program (HSGP); US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grant (ESG) Program; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.98: Mitigation Action 98

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 99	<u>ACTION 2A4:</u> Improve communications between the public and emergency management services through social media (i.e. Facebook & Twitter).
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EMC; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; County General Account; DHS – Homeland Security Grant Program (HSGP)

Figure 6.4.99: Mitigation Action 99

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County & All Municipalities ACTION # 100	ACTION 2A6: Create and distribute electronic and print information on Radon exposure and Radon mitigation systems to homeowners throughout the County, especially those in areas with elevated Radon test levels.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Radon Exposure
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, HAZMAT Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; County General Fund; Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account

Figure 6.4.100: Mitigation Action 100

COMMUNITY: Franklin County & All Municipalities ACTION # 101	ACTION 4B1: Encourage municipalities to update their storm water regulations as needed. A model PA DEP Ordinance is available online that can be used.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population)

Figure 6.4.101: Mitigation Action 101

COMMUNITY: Franklin County & All Municipalities ACTION # 102	ACTION 4A5: Research, identify, and pursue acquisition of land parcels/structures in floodplains for demolition and relocation to reduce exposure to flood damage losses, to include options for mitigation reconstruction for homeowners that are reluctant to relocate.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County EMC, Local EMCs, Local Government, Leadership & Public Works Departments
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	PA Department of Community and Economic Development (DCED) – Watershed Restoration and Protection Program (WRPP); FEMA Hazard Mitigation Assistance Programs
SUB-PROJECT:	Acquire and remove structures located within a designated floodway proximate to Loudon Street in Chambersburg Borough.

Figure 6.4.102: Mitigation Action 102

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County ACTION # 103	ACTION 1C15: Improve tracking and collection of boil water advisories throughout the county to identify potential problem areas for mitigation project development.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations; Education and Awareness Programs
HAZARD(S) ADDRESSED:	Drought
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, 911 Coordinator
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.103: Mitigation Action 103

COMMUNITY: Franklin County ACTION # 104	ACTION 1C5: Develop and maintain a cache of hazardous materials mitigation supplies for deployment as needed.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Environmental Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, HAZMAT Coordinator
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account

Figure 6.4.104: Mitigation Action 104

COMMUNITY: Franklin County ACTION # 105	ACTION 2A8: Promote public awareness of hail-resistant building and construction practices including the use of structural bracing, window shutters, laminated glass in window panes, and hail resistant roof shingles.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Hailstorm; Tornado/Windstorm; Hurricane, Tropical Storm, Nor'easter
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; PEMA Sponsored training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.105: Mitigation Action 105

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County ACTION # 106	<u>ACTION 2C6:</u> Research, develop, and execute an annual Floodplain Management Outreach Program to educate the municipalities on NFIP, DFIRM, and their associated requirements and regulations to assure a common understanding across the county.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time

Figure 6.4.106: Mitigation Action 106

<u>COMMUNITY:</u> Franklin County: Medical Community; SCTF Medical Working Group ACTION # 107	<u>ACTION 1E3:</u> Develop and implement a Pandemic Response Plan early and in a coordinated effort with layered approach – individuals, community, county, and regional measures.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Pandemic & Infectious Disease
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Franklin County MH/ID/EI, Program Specialist
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time

Figure 6.4.107: Mitigation Action 107

<u>COMMUNITY:</u> Greene Township ACTION # 108	<u>ACTION 4A1:</u> Evaluate the property of Mickey's Inn Trailer Park for possible acquisition and repurpose under the Flood Mitigation Program.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township, EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.108: Mitigation Action 108

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township ACTION # 109	ACTION 4A2: Evaluate the property of the Lincoln Dell Camping Area for possible acquisition and repurpose under the Flood Mitigation Program.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Greene Township, EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.109: Mitigation Action 109

COMMUNITY: Southampton Township ACTION # 110	ACTION 4A4: Establish a voluntary acquisition program of floodway properties (McClays Mill Rd, along the Conodoquinet Creek) based on Fair Market Value. Retain in public ownership and rezone as a conservation area.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Southampton Township Board of Supervisors
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Municipal General Account; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.110: Mitigation Action 110

COMMUNITY: Greene Township ACTION # 111	ACTION 1C18: Widen I-81 to 6 lanes (3 each direction) between Exit 17 and 20 to assist in reduction of traffic congestion.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	USDOT – Surface Transportation Improvement Grant; Transportation Investment Generating Economic Recovery (TIGER) Program; Federal Highway Administration (FHA) – Congestion Mitigation and Air Quality (CMAQ) Program; DCED – Pennsylvania Infrastructure Bank (PIB); PennDOT – Highway Safety and Traffic Engineering Grants; USDA – Rural Development Grants (population under 20,000)

Figure 6.4.111: Mitigation Action 111

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Lurgan Township ACTION # 112	<u>ACTION 4B7:</u> Replace an existing culvert pipe at 7288 Ebenezer Road in Lurgan Township with a larger one.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Lurgan Township
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Franklin County Conservation District Dirt & Gravel Road Program

Figure 6.4.112: Mitigation Action 112

COMMUNITY: Montgomery Township ACTION # 113	<u>ACTION 4B8:</u> Replace an existing stream crossing in the 14000 block of Shimpstown Road in Montgomery Township.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Montgomery Township
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	American Rescue Plan Act (ARPA) Funding

Figure 6.4.113: Mitigation Action 113

COMMUNITY: Franklin County & All Municipalities ACTION # 114	<u>ACTION 1C1:</u> Review and evaluate facilities, equipment, personnel, and other resources needed to support emergency response annually and update County/Municipal Resource Books.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, IMT Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.114: Mitigation Action 114

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 115	<u>ACTION 1D10:</u> Coordinate with local municipalities and other community partners to increase awareness of Opioid Addiction.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Opioid Addiction Response
LEAD AGENCY/ DEPARTMENT:	Franklin County; Local Government
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.115: Mitigation Action 115

<u>COMMUNITY:</u> Franklin County ACTION # 116	<u>ACTION 1A2:</u> Incorporate local data in HAZUS models.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, EOC Manager
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.116: Mitigation Action 116

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 117	<u>ACTION 1B1:</u> Evaluate and update evacuation routes and sheltering plans throughout Franklin County annually.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time; US Department of Housing and Urban Development (HUD) – Emergency Shelter Grants Program/Emergency Solutions Grant (ESG) Program

Figure 6.4.117: Mitigation Action 117

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County ACTION # 118	ACTION 1D6: Work with local Police Departments, Pennsylvania State Police, and First Responders to provide civil disturbance response training. Provide police presence at controversial events with large crowd gatherings as a means of discouraging conflict.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Civil Disturbance; Terrorism
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Operations & Training Officer
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; County/Municipal General Account; PEMA Sponsored Training, FEMA - EMI Institute; FCDES Training Budget; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.118: Mitigation Action 118

COMMUNITY: Franklin County & All Municipalities ACTION # 119	ACTION 2A9: Map abandoned mine shafts, caves, and potentially vulnerable areas to cave ins or subsidence, including coordination with municipalities regarding newly identified features or risks.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Subsidence/Sinkholes
LEAD AGENCY/ DEPARTMENT:	Franklin County ITS, GIS Specialist
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.119: Mitigation Action 119

COMMUNITY: Franklin County ACTION # 120	ACTION 3A1: Map new housing developments as plans are approved for the purpose of emergency and land use planning.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County ITS, GIS Specialist; Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.120: Mitigation Action 120

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Greene Township & All Municipalities ACTION # 121	ACTION 1D9: Assess the possibility of forming a Township/County Hazardous Materials Team. Analyze the number of trained volunteers or career persons in the county versus the required staff needed to form a hazardous materials team.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Environmental Hazards
LEAD AGENCY/ DEPARTMENT:	Greene Township EMC
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Hazardous Materials Response Fund (HMRF) Grant; Local Emergency Planning Committee (LEPC) Reimbursement Account

Figure 6.4.121: Mitigation Action 121

COMMUNITY: Montgomery Township ACTION # 122	ACTION 4B9: Stabilize the stream and relocate Shmipstown Road between Corner Road and Punch Bowl Road in Montgomery Township.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Montgomery Township
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Chesapeake Bay Foundation; American Rescue Plan Act (ARPA) Funding

Figure 6.4.122: Mitigation Action 122

COMMUNITY: Franklin County ACTION # 123	ACTION 1E4: Survey, document, and incorporate private well locations in Franklin County into GIS database for analyses of available water resources.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Drought
LEAD AGENCY/ DEPARTMENT:	Franklin County ITS, GIS Specialist
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time; USDA – Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.123: Mitigation Action 123

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Municipalities ACTION # 124	<u>ACTION 1E2:</u> Maintain/develop traffic re-route plans and coordinate them with neighboring municipalities for traffic accidents that impact major arteries in the County..
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Local EMCs; Local Government, Public Works Supervisor
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.124: Mitigation Action 124

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 125	<u>ACTION 1C3:</u> Develop a Debris Management Plan to include quick “help sheets/checklists” built upon various types of incidents and events.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Tornado/Windstorm; Earthquake; Hurricane, Tropical Storm & Nor’easter; Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local EMCs
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.125: Mitigation Action 125

<u>COMMUNITY:</u> Franklin County & All Municipalities ACTION # 126	<u>ACTION 4A3:</u> Identify underdeveloped floodplain and wetland areas through the enforcement of county or municipal Subdivision and Land Development Ordinances (SALDOs), and when available, seek grants to acquire public open space for passive recreational uses in an effort to minimize/prevent potential flooding damages and enhance the regional environment.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Natural Systems Protection
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Local Government Planning Official
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); USDA – Rural Development Water and Environmental (WEP) Program (under 10,000 population); FEMA Hazard Mitigation Assistance Programs

Figure 6.4.126: Mitigation Action 126

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County ACTION # 127	ACTION 3C1: Advocate for municipalities to find alternative methods of funding to the Hazard Mitigation Program.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner; Franklin County Grant Management, Grant Coordinator
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE)

Figure 6.4.127: Mitigation Action 127

COMMUNITY: ALL ACTION # 128	ACTION 1C35: Coordinate with Franklin County to increase cyber-security awareness within and between municipalities in order to reduce the risk of cyber attacks.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Transportation Accident
LEAD AGENCY/ DEPARTMENT:	Franklin County Department of Emergency Services
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.128: Mitigation Action 128

COMMUNITY: Fannett Township; Lurgan Township; Letterkenny Township ACTION # 129	ACTION 3A7: Coordinate between Lurgan Township, Letterkenny Township, and Fannett Township to update their Joint Comprehensive Plan, last update was in 2007.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Lurgan Township EMC, Letterkenny Township EMC, and Fannett Township EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.129: Mitigation Action 129

Franklin County Hazard Mitigation Plan - 2023

<u>COMMUNITY:</u> Franklin County; PSU Agriculture Extension	<u>ACTION 2B4:</u> Develop, maintain, and disseminate an Invasive Species Plants and Animals listing for citizen education and future Land Use development planning.
ACTION # 130	
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Invasive Species
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; PSU Ag Extension Representative
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; USDA Grant and Partnership Programs for Invasive Species

Figure 6.4.130: Mitigation Action 130

<u>COMMUNITY:</u> Greencastle Borough ACTION # 131	<u>ACTION 3A8:</u> Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Greencastle Borough.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Greencastle Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.131: Mitigation Action 131

<u>COMMUNITY:</u> Mont Alto Borough ACTION # 132	<u>ACTION 3A9:</u> Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Mont Alto Borough.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	All Hazards
LEAD AGENCY/ DEPARTMENT:	Mont Alto Borough EMC
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time; Community Assistance Program – State Support Services Element (CAP-SSSE); Community Development Block Grants; USDA Rural Development Water and Environmental (WEP) Programs (population under 10,000)

Figure 6.4.132: Mitigation Action 132

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: All Municipalities ACTION # 133	ACTION 1C11: Demolish abandoned or collapsed structures and clean up junk and debris.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects; Education and Awareness Programs; Local Plans and Regulations
HAZARD(S) ADDRESSED:	Urban Fire & Explosion
LEAD AGENCY/ DEPARTMENT:	Local Government, Leadership & Public Works Departments
IMPLEMENTATION SCHEDULE:	Within 5 years
FUNDING SOURCE:	DCED – Community Development Block Grant – Disaster Recovery (CDBG-DR); US Department and Housing and Urban Development (HUD) - Housing Preservation Grants; FEMA Hazard Mitigation Assistance Programs

Figure 6.4.133: Mitigation Action 133

COMMUNITY: Franklin County ACTION # 134	ACTION 1C16: Continue to maintain existing threat protection software for Franklin County and evaluate for improvement.
MITIGATION TECHNIQUE(S):	Structural and Infrastructure Projects
HAZARD(S) ADDRESSED:	Cyber Attack
LEAD AGENCY/ DEPARTMENT:	Franklin County Information Technology Systems
IMPLEMENTATION SCHEDULE:	Continuous
FUNDING SOURCE:	Staff Time

Figure 6.4.134: Mitigation Action 134

COMMUNITY: Franklin County & All Municipalities ACTION # 135	ACTION 1D8: Work with local industry partners (i.e. IESI & Parks) to assess the capacity of landfills to accommodate Earthquake or other hazard debris. Develop coordination plans for disposal of debris in the aftermath of a natural or man-made disaster.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Earthquake; Tornado/Windstorm; Hurricane, Tropical Storm, Nor'easter; Terrorism
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; Local Government, Public Works Supervisor
IMPLEMENTATION SCHEDULE:	Within 2 years
FUNDING SOURCE:	Staff Time

Figure 6.4.135: Mitigation Action 135

Franklin County Hazard Mitigation Plan - 2023

COMMUNITY: Franklin County; PSU Agriculture Extension ACTION # 136	ACTION 4C3: Partner with the local PSU Agriculture Extension to look into crop insurance saturation rates in the county to determine the availability of insurance and any cost prohibitive factors that may be present.
MITIGATION TECHNIQUE(S):	Local Plans and Regulations
HAZARD(S) ADDRESSED:	Hailstorm; Winter Storm; Tornado/Windstorm, Hurricane, Tropical Storm, Nor'easter; Flood, Flash Flood & Ice Jam; Extreme Temperatures; Drought
LEAD AGENCY/ DEPARTMENT:	Franklin County DES, Planning Coordinator; PSU Agriculture Extension Representative
IMPLEMENTATION SCHEDULE:	Within 3 years
FUNDING SOURCE:	Staff Time

Figure 6.4.136: Mitigation Action 136

COMMUNITY: Franklin County ACTION # 137	ACTION 2C7: Request Substantial Improvement/Substantial Damage training be delivered to all communities in Franklin County.
MITIGATION TECHNIQUE(S):	Education and Awareness Programs
HAZARD(S) ADDRESSED:	Flood, Flash Flood & Ice Jam
LEAD AGENCY/ DEPARTMENT:	Franklin County Planning Department, Planner
IMPLEMENTATION SCHEDULE:	Within 1 year
FUNDING SOURCE:	Staff Time; FEMA Region 3 Floodplain Branch

Figure 6.4.137: Mitigation Action 137

Of the 137 Mitigation Actions submitted, 46 of them are common to all municipalities. Each municipality has an action item in place for each hazard (either individually by municipality or under the broader classification “All Municipalities”), with the exception of Nuclear Incident and Dam Failure. In reviewing those risks and the mitigation actions in the plan, the municipalities would not have the resources in place to take the lead on any proposed action(s) and would defer to the county and PEMA for that type of incident. The Dam Failure risk and associated mitigation items would not apply to 6 municipalities (2 townships and 4 boroughs), so they would likely not be involved in any mitigation actions in the event of a dam failure. The actions common to all municipalities are shown in **Table 6.4.34**.

Mitigation Actions Common to All Municipalities				
1A3	1C10	1D8	2B3	3B1
1A4	1C11	1D9	2B4	3E1
1B1	1C12	1D10	2C2	3E2
1B2	1C13	1E1	2C3	4A3
1B3	1C35	1E2	2C7	4A5
1C1	1D1	2A3	3A2	4B1
1C3	1D4	2A4	3A3	4B3
1C6	1D6	2A5	3A4	4B4
1C7	1D7	2A6	3A5	4B5
		2A9		

Table 6.4.33: Mitigation Actions Common to All Municipalities

Municipalities also submitted specific Mitigation Actions to cover projects and initiatives in their jurisdictions. These are outlined in **Table 6.4.34**.

Franklin County Hazard Mitigation Plan - 2023

Municipality	Mitigation Actions Unique to Municipalities	Number of Mitigation Actions
Antrim Township	1C31	1
Chambersburg Borough	3D3	1
Fannett Township	3A7	1
Greencastle Borough	3A8	1
Greene Township	1A5, 1B5, 1C17, 1C18, 1C19, 1C20, 1C21, 1C22, 1C23, 1C24, 1C25, 1C34, 1D9, 2C5, 4A1, 4A2, 4C4, 4C5, 4C6, 4C7, 4C8, 4C9, 4C10, 4C11, 4C12, 4C13, 4C14, 4C15, 4C16, 4C17, 4C18, 4C19, 4C20, 4C21	34
Guilford Township	1C29	1
Hamilton Township	1C26	1
Letterkenny Township	3A7	1
Lurgan Township	3A7, 4B7	2
Metal Township	1C14	1
Mercersburg Borough	3A11	1
Mont Alto Borough	3A9	1
Montgomery Township	1C36, 4B8, 4B9	3
Orrstown Borough	3A12	1
Peters Township	3D2	1
Quincy Township	1C28	1
Shippensburg Borough	3A10	1
Southampton Township	4A4	1
St Thomas Township	1B6, 3A6	2
Warren Township	1C33	1
Washington Township	1C30	1
Waynesboro Borough	1C31, 1B6	2

Table 6.4.34: Municipal Specific Mitigation Actions

The Mitigation Strategy is required to contain at least one Mitigation Action for every threat profiled in **Section 4.3**. **Table 6.4.35** shows that every threat profiled in this HMP is in fact covered by at least one Mitigation Action.

Franklin County Hazard Mitigation Plan - 2023

Hazard Threat	Specific Actions Addressing Hazard	Total Number of Actions Addressing Hazard
All Hazards	1A1, 1A2, 1A3, 1A4, 1A5, 1B1, 1B4, 1C1, 1C6, 1C25, 1C26, 1C27, 1C28, 1C29, 1C30, 1C31, 1C32, 1C33, 1D1, 1D2, 1D3, 1E1, 1F1, 2A1, 2A3, 2A4, 2B1, 2B2, 2C1, 2C5, 2C2, 3A1, 3A3, 3A4, 3A5, 3A7, 3A8, 3A9, 3A10, 3C1, 4C1, 4C2	42
Winter Storm	1B2, 1B3, 1B5, 1B6, 1C10, 1C12, 2A5, 2A7, 3E2, 4C3	10
Pandemic and Infectious Disease	1E3	1
Utility Interruption	1C7, 1C10, 1C12, 1D5	4
Hurricane, Tropical Storm, Nor'easter	1C3, 1C10, 1C12, 1D8, 2A5, 2A8, 3E2, 4C3	8
Extreme Temperatures	1B2, 1B3, 1C10, 4C3	4
Tornado/Windstorm	1C3, 1C10, 1C12, 1D8, 2A5, 2A8, 3E2, 4C3	8
Transportation Accident	1C7, 1C12, 1C17, 1C18, 1C19, 1C20, 1C21, 1C22, 1C23, 1C24, 1C34, 1D7, 1E2	13
Hailstorm	2A8, 3E2, 4C3	3
Drought	1C15, 1E4, 4B3, 4C3	4
Environmental Hazards (HAZMAT Release)	1C2, 1C4, 1C5, 1D9	4
Nuclear Incident	1C4, 1C8	2
Flood, Flash Flood, Ice Jam	1A6, 1B2, 1C3, 1C9, 1C14, 2A2, 2C4, 2C6, 2C7, 3A2, 3A6, 3A11, 3A12, 3B1, 3D1, 3D2, 3D3, 3E2, 4A1, 4A2, 4A3, 4A4, 4A5, 4B1, 4B2, 4B4, 4B5, 4B7, 4B8, 4B9, 4C3, 4C4, 4C5, 4C6, 4C7, 4C8, 4C9, 4C10, 4C11, 4C12, 4C13, 4C14, 4C15, 4C16, 4C17, 4C18, 4C19, 4C20, 4C21	49
Cyber-Terrorism	1C16, 1C35	2
Earthquake	1C3, 1C13, 1D8	3
Radon Exposure	2A6	1
Invasive Species	2B4	1
Dam Failure	1C9, 1C14, 2C4, 4B6	4
Building and Structure Collapse	1C3, 1C11, 3A2, 4B1	4
Opioid Addiction Response	1D10	1
Lightning Strike	2A10, 3E2	2
Terrorism	1D5, 1D6, 1D8, 2C3	4
Subsidence, Sinkhole	2A9	1
Urban Fire and Explosion	1C11, 1C13, 2B3, 2C2	4
Mass Food and Animal Feed Contamination	1D4	1
Wildfire	3E1	1
Civil Disturbance	1D6	1
Landslide	1D7	1
Summary: 42 - Actions that address all Hazards (in Blue) 18 - Actions that address multiple Hazards 77 - Actions that address a single Hazard (in Red) 137 - Total Mitigation Actions		

Table 6.4.35: Mitigation Actions by Threat Profiled

Franklin County Hazard Mitigation Plan - 2023

6.5. Mitigation Action Annual Updates

As part of the HMP annual review process each Mitigation Action is evaluated to record any progress, add new actions, and/or recommend closure of those actions that have been completed from the 2018 plan. Incomplete projects from the 2018 HMP were rolled over into the 2023 plan and re-ranked. **Table 6.5.1** shows projects that are in process or have been completed, but will be maintained, while **Table 6.5.2** shows projects that have been completed and removed for the 2023 update. Future project updates will be posted here during the annual review.

Rank	Number	Project Status
1	1C2	Currently being done, project to be maintained.
11	3E2	Franklin County renewed our membership in the StormReady Program through 2026, project to be maintained.
13	2B1	Working with County Communications Coordinator to set up a landing page for Emergency Preparedness information, project to be maintained.
18	3B5	Project partially completed, waiting on additional permits, project to be maintained until complete.
36	1F1	Established annual open house for FCPSTC and participate in outreach programs across the county, project to be maintained.
37	1C6	Execute at least 2 weather exercises and multiple EOC recall drills annually, project to be maintained.
46	2B2	Completed the following trainings: fire extinguisher, hazmat awareness, weather preparedness, EMS/EMA response to COVID. Project to be maintained.
47	4B6	New Mitigation Action added as part of the 2019 update. Requested by Waynesboro Borough Authority, project to be maintained.
57	2A4	Actively manage a DES Facebook and DES Twitter account to get public service information out via social media, project to be maintained.
59	1C17	Project is designed, waiting on permits, project to be maintained.
63	1C5	Currently maintained in DES warehouse, project to be maintained.
64	3A1	Done as needed through Franklin County GIS Office, project to be maintained.
65	1C8	Project and Annex E to be revisited as the closure of Three Mile Island has changed the need for biannual exercises. Still need a radiological response plan, but should be modified in scope. Increased RAD officers by 3. Project to be maintained.
67	3D1	Planning office and DES reached out to municipalities for flood prone areas, project to be maintained.
70	1C28	In process. Two lights still need battery backup, project to be maintained.
72	1D2	County HVA updated annually as part of the HMP process and given to the municipalities to assist in completing Section 2 of their EOPs. Open offer for support for review and comment on municipal EOPs, project to be maintained.
76	2C6	Coordinating a FEMA training session through PEMA to bring a Letter of Map Change training session to Franklin County in Nov of 2019, project to be maintained.
78	2C4	Implemented a plan for annual visits to all high hazard dams potentially impacting Franklin County. Any issues or deficiencies noted will be forwarded to land owner and associated regulatory agency, project to be maintained.
79	1B2	All shelters are identified and relationship with local Red Cross chapter in place to assess and modify current plan to address changing needs, project to be maintained.
80	1A3	All systems tested monthly, project to be maintained.
86	4A5	Chambersburg Borough added new mitigation action to acquire and remove structures located within a designated floodway proximate to 195 Loudon Street, project to be maintained.
87	1B1	Shelter plans coordinated with American Red Cross. Project to be maintained.
100	1C25	Study completed. PennDOT denied speed reduction, will try again at later time, project to be maintained.
105	1E1	Worked with Greene Twp on stream restoration project. Project to be maintained.
108	1E3	Distribution Management Plan and Mass Vaccination Plan completed, set up Community Vaccination Center, project to be maintained.
110	1D8	Draft Debris Management Plan under development, project to be maintained.
114	1A4	Working IPAWS integration and training to improve county's posture to disseminate information near-real time, project to be maintained.
118	1C3	Developed Debris Management Plan as Annex to EOP, project to be maintained.
121	1C1	FCDES updates the Notification and Resource Manual (Volume IV - NARM) of our EOP annually, project to be maintained.
122	4C1	Currently being worked as an annual update to reduce the amount of changes needed in the 5-year update, project to be maintained.
127	4C2	Reviewed and updated the committee list, project to be maintained.
128	3C1	County assisted Greene Township in getting funding for their in-stream dam removal initiative, project to be maintained.
129	1D3	Attended Cumberland Co. and Fulton Co. HMP initiatives to assist in their updates and establishing a partnering relationship, project to be maintained.
130	2A1	Planning coordinator trained on GIS, will continue to train staff. Project to be maintained.
132	2A3	Being accomplished via the annual HMP update, project to be maintained.
134	2A9	Listing of mines/abandoned mines developed to augment the subsidence threat assessment, project to be maintained.

Table 6.5.1: 2018 HMP Mitigation Action Projects in process or completed and to be maintained for the 2023 HMP Update.

Rank	Number	Project Status
7	1F2	Study complete, project completed.
19	3B6	Project completed.
58	1C16	Project completed.
68	1C26	Project Completed.
69	1C24	Study completed, stop sign added making the intersection a three-way stop, project completed.
97	1C21	Stop sign installed. Project completed.

Table 6.5.2: 2018 HMP Mitigation Action Projects Completed and Removed for the 2023 HMP Update.

7. Plan Maintenance

7.1. Update Process Summary

The government entities of Franklin County and our municipalities have been integral in the drafting of this HMP update. All Franklin County municipalities have reviewed and approved the plan for staffing to PEMA and FEMA for acceptance. Upon “Approval Pending Adoption” from FEMA, the final draft of this plan was sent to all municipalities for approval and adoption.

7.2. Monitoring, Evaluating, and Updating the Plan

FCDES staff, representatives from stakeholders (internal and external), the Hazard Mitigation Plan Steering Group (HMPSG), and the general public will be invited to review the plan annually or more often if a major event occurs, to recommend changes to the plan. Any change in hazard will also be incorporated into the HVA at these annual reviews. These reviews shall occur 12 months following plan adoption, and every 12 months thereafter.

This plan will be formally updated every 5 years using information gathered from annual reviews and observations. Planning for this semi-decadal update shall begin immediately following the 4 year annual review and shall be completed approximately 3 months prior to the 5 year anniversary (see **Figure 7.2.1** below).

Franklin County Hazard Mitigation Plan - 2023

Year	Activity	Participants
1	Annual Review and Update	HMPT Steering Group FCDES & County Staff County EMC/Local EMCs Municipal Leaders Community Groups Non-Government Organizations Citizens
2	Annual Review and Update	HMPT Steering Group FCDES & County Staff County EMC/Local EMCs Municipal Leaders Community Groups Non-Government Organizations Citizens
3	Annual Review and Update	HMPT Steering Group FCDES & County Staff County EMC/Local EMCs Municipal Leaders Community Groups Non-Government Organizations Citizens
4	Annual Review and Update	HMPT Steering Group FCDES & County Staff County EMC/Local EMCs Municipal Leaders Community Groups Non-Government Organizations Citizens
5	Semi-decadal Review and Update	HMPT Steering Group FCDES & County Staff County EMC/Local EMCs Municipal Leaders Community Groups Non-Government Organizations Citizens

Figure 7.2.1: Franklin County HMP Maintenance Schedule

Annual evaluations shall consist of input and observations from the entire HMP Team to include:

- Addition of Mitigation Actions
- Mitigation Action Progress
- Hazard Changes/Additions
- Update/Modify Plan Goals/Objectives

- Additions/Changes to the Hazard Mitigation Planning Team

FCDES will be responsible for monitoring progress and incorporating changes to the HMP annually.

7.3. Continued Public Involvement

As was done during the development of the 2023 Hazard Mitigation Plan (HMP) update, the HMPSG will involve the public during the annual evaluation and update of the HMP through various workshops and meetings. The public will have access to an electronic copy of the current HMP through their local municipal office, Franklin County Department of Emergency Services, or the Franklin County Planning Department. FCDES will also keep a paper copy of the plan in the Emergency Operations Center (EOC), should a citizen not have ready electronic access. Information on upcoming events related to the HMP or solicitation for comments will be announced via social media and Franklin County webpage (<http://www.franklincountypa.gov/>) postings. The HMPSG will incorporate all relevant comments during the next update of the HMP.

8. Plan Adoption

Plan was submitted to the Pennsylvania State Hazard Mitigation Officer on July 31, 2023. It was forwarded to FEMA for final review and approval on October 12, 2023. FEMA granted approval-pending-adoption on October 12, 2023. Full approval from FEMA was received on _____, 2023.

Appendix H of this plan includes copies of the local adoption resolutions passed by Franklin County and its municipal governments. Adoption resolution templates were provided to assist the County and municipal governments with recommended language for adoption of the HMP.

Franklin County 2023 Hazard Mitigation Plan
County Adoption Resolution

Resolution No. _____
Franklin County, Pennsylvania

WHEREAS, the municipalities of Franklin County, Pennsylvania are most vulnerable to natural and human-made hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, Franklin County acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Franklin County 2023 Hazard Mitigation Plan has been developed by the Franklin County Department of Emergency Services in cooperation with other county departments, local municipal officials, and the citizens of Franklin County, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Franklin County 2023 Hazard Mitigation Plan, and

WHEREAS, the Franklin County 2023 Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the County of Franklin that:

- The Franklin County 2023 Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the County, and
- The respective officials and agencies identified in the implementation strategy of the Franklin County 2023 Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 2023

ATTEST:

FRANKLIN COUNTY COMMISSIONERS

By _____

By _____

By _____

Franklin County 2023 Hazard Mitigation Plan
Municipal Adoption Resolution

Resolution No. _____

<Borough/Township of Municipality Name>, Franklin County, Pennsylvania

WHEREAS, the <Borough/Township of Municipality Name>, Franklin County, Pennsylvania is most vulnerable to natural and human-made hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, the <Borough/Township of Municipality Name> acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Franklin County 2023 Hazard Mitigation Plan has been developed by the Franklin County Department of Emergency Services in cooperation with other county departments, and officials and citizens of <Borough/Township of Municipality Name>, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Franklin County 2023 Hazard Mitigation Plan, and

WHEREAS, the Franklin County 2023 Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the <Borough/Township of Municipality Name>:

- The Franklin County 2023 Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the <Borough/Township>, and
- The respective officials and agencies identified in the implementation strategy of the Franklin County 2023 Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

ADOPTED, this _____ day of _____, 2023

ATTEST: **<BOROUGH/TOWNSHIP OF MUNICIPALITY NAME>**

By _____

By _____

9. Appendices

Appendix A: Bibliography

Appendix B: Meeting Sign-In Sheets/Briefings

Appendix C: Participation/Public Outreach

Appendix D: Worksheet Survey Responses

Appendix E: Franklin County HMP Data Collection Tools

Appendix F: Special Flood Hazard Area Terminology

Appendix G: County DFRIM Maps

Appendix H: County and Municipal HMP Adoption Resolutions

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Section 6

Section 7

Section 8

Appendix B and Appendix C removed due to personal information.

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Civil Disturbance	1	30%	1	30%	2	20%	1	10%	2	10%	1.3
Cyber-terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Dam Failure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Drought	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Earthquake	2	30%	2	30%	4	20%	4	10%	1	10%	2.5
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	3	20%	4	10%	2	10%	2.4
Extreme Temperatures	2	30%	2	30%	4	20%	1	10%	3	10%	2.4
Flood, Flash Flood, Ice Jam	2	30%	2	30%	3	20%	1	10%	3	10%	2.2
Hailstorm	2	30%	1	30%	4	20%	4	10%	1	10%	2.2
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	4	20%	4	10%	4	10%	2.2
Invasive species	2	30%	1	30%	3	20%	1	10%	4	10%	2.0
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	3	30%	1	30%	2	20%	2	10%	1	10%	1.9
Mass Food and Animal Feed Contamination	2	30%	3	30%	4	20%	4	10%	2	10%	2.9
Nuclear Incident	1	30%	4	30%	4	20%	4	10%	4	10%	3.1
Opioid Addiction Response	3	30%	1	30%	1	20%	4	10%	1	10%	1.9
Pandemic and Infectious Disease	3	30%	3	30%	4	20%	4	10%	4	10%	3.4
Radon Exposure	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Subsidence, Sinkhole	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Tornado, Windstorm	2	30%	3	30%	4	20%	3	10%	1	10%	2.7
Transportation Accident	3	30%	2	30%	1	20%	4	10%	1	10%	2.2
Urban Fire and Explosion	2	30%	2	30%	3	20%	4	10%	1	10%	2.3
Utility Interruption	3	30%	1	30%	4	20%	4	10%	2	10%	2.6
Wildfire	2	30%	2	30%	3	20%	4	10%	2	10%	2.4
Winter Storm	3	30%	2	30%	4	20%	1	10%	3	10%	2.7

Figure D.1.1: Antrim Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	2	20%	3	10%	4	10%	1.7
Civil Disturbance	1	30%	2	30%	2	20%	2	10%	2	10%	1.7
Cyber-terrorism	2	30%	4	30%	2	20%	4	10%	2	10%	2.8
Dam Failure	2	30%	2	30%	3	20%	4	10%	4	10%	2.6
Drought	2	30%	2	30%	2	20%	2	10%	4	10%	2.2
Earthquake	2	30%	3	30%	4	20%	4	10%	1	10%	2.8
Environmental Hazards (HAZMAT Release)	2	30%	1	30%	2	20%	4	10%	2	10%	1.9
Extreme Temperatures	2	30%	2	30%	4	20%	4	10%	3	10%	2.7
Flood, Flash Flood, Ice Jam	1	30%	2	30%	1	20%	4	10%	3	10%	1.8
Hailstorm	2	30%	3	30%	4	20%	4	10%	1	10%	2.8
Hurricane, Tropical Storm, Nor'easter	2	30%	2	30%	3	20%	3	10%	4	10%	2.5
Invasive species	2	30%	3	30%	4	20%	1	10%	4	10%	2.8
Landslide	2	30%	1	30%	1	20%	1	10%	1	10%	1.3
Lightning Strike	2	30%	2	30%	3	20%	3	10%	1	10%	2.2
Mass Food and Animal Feed Contamination	1	30%	2	30%	2	20%	2	10%	2	10%	1.7
Nuclear Incident	1	30%	2	30%	2	20%	1	10%	4	10%	1.8
Opioid Addiction Response	2	30%	1	30%	1	20%	2	10%	1	10%	1.4
Pandemic and Infectious Disease	1	30%	2	30%	2	20%	2	10%	4	10%	1.9
Radon Exposure	2	30%	3	30%	2	20%	3	10%	4	10%	2.6
Subsidence, Sinkhole	2	30%	2	30%	2	20%	4	10%	1	10%	2.1
Terrorism	1	30%	1	30%	2	20%	2	10%	2	10%	1.4
Tornado, Windstorm	2	30%	3	30%	3	20%	2	10%	1	10%	2.4
Transportation Accident	2	30%	3	30%	2	20%	2	10%	1	10%	2.2
Urban Fire and Explosion	2	30%	3	30%	3	20%	4	10%	1	10%	2.6
Utility Interruption	3	30%	3	30%	3	20%	3	10%	2	10%	2.9
Wildfire	1	30%	2	30%	2	20%	1	10%	2	10%	1.6
Winter Storm	3	30%	3	30%	3	20%	2	10%	3	10%	2.9

Figure D.1.2: Chambersburg Borough Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)	Previously for Fannett	Previously for Metal
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9		
Civil Disturbance	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	1.1	1.1
Cyber-terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1		
Dam Failure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6	1.3	2.2
Drought	2	30%	1	30%	1	20%	1	10%	4	10%	1.6	2.2	2
Earthquake	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1	2.1
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2	1.1	2.2
Extreme Temperatures	2	30%	2	30%	4	20%	1	10%	3	10%	2.4	2.2	1.8
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	1.2	2.5	2.1
Hailstorm	3	30%	1	30%	2	20%	3	10%	1	10%	2.0	1.3	1
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.3	1.9
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.3	1.3
Landslide	2	30%	1	30%	1	20%	3	10%	1	10%	1.5	1	1.6
Lightning Strike	2	30%	2	30%	3	20%	4	10%	1	10%	2.3	2.5	1.9
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	3	10%	2	10%	1.3	1.1	1.1
Nuclear Incident	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.3	1.6
Opioid Addiction Response	2	30%	1	30%	3	20%	1	10%	1	10%	1.7		
Pandemic and Infectious Disease	2	30%	1	30%	3	20%	1	10%	4	10%	2.0	1.3	2.9
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3	1.3	1.3
Subsidence, Sinkhole	2	30%	1	30%	2	20%	4	10%	1	10%	1.8	1	1.3
Terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1	1.1	2.1
Tornado, Windstorm	3	30%	2	30%	3	20%	4	10%	1	10%	2.6	2.5	1.6
Transportation Accident	3	30%	2	30%	3	20%	4	10%	1	10%	2.6	2.1	2.8
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	1.0	1	1
Utility Interruption	2	30%	1	30%	2	20%	4	10%	2	10%	1.9	1.1	2.5
Wildfire	3	30%	1	30%	3	20%	4	10%	2	10%	2.4	1.1	2.2
Winter Storm	3	30%	1	30%	3	20%	3	10%	3	10%	2.4	2.4	1.6

Figure D.1.3: Fannett Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	2	30%	2	20%	4	10%	4	10%	2.1
Civil Disturbance	2	30%	2	30%	1	20%	3	10%	2	10%	1.9
Cyber-terrorism	3	30%	2	30%	2	20%	4	10%	2	10%	2.5
Dam Failure	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Drought	3	30%	3	30%	2	20%	4	10%	4	10%	3.5
Earthquake	1	30%	2	30%	3	20%	4	10%	1	10%	2.0
Environmental Hazards (HAZMAT Release)	2	30%	3	30%	3	20%	4	10%	2	10%	2.7
Extreme Temperatures	3	30%	3	30%	3	20%	1	10%	3	10%	2.8
Flood, Flash Flood, Ice Jam	2	30%	2	30%	2	20%	4	10%	3	10%	2.3
Hailstorm	3	30%	3	30%	3	20%	2	10%	1	10%	2.7
Hurricane, Tropical Storm, Nor'easter	3	30%	3	30%	3	20%	1	10%	4	10%	2.9
Invasive species	2	30%	2	30%	2	20%	1	10%	4	10%	2.1
Landslide	1	30%	1	30%	2	20%	2	10%	1	10%	1.3
Lightning Strike	3	30%	3	30%	2	20%	4	10%	1	10%	2.7
Mass Food and Animal Feed Contamination	1	30%	1	30%	2	20%	2	10%	2	10%	1.4
Nuclear Incident	1	30%	3	30%	3	20%	2	10%	4	10%	2.4
Opioid Addiction Response	2	30%	2	30%	2	20%	4	10%	1	10%	2.1
Pandemic and Infectious Disease	3	30%	3	30%	3	20%	2	10%	4	10%	3.0
Radon Exposure	2	30%	2	30%	2	20%	4	10%	4	10%	2.4
Subsidence, Sinkhole	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Terrorism	2	30%	3	30%	4	20%	2	10%	2	10%	2.7
Tornado, Windstorm	3	30%	3	30%	3	20%	2	10%	1	10%	2.7
Transportation Accident	3	30%	3	30%	3	20%	4	10%	1	10%	2.9
Urban Fire and Explosion	2	30%	3	30%	2	20%	4	10%	1	10%	2.4
Utility Interruption	2	30%	2	30%	3	20%	3	10%	2	10%	2.3
Wildfire	1	30%	2	30%	1	20%	3	10%	2	10%	1.6
Winter Storm	4	30%	3	30%	4	20%	1	10%	3	10%	3.3

Figure D.1.4: Greencastle Borough Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Cyber-terrorism	3	30%	3	30%	4	20%	4	10%	2	10%	3.2
Dam Failure	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Drought	2	30%	2	30%	3	20%	1	10%	4	10%	2.3
Earthquake	2	30%	1	30%	4	20%	4	10%	1	10%	2.2
Environmental Hazards (HAZMAT Release)	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Extreme Temperatures	3	30%	1	30%	4	20%	1	10%	3	10%	2.4
Flood, Flash Flood, Ice Jam	2	30%	1	30%	1	20%	4	10%	3	10%	1.8
Hailstorm	4	30%	1	30%	4	20%	4	10%	1	10%	2.8
Hurricane, Tropical Storm, Nor'easter	2	30%	1	30%	4	20%	4	10%	4	10%	2.5
Invasive species	2	30%	1	30%	3	20%	1	10%	4	10%	2.0
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Nuclear Incident	1	30%	2	30%	4	20%	4	10%	4	10%	2.5
Opioid Addiction Response	4	30%	2	30%	3	20%	1	10%	1	10%	2.6
Pandemic and Infectious Disease	4	30%	3	30%	4	20%	1	10%	4	10%	3.4
Radon Exposure	2	30%	1	30%	1	20%	3	10%	4	10%	1.8
Subsidence, Sinkhole	4	30%	1	30%	1	20%	4	10%	1	10%	2.2
Terrorism	2	30%	2	30%	1	20%	4	10%	2	10%	2.0
Tornado, Windstorm	3	30%	2	30%	2	20%	4	10%	1	10%	2.4
Transportation Accident	3	30%	1	30%	1	20%	4	10%	1	10%	1.9
Urban Fire and Explosion	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Utility Interruption	4	30%	1	30%	3	20%	4	10%	2	10%	2.7
Wildfire	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Winter Storm	3	30%	2	30%	4	20%	3	10%	3	10%	2.9

Figure D.1.5: Greene Township Hazard Vulnerability Analysis

GUILFORD TOWNSHIP

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	3	30%	1	20%	4	10%	4	10%	0.4
Civil Disturbance	1	30%	1	30%	2	20%	4	10%	2	10%	0.2
Cyber-terrorism	1	30%	1	30%	4	20%	4	10%	2	10%	0.4
Dam Failure	1	30%	2	30%	3	20%	4	10%	4	10%	0.4
Drought	2	30%	1	30%	3	20%	1	10%	4	10%	0.4
Earthquake	1	30%	2	30%	4	20%	4	10%	1	10%	0.3
Environmental Hazards (HAZMAT Release)	4	30%	2	30%	1	20%	4	10%	2	10%	0.2
Extreme Temperatures	3	30%	1	30%	4	20%	1	10%	3	10%	0.3
Flood, Flash Flood, Ice Jam	3	30%	1	30%	3	20%	4	10%	1	10%	0.4
Hailstorm	3	30%	1	30%	3	20%	4	10%	1	10%	0.4
Hurricane, Tropical Storm, Nor'easter	2	30%	2	30%	4	20%	4	10%	4	10%	0.4
Invasive species	2	30%	1	30%	3	20%	1	10%	4	10%	0.4
Landslide	1	30%	1	30%	2	20%	4	10%	1	10%	0.1
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	0.1
Mass Food and Animal Feed Contamination	1	30%	2	30%	4	20%	2	10%	2	10%	0.4
Nuclear Incident	1	30%	2	30%	1	20%	4	10%	4	10%	0.4
Opioid Addiction Response	2	30%	2	30%	1	20%	4	10%	1	10%	0.4
Pandemic and Infectious Disease	3	30%	3	30%	4	20%	1	10%	4	10%	0.4
Radon Exposure	2	30%	1	30%	1	20%	3	10%	4	10%	0.4
Subsidence, Sinkhole	3	30%	2	30%	1	20%	4	10%	1	10%	0.4
Terrorism	2	30%	2	30%	2	20%	4	10%	2	10%	0.2
Tornado, Windstorm	2	30%	2	30%	3	20%	4	10%	1	10%	0.4
Transportation Accident	4	30%	3	30%	1	20%	4	10%	1	10%	0.4
Urban Fire and Explosion	1	30%	2	30%	1	20%	4	10%	1	10%	0.1
Utility Interruption	3	30%	2	30%	3	20%	4	10%	2	10%	0.2
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	0.2
Winter Storm	4	30%	2	30%	4	20%	1	10%	3	10%	0.3

Figure D.1.6: Guilford Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Cyber-terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Dam Failure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Drought	2	30%	2	30%	3	20%	1	10%	4	10%	2.3
Earthquake	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Extreme Temperatures	2	30%	1	30%	4	20%	1	10%	3	10%	2.1
Flood, Flash Flood, Ice Jam	1	30%	2	30%	2	20%	2	10%	3	10%	1.8
Hailstorm	2	30%	1	30%	4	20%	2	10%	1	10%	2.0
Hurricane, Tropical Storm, Nor'easter	2	30%	1	30%	4	20%	2	10%	4	10%	2.3
Invasive species	2	30%	1	30%	2	20%	1	10%	4	10%	1.8
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	2	30%	1	30%	2	20%	4	10%	1	10%	1.8
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Nuclear Incident	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Opioid Addiction Response	2	30%	1	30%	2	20%	4	10%	1	10%	1.8
Pandemic and Infectious Disease	2	30%	2	30%	2	20%	1	10%	4	10%	2.1
Radon Exposure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Subsidence, Sinkhole	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Terrorism	2	30%	1	30%	2	20%	4	10%	2	10%	1.9
Tornado, Windstorm	2	30%	2	30%	3	20%	4	10%	1	10%	2.3
Transportation Accident	2	30%	2	30%	2	20%	4	10%	1	10%	2.1
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Utility Interruption	2	30%	1	30%	3	20%	4	10%	2	10%	2.1
Wildfire	2	30%	2	30%	2	20%	3	10%	2	10%	2.1
Winter Storm	3	30%	2	30%	4	20%	2	10%	3	10%	2.8

Figure D.1.7: Hamilton Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	2	30%	1	20%	4	10%	4	10%	2.2
Civil Disturbance	1	30%	2	30%	2	20%	4	10%	2	10%	1.9
Cyber-terrorism	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Dam Failure	1	30%	2	30%	1	20%	4	10%	4	10%	1.9
Drought	2	30%	1	30%	3	20%	1	10%	4	10%	2.0
Earthquake	1	30%	1	30%	3	20%	4	10%	1	10%	1.7
Environmental Hazards (HAZMAT Release)	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Extreme Temperatures	3	30%	1	30%	4	20%	1	10%	3	10%	2.4
Flood, Flash Flood, Ice Jam	2	30%	1	30%	2	20%	1	10%	3	10%	1.7
Hailstorm	2	30%	1	30%	3	20%	2	10%	1	10%	1.8
Hurricane, Tropical Storm, Nor'easter	2	30%	2	30%	4	20%	1	10%	4	10%	2.5
Invasive species	4	30%	1	30%	3	20%	1	10%	4	10%	2.6
Landslide	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Lightning Strike	2	30%	1	30%	1	20%	3	10%	1	10%	1.5
Mass Food and Animal Feed Contamination	1	30%	2	30%	3	20%	4	10%	2	10%	2.1
Nuclear Incident	1	30%	3	30%	4	20%	4	10%	4	10%	2.8
Opioid Addiction Response	2	30%	3	30%	1	20%	4	10%	1	10%	2.2
Pandemic and Infectious Disease	2	30%	3	30%	3	20%	1	10%	4	10%	2.6
Radon Exposure	1	30%	3	30%	2	20%	1	10%	4	10%	2.1
Subsidence, Sinkhole	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Terrorism	2	30%	3	30%	2	20%	4	10%	2	10%	2.5
Tornado, Windstorm	2	30%	2	30%	2	20%	3	10%	1	10%	2.0
Transportation Accident	4	30%	2	30%	1	20%	4	10%	1	10%	2.5
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Utility Interruption	3	30%	1	30%	3	20%	4	10%	2	10%	2.4
Wildfire	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Winter Storm	4	30%	1	30%	4	20%	2	10%	3	10%	2.8

Figure D.1.8: Letterkenny Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	2	10%	4	10%	1.4
Civil Disturbance	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Cyber-terrorism	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Dam Failure	2	30%	4	30%	3	20%	4	10%	4	10%	3.2
Drought	2	30%	1	30%	1	20%	2	10%	4	10%	1.7
Earthquake	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Extreme Temperatures	1	30%	1	30%	1	20%	2	10%	3	10%	1.3
Flood, Flash Flood, Ice Jam	2	30%	1	30%	1	20%	3	10%	3	10%	1.7
Hallstorm	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Invasive species	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Landslide	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Lightning Strike	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Nuclear Incident	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Opioid Addiction Response	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Pandemic and Infectious Disease	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Radon Exposure	1	30%	1	30%	1	20%	2	10%	4	10%	1.4
Subsidence, Sinkhole	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Terrorism	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Tornado, Windstorm	1	30%	1	30%	1	20%	3	10%	1	10%	1.2
Transportation Accident	1	30%	1	30%	1	20%	3	10%	1	10%	1.2
Urban Fire and Explosion	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Utility Interruption	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Wildfire	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Winter Storm	1	30%	1	30%	1	20%	3	10%	3	10%	1.4

Figure D.1.9: Lurgan Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Civil Disturbance	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Cyber-terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Dam Failure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Drought	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Earthquake	1	30%	4	30%	4	20%	4	10%	1	10%	2.1
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Extreme Temperatures	3	30%	1	30%	4	20%	1	10%	3	10%	2.4
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	1.2
Hallstorm	2	30%	1	30%	4	20%	4	10%	1	10%	2.2
Hurricane, Tropical Storm, Nor'easter	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Invasive species	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Landslide	2	30%	2	30%	2	20%	4	10%	1	10%	2.1
Lightning Strike	3	30%	1	30%	4	20%	4	10%	1	10%	2.5
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Nuclear Incident	1	30%	4	30%	1	20%	4	10%	4	10%	2.5
Opioid Addiction Response	2	30%	2	30%	1	20%	1	10%	1	10%	1.6
Pandemic and Infectious Disease	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Subsidence, Sinkhole	2	30%	2	30%	1	20%	4	10%	1	10%	1.9
Terrorism	1	30%	4	30%	4	20%	4	10%	2	10%	2.9
Tornado, Windstorm	2	30%	3	30%	4	20%	4	10%	1	10%	2.8
Transportation Accident	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.1
Utility Interruption	2	30%	1	30%	4	20%	4	10%	2	10%	2.3
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Winter Storm	3	30%	1	30%	4	20%	2	10%	3	10%	2.4

Figure D.1.10: Mercersburg Borough Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

metal

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Cyber-terrorism	2	30%	1	30%	1	20%	2	10%	2	10%	1.5
Dam Failure	1	30%	1	30%	2	20%	4	10%	4	10%	1.8
Drought	1	30%	2	30%	1	20%	1	10%	4	10%	1.6
Earthquake	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Environmental Hazards (HAZMAT Release)	3	30%	2	30%	2	20%	4	10%	2	10%	2.5
Extreme Temperatures	1	30%	1	30%	1	20%	1	10%	3	10%	1.2
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	1.2
Hailstorm	1	30%	1	30%	1	20%	3	10%	1	10%	1.2
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Nuclear Incident	1	30%	2	30%	2	20%	1	10%	4	10%	1.8
Opioid Addiction Response	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Pandemic and Infectious Disease	2	30%	1	30%	2	20%	1	10%	4	10%	1.8
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Subsidence, Sinkhole	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Terrorism	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Tornado, Windstorm	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Transportation Accident	3	30%	2	30%	1	20%	4	10%	1	10%	2.2
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Utility Interruption	2	30%	3	30%	1	20%	4	10%	2	10%	2.3
Wildfire	2	30%	1	30%	2	20%	4	10%	2	10%	1.9
Winter Storm	1	30%	1	30%	1	20%	1	10%	3	10%	1.2

Figure D.1.11: Metal Township Hazard Vulnerability Analysis

Metal Township
P.O. Box 332
Fannettsburg, PA 17221

Metal Twp
Hazmat Update

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	0.4
Civil Disturbance	1	30%	1	30%	1	20%	2	10%	2	10%	0.2
Cyber-terrorism	2	30%	1	30%	1	20%	2	10%	2	10%	0.2
Dam Failure	1	30%	1	30%	2	20%	4	10%	4	10%	0.4
Drought	1	30%	2	30%	1	20%	1	10%	4	10%	0.4
Earthquake	1	30%	2	30%	1	20%	4	10%	1	10%	0.1
Environmental Hazards (HAZMAT Release)	3	30%	2	30%	2	20%	4	10%	2	10%	0.2
Extreme Temperatures	1	30%	1	30%	1	20%	1	10%	3	10%	0.3
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	0.3
Hailstorm	1	30%	1	30%	1	20%	3	10%	1	10%	0.1
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	1	10%	4	10%	0.4
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	0.4
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	0.1
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	0.1
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	0.2
Nuclear Incident	1	30%	2	30%	2	20%	1	10%	4	10%	0.4
Opioid Addiction Response	1	30%	1	30%	1	20%	1	10%	1	10%	0.1
Pandemic and Infectious Disease	2	30%	1	30%	2	20%	1	10%	4	10%	0.4
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	0.4
Subsidence, Sinkhole	1	30%	1	30%	1	20%	4	10%	1	10%	0.1
Terrorism	1	30%	1	30%	2	20%	4	10%	2	10%	0.2
Tornado, Windstorm	1	30%	1	30%	1	20%	2	10%	1	10%	0.1
Transportation Accident	3	30%	2	30%	1	20%	4	10%	1	10%	0.1
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	0.1
Utility Interruption	2	30%	3	30%	1	20%	4	10%	2	10%	0.2
Wildfire	2	30%	1	30%	2	20%	4	10%	2	10%	0.2
Winter Storm	1	30%	1	30%	1	20%	1	10%	3	10%	0.3

Figure D.1.12: Metal Township Hazard Vulnerability Analysis (Hazmat Update)

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	2	10%	4	10%	1.4
Civil Disturbance	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Cyber-terrorism	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Dam Failure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Drought	2	30%	2	30%	3	20%	1	10%	4	10%	2.3
Earthquake	1	30%	2	30%	2	20%	3	10%	1	10%	1.7
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Extreme Temperatures	2	30%	2	30%	2	20%	1	10%	3	10%	2.0
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	1.4
Hailstorm	1	30%	1	30%	3	20%	2	10%	1	10%	1.5
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Lightning Strike	1	30%	1	30%	3	20%	3	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Nuclear Incident	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Opioid Addiction Response	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Pandemic and Infectious Disease	1	30%	1	30%	3	20%	1	10%	4	10%	1.7
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Subsidence, Sinkhole	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Terrorism	1	30%	2	30%	2	20%	3	10%	2	10%	1.8
Tornado, Windstorm	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Transportation Accident	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Utility Interruption	3	30%	1	30%	4	20%	4	10%	2	10%	2.6
Wildfire	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Winter Storm	3	30%	1	30%	4	20%	2	10%	3	10%	2.5

Figure D.1.13: Mont Alto Borough Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	2	30%	1	20%	4	10%	4	10%	2.2
Civil Disturbance	1	30%	3	30%	1	20%	4	10%	2	10%	2.0
Cyber-terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Dam Failure	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Drought	3	30%	1	30%	4	20%	2	10%	4	10%	2.4
Earthquake	1	30%	2	30%	4	20%	4	10%	1	10%	2.2
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Extreme Temperatures	3	30%	2	30%	4	20%	1	10%	3	10%	2.7
Flood, Flash Flood, Ice Jam	4	30%	2	30%	4	20%	2	10%	3	10%	3.1
Hailstorm	2	30%	1	30%	4	20%	4	10%	1	10%	2.2
Hurricane, Tropical Storm, Nor'easter	3	30%	2	30%	4	20%	1	10%	4	10%	2.8
Invasive species	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Landslide	1	30%	1	30%	2	20%	4	10%	1	10%	1.5
Lightning Strike	3	30%	2	30%	4	20%	4	10%	1	10%	2.8
Mass Food and Animal Feed Contamination	2	30%	2	30%	2	20%	3	10%	2	10%	2.1
Nuclear Incident	1	30%	2	30%	4	20%	3	10%	4	10%	2.4
Opioid Addiction Response	4	30%	3	30%	4	20%	4	10%	1	10%	3.4
Pandemic and Infectious Disease	4	30%	2	30%	4	20%	3	10%	4	10%	3.3
Radon Exposure	4	30%	2	30%	4	20%	3	10%	4	10%	3.3
Subsidence, Sinkhole	4	30%	2	30%	4	20%	4	10%	1	10%	3.1
Terrorism	3	30%	2	30%	4	20%	4	10%	2	10%	2.9
Tornado, Windstorm	2	30%	2	30%	2	20%	4	10%	1	10%	2.1
Transportation Accident	3	30%	3	30%	4	20%	4	10%	1	10%	3.1
Urban Fire and Explosion	1	30%	2	30%	2	20%	4	10%	1	10%	1.8
Utility Interruption	4	30%	2	30%	4	20%	4	10%	2	10%	3.2
Wildfire	2	30%	2	30%	4	20%	4	10%	2	10%	2.6
Winter Storm	3	30%	2	30%	4	20%	1	10%	3	10%	2.7

Figure D.1.14: Montgomery Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Civil Disturbance	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Cyber-terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Dam Failure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Drought	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Earthquake	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Extreme Temperatures	1	30%	1	30%	1	20%	1	10%	3	10%	1.2
Flood, Flash Flood, Ice Jam	1	30%	1	30%	1	20%	1	10%	3	10%	1.2
Hailstorm	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Lightning Strike	2	30%	1	30%	1	20%	1	10%	1	10%	1.3
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Nuclear Incident	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Opioid Addiction Response	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Pandemic and Infectious Disease	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Subsidence, Sinkhole	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Tornado, Windstorm	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Transportation Accident	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Utility Interruption	3	30%	1	30%	3	20%	1	10%	2	10%	2.1
Wildfire	2	30%	1	30%	1	20%	1	10%	2	10%	1.4
Winter Storm	3	30%	1	30%	2	20%	1	10%	3	10%	2.0

Figure D.1.15: Orrstown Borough Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Cyber-terrorism	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Dam Failure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Drought	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Earthquake	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Environmental Hazards (HAZMAT Release)	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Extreme Temperatures	3	30%	1	30%	1	20%	4	10%	3	10%	2.1
Flood, Flash Flood, Ice Jam	3	30%	1	30%	1	20%	4	10%	3	10%	2.1
Hailstorm	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Hurricane, Tropical Storm, Nor'easter	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Invasive species	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Nuclear Incident	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Opioid Addiction Response	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Pandemic and Infectious Disease	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Radon Exposure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Subsidence, Sinkhole	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Tornado, Windstorm	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Transportation Accident	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Urban Fire and Explosion	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Utility Interruption	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Winter Storm	2	30%	1	30%	1	20%	4	10%	3	10%	1.8

Figure D.1.16: Peters Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	2	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Cyber-terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Dam Failure	1	30%	2	30%	2	20%	1	10%	4	10%	1.8
Drought	2	30%	1	30%	3	20%	1	10%	4	10%	2.0
Earthquake	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	1	20%	3	10%	2	10%	1.3
Extreme Temperatures	1	30%	1	30%	2	20%	1	10%	3	10%	1.4
Flood, Flash Flood, Ice Jam	1	30%	1	30%	2	20%	2	10%	3	10%	1.5
Hailstorm	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Hurricane, Tropical Storm, Nor'easter	2	30%	2	30%	2	20%	1	10%	4	10%	2.1
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Lightning Strike	1	30%	1	30%	1	20%	3	10%	1	10%	1.2
Mass Food and Animal Feed Contamination	1	30%	2	30%	3	20%	1	10%	2	10%	1.8
Nuclear Incident	1	30%	3	30%	4	20%	1	10%	4	10%	2.5
Opioid Addiction Response	2	30%	1	30%	1	20%	1	10%	1	10%	1.3
Pandemic and Infectious Disease	2	30%	1	30%	2	20%	1	10%	4	10%	1.8
Radon Exposure	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Subsidence, Sinkhole	1	30%	1	30%	1	20%	3	10%	1	10%	1.2
Terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Tornado, Windstorm	2	30%	2	30%	1	20%	3	10%	1	10%	1.8
Transportation Accident	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Urban Fire and Explosion	2	30%	2	30%	1	20%	3	10%	1	10%	1.8
Utility Interruption	2	30%	1	30%	2	20%	3	10%	2	10%	1.8
Wildfire	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Winter Storm	2	30%	2	30%	2	20%	1	10%	3	10%	2.0

FigureD. 1.17: Quincy Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Civil Disturbance	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Cyber-terrorism	2	30%	2	30%	3	20%	4	10%	2	10%	2.4
Dam Failure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Drought	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Earthquake	1	30%	1	30%	2	20%	4	10%	1	10%	1.5
Environmental Hazards (HAZMAT Release)	1	30%	1	30%	2	20%	4	10%	2	10%	1.6
Extreme Temperatures	2	30%	1	30%	4	20%	1	10%	3	10%	2.1
Flood, Flash Flood, Ice Jam	2	30%	2	30%	2	20%	2	10%	3	10%	2.1
Hailstorm	2	30%	1	30%	1	20%	3	10%	1	10%	1.5
Hurricane, Tropical Storm, Nor'easter	2	30%	1	30%	4	20%	1	10%	4	10%	2.2
Invasive species	2	30%	1	30%	1	20%	1	10%	4	10%	1.6
Landslide	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	2	20%	2	10%	2	10%	1.4
Nuclear Incident	1	30%	1	30%	4	20%	3	10%	4	10%	2.1
Opioid Addiction Response	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Pandemic and Infectious Disease	2	30%	2	30%	4	20%	1	10%	4	10%	2.5
Radon Exposure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Subsidence, Sinkhole	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Terrorism	1	30%	2	30%	2	20%	4	10%	2	10%	1.9
Tornado, Windstorm	4	30%	2	30%	2	20%	3	10%	1	10%	2.6
Transportation Accident	2	30%	2	30%	1	20%	4	10%	1	10%	1.9
Urban Fire and Explosion	4	30%	2	30%	1	20%	4	10%	1	10%	2.5
Utility Interruption	2	30%	1	30%	3	20%	4	10%	2	10%	2.1
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Winter Storm	3	30%	1	30%	4	20%	1	10%	3	10%	2.4

Figure D.1.18: Shippensburg Borough Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Civil Disturbance	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Cyber-terrorism	2	30%	1	30%	1	20%	3	10%	2	10%	1.6
Dam Failure	1	30%	1	30%	1	20%	3	10%	4	10%	1.5
Drought	1	30%	1	30%	3	20%	1	10%	4	10%	1.7
Earthquake	1	30%	1	30%	2	20%	1	10%	1	10%	1.2
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Extreme Temperatures	2	30%	2	30%	4	20%	4	10%	3	10%	2.7
Flood, Flash Flood, Ice Jam	1	30%	1	30%	3	20%	4	10%	3	10%	1.9
Hailstorm	1	30%	1	30%	2	20%	4	10%	1	10%	1.5
Hurricane, Tropical Storm, Nor'easter	1	30%	1	30%	3	20%	1	10%	4	10%	1.7
Invasive species	1	30%	1	30%	1	20%	2	10%	4	10%	1.4
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Nuclear Incident	1	30%	1	30%	2	20%	1	10%	4	10%	1.5
Opioid Addiction Response	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Pandemic and Infectious Disease	2	30%	2	30%	2	20%	1	10%	4	10%	2.1
Radon Exposure	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Subsidence, Sinkhole	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Terrorism	1	30%	1	30%	1	20%	1	10%	2	10%	1.1
Tornado, Windstorm	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Transportation Accident	2	30%	1	30%	2	20%	4	10%	1	10%	1.8
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Utility Interruption	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Wildfire	1	30%	1	30%	1	20%	3	10%	2	10%	1.3
Winter Storm	2	30%	2	30%	4	20%	4	10%	3	10%	2.7

Figure D.1.19: Southampton Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	2	30%	2	30%	1	20%	4	10%	2	10%	2.0
Cyber-terrorism	2	30%	2	30%	1	20%	4	10%	2	10%	2.0
Dam Failure	2	30%	1	30%	1	20%	2	10%	4	10%	1.7
Drought	3	30%	2	30%	1	20%	4	10%	4	10%	2.5
Earthquake	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Environmental Hazards (HAZMAT Release)	3	30%	2	30%	1	20%	4	10%	2	10%	2.3
Extreme Temperatures	2	30%	2	30%	2	20%	3	10%	3	10%	2.2
Flood, Flash Flood, Ice Jam	2	30%	2	30%	2	20%	3	10%	3	10%	2.2
Hailstorm	3	30%	1	30%	2	20%	4	10%	1	10%	2.1
Hurricane, Tropical Storm, Nor'easter	3	30%	2	30%	2	20%	1	10%	4	10%	2.4
Invasive species	3	30%	1	30%	2	20%	2	10%	4	10%	2.2
Landslide	1	30%	1	30%	1	20%	2	10%	1	10%	1.1
Lightning Strike	3	30%	1	30%	1	20%	4	10%	1	10%	1.9
Mass Food and Animal Feed Contamination	3	30%	2	30%	2	20%	3	10%	2	10%	2.4
Nuclear Incident	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Opioid Addiction Response	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Pandemic and Infectious Disease	3	30%	2	30%	3	20%	1	10%	4	10%	2.6
Radon Exposure	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Subsidence, Sinkhole	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Terrorism	2	30%	2	30%	1	20%	4	10%	2	10%	2.0
Tornado, Windstorm	4	30%	2	30%	2	20%	4	10%	1	10%	2.7
Transportation Accident	4	30%	2	30%	2	20%	4	10%	1	10%	2.7
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Utility Interruption	4	30%	2	30%	3	20%	3	10%	2	10%	2.9
Wildfire	2	30%	1	30%	1	20%	3	10%	2	10%	1.6
Winter Storm	3	30%	2	30%	3	20%	1	10%	3	10%	2.5

Figure D.1.20: St. Thomas Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	1	30%	2	30%	2	20%	4	10%	4	10%	2.1
Civil Disturbance	1	30%	2	30%	2	20%	3	10%	2	10%	1.8
Cyber-terrorism	1	30%	1	30%	2	20%	2	10%	2	10%	1.4
Dam Failure	2	30%	2	30%	2	20%	3	10%	4	10%	2.3
Drought	2	30%	1	30%	3	20%	1	10%	4	10%	2.0
Earthquake	1	30%	2	30%	3	20%	1	10%	1	10%	1.7
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Extreme Temperatures	2	30%	2	30%	3	20%	1	10%	3	10%	2.2
Flood, Flash Flood, Ice Jam	3	30%	1	30%	2	20%	2	10%	3	10%	2.1
Hailstorm	2	30%	2	30%	3	20%	4	10%	1	10%	2.3
Hurricane, Tropical Storm, Nor'easter	2	30%	2	30%	2	20%	2	10%	4	10%	2.2
Invasive species	3	30%	1	30%	2	20%	1	10%	4	10%	2.1
Landslide	2	30%	2	30%	3	20%	4	10%	1	10%	2.3
Lightning Strike	3	30%	1	30%	2	20%	4	10%	1	10%	2.1
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Nuclear Incident	1	30%	1	30%	4	20%	4	10%	4	10%	2.2
Opioid Addiction Response	3	30%	2	30%	3	20%	1	10%	1	10%	2.3
Pandemic and Infectious Disease	3	30%	3	30%	3	20%	2	10%	4	10%	3.0
Radon Exposure	2	30%	1	30%	2	20%	1	10%	4	10%	1.8
Subsidence, Sinkhole	2	30%	1	30%	1	20%	4	10%	1	10%	1.6
Terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Tornado, Windstorm	2	30%	2	30%	3	20%	4	10%	1	10%	2.3
Transportation Accident	4	30%	2	30%	2	20%	4	10%	1	10%	2.7
Urban Fire and Explosion	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Utility Interruption	4	30%	2	30%	3	20%	4	10%	2	10%	3.0
Wildfire	3	30%	2	30%	3	20%	4	10%	2	10%	2.7
Winter Storm	4	30%	2	30%	3	20%	4	10%	3	10%	3.1

Figure D.1.21: Warren Township Hazard Vulnerability Analysis

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	1	30%	1	20%	4	10%	4	10%	1.9
Civil Disturbance	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Cyber-terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Dam Failure	1	30%	3	30%	2	20%	3	10%	4	10%	2.3
Drought	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Earthquake	1	30%	1	30%	2	20%	4	10%	1	10%	1.5
Environmental Hazards (HAZMAT Release)	2	30%	2	30%	2	20%	4	10%	2	10%	2.2
Extreme Temperatures	1	30%	1	30%	1	20%	2	10%	3	10%	1.3
Flood, Flash Flood, Ice Jam	2	30%	2	30%	2	20%	4	10%	3	10%	2.3
Hailstorm	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Hurricane, Tropical Storm, Nor'easter	3	30%	2	30%	2	20%	1	10%	4	10%	2.4
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Lightning Strike	1	30%	1	30%	1	20%	1	10%	1	10%	1.0
Mass Food and Animal Feed Contamination	1	30%	1	30%	1	20%	2	10%	2	10%	1.2
Nuclear Incident	1	30%	1	30%	1	20%	4	10%	4	10%	1.6
Opioid Addiction Response	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Pandemic and Infectious Disease	1	30%	2	30%	3	20%	1	10%	4	10%	2.0
Radon Exposure	1	30%	2	30%	2	20%	1	10%	4	10%	1.8
Subsidence, Sinkhole	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Terrorism	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Tornado, Windstorm	2	30%	2	30%	1	20%	4	10%	1	10%	1.9
Transportation Accident	1	30%	2	30%	1	20%	4	10%	1	10%	1.6
Urban Fire and Explosion	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Utility Interruption	2	30%	2	30%	1	20%	2	10%	2	10%	1.8
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Winter Storm	3	30%	2	30%	3	20%	1	10%	3	10%	2.5


Figure D.1.22: Washington Township Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse	2	30%	2	30%	1	20%	4	10%	4	10%	2.2
Civil Disturbance	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Cyber-terrorism	2	30%	1	30%	1	20%	4	10%	2	10%	1.7
Dam Failure	2	30%	2	30%	2	20%	4	10%	4	10%	2.4
Drought	3	30%	1	30%	4	20%	1	10%	4	10%	2.5
Earthquake	1	30%	2	30%	4	20%	4	10%	1	10%	2.2
Environmental Hazards (HAZMAT Release)	1	30%	2	30%	2	20%	4	10%	2	10%	1.9
Extreme Temperatures	4	30%	2	30%	4	20%	1	10%	3	10%	3.0
Flood, Flash Flood, Ice Jam	1	30%	2	30%	2	20%	4	10%	3	10%	2.0
Hailstorm	1	30%	2	30%	4	20%	4	10%	1	10%	2.2
Hurricane, Tropical Storm, Nor'easter	1	30%	2	30%	4	20%	1	10%	4	10%	2.2
Invasive species	1	30%	1	30%	1	20%	1	10%	4	10%	1.3
Landslide	1	30%	1	30%	1	20%	4	10%	1	10%	1.3
Lightning Strike	4	30%	2	30%	1	20%	4	10%	1	10%	2.5
Mass Food and Animal Feed Contamination	1	30%	3	30%	3	20%	2	10%	2	10%	2.2
Nuclear Incident	1	30%	1	30%	4	20%	4	10%	4	10%	2.2
Opioid Addiction Response	4	30%	3	30%	1	20%	4	10%	1	10%	2.8
Pandemic and Infectious Disease	4	30%	3	30%	4	20%	1	10%	4	10%	3.4
Radon Exposure	2	30%	1	30%	2	20%	2	10%	4	10%	1.9
Subsidence, Sinkhole	2	30%	2	30%	1	20%	4	10%	1	10%	1.9
Terrorism	3	30%	2	30%	4	20%	4	10%	2	10%	2.9
Tornado, Windstorm	4	30%	2	30%	2	20%	4	10%	1	10%	2.7
Transportation Accident	3	30%	2	30%	1	20%	4	10%	1	10%	2.2
Urban Fire and Explosion	2	30%	1	30%	2	20%	4	10%	1	10%	1.8
Utility Interruption	4	30%	1	30%	3	20%	4	10%	2	10%	2.7
Wildfire	1	30%	1	30%	1	20%	4	10%	2	10%	1.4
Winter Storm	4	30%	1	30%	4	20%	1	10%	3	10%	2.7

Figure D.1.23: Waynesboro Borough Hazard Vulnerability Analysis

Appendix D: Worksheet Survey Responses



Rochelle Barvinchack <rlbarvin@franklincountypa.gov>

HMP Mitigation Action Review

Rodney Eberly <REberly@twp.antrim.pa.us>
To: Rochelle Barvinchack <rlbarvin@franklincountypa.gov>

Thu, May 25, 2023 at 12:56 PM

Great, thank you so much!

From: Rochelle Barvinchack <rlbarvin@franklincountypa.gov>
Sent: Thursday, May 25, 2023 12:55 PM
To: Rodney Eberly <REberly@twp.antrim.pa.us>
Subject: Re: HMP Mitigation Action Review

I will make note of that in my files. Antrim is now up to date on everything. The only thing left is our public meeting next month, which I will be sending out a meeting invite for in the near future. Thanks so much for getting back to me.

Rochelle

On Thu, May 25, 2023 at 12:51 PM Rodney Eberly <REberly@twp.antrim.pa.us> wrote:

As I see it there has been no action since our last update.

Rodney Eberly
Road Master
Antrim Township

From: Rochelle Barvinchack <rlbarvin@franklincountypa.gov>
Sent: Tuesday, May 2, 2023 1:26 PM
To: Rodney Eberly <REberly@twp.antrim.pa.us>; John Alleman <JAlleman@twp.antrim.pa.us>
Subject: HMP Mitigation Action Review

Good afternoon,

In reviewing our files, we are still in need of a response from Antrim Township regarding its mitigation action items. I have attached a PDF that highlights the mitigation action that is in the current plan. Please review it and then fill out the attached Mitigation Action Plan Review form so that we know the current status of the action item. This will enable us to keep that action item in the plan for you so that you are in compliance with FEMA requirements. If you find that you would like to add an action, please let me know and I will send that form to you for completion as well. Don't hesitate to contact me if you have any questions.

Figure D.2.1: Antrim Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
HA5 - Research, identify, and pursue acquisition of land parcels		X				
303 - Research and develop a flood mgmt plan	X					Not yet started

Borough of Chambersburg
C. Nipe - Director of Public Works

Figure D.2.2: Chambersburg Borough Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
Update Joint Comp Plan	✓					Discussion w/ Lorgan & Letherkenny

Figure D.2.3: Fannett Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
Research, assess, and if feasible, develop a Comprehensive Land Use plan to guide the future development actions of Greencastle Borough	X					

Figure D.2.4: Greencastle Borough Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
404		X				Some municipalities may need to update ordinances ↑ same reflect MS4
401		X				
205	X					
302		X				
303		X				
305	X					
307	X					
308	X					
309	X					

Figure D.2.5.1: Greene Township Mitigation Action Review (1 of 4)

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
3010	X					
3011	X					
3012	X					
3013	X					
3014	X					
3015	X					
3016	X					
3017	X					
3018	X					

Figure D.2.5.2: Greene Township Mitigation Action Review (2 of 4)

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
3019	X					
3020	X					
1C17		X				
1A5	X					
1C26				X		
1C28		X	X			We have generators for each station but not internal battery backup. Power Out Denied Request working with Army. Power Out in Project
1C19		X				
1C22		X	X			
1C23	X					

Figure D.2.5.3: Greene Township Mitigation Action Review (3 of 4)

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
1C25			X			Submitted 2 X POND ON POND DIVER RELEASE to SEIT
4A1			X			
4A2	X					
1C18			X			m PO working on Issue.
1C29	X					
1C27	X					
1D7	X					

Figure D.2.5.4: Greene Township Mitigation Action Review (4 of 4)

Appendix D: Worksheet Survey Responses

Guilford Twp.

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1-C-33	X					

05/08/2023 10:58 5885

STATION 1

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Figure D.2.6: Guilford Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
RESEARCH/DEVELOP A C.O.O.P. FOR HAMILTON		X				Change of personnel

Figure D.2.7: Hamilton Township Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
Coordinate between Lurgan, Letterkenny, and Farnett township to update their Joint Comprehensive Plan last update in 2007		X				Letterkenny Township Board of Supervisors approved on 4/18/23 to get an estimate from Township Engineer to complete Joint Comprehensive Plan

Figure D.2.8: Letterkenny Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
Update Joint Comprehensive Plan	X		X			

Figure D.2.9: Lurgan Township Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	No Progress / Unknown	In Progress / Not Yet Complete	Status			Review Comments
			Continuous	Completed	Discontinued	
3321 Stormwater Mgmt Plan	X					Still intend to research this option and want it to remain for 2023 Hmp

Phone call w/ Melissa Price 5/23/24
Mercersburg Borough

Figure D.2.10: Mercersburg Borough Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status			Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	
2A5			Continuous	All units placed after 2004 are inspected by UCC
3A3			Continuous	Adopted PA UCC is 2004
3A4			Continuous	Adopted PA Uniform Construction Code
3A2			Continuous	Adopted Flood Plain Ordinance
1C10			Completed	Twp Office/Meeting room has stationary generator
1C14	No Progress			We have no documentation this needs breached
1C12			Continuous	Twp road crew checks & clears debris during and after weather events, post Flood warning

Figure D.2.11: Metal Township Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status			Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	
3A9 Develop Comp Plan	X			No progress as of yet, but would like to have PA as their mitigation action for 2023 plan

Phone call w/ Pat Stilely 5/23/21
Mont Alto Borough

Figure D.2.12: Mont Alto Borough Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.


Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
44 LC36			X			Developing more extensive plans

Figure D.2.13: Montgomery Township Mitigation Action Review

FRANKLIN COUNTY OF EMERGENCY SERVICES
390 NEW YORK AVENUE
CHAMBERSBURG, PA 17201-7883

FRANKLIN COUNTY COMMISSIONERS
David S. Keller, Chairman
John T. Flannery
Robert G. Ziobrowski

PHONE: (717) 264-2813



DIRECTOR
Robert W. Povlich
ASSISTANT DIRECTOR
Mary K. Seville

FAX: (717) 267-2813

Memo
06.07.2023
HMP Meeting Participation Verification *BS*
Re: Orrstown Borough

P. Ted Reed, the EMC for the Borough of Orrstown, spoke with the Planning Coordinator over the phone to review the Capabilities Assessment for the Borough. Each section was discussed and background information was provided to assist in completing the updated information. The Borough's mitigation actions were discussed as well and they wish to keep the same mitigation action for the 2023 plan. Mr. Reed was encouraged to reach out if Orrstown Borough has any additional needs as the HMP moves into the final stages.

Figure D.2.14: Orrstown Borough Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet *Peters Township*

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.


Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
<i>Develop Floodplain Mgt. Plan</i>	✓					

Figure D.2.15: Peters Township Mitigation Action Review

FRANKLIN COUNTY OF EMERGENCY SERVICES
390 NEW YORK AVENUE
CHAMBERSBURG, PA 17201-7883

FRANKLIN COUNTY COMMISSIONERS
David S. Keller, Chairman
John T. Flannery
Robert G. Ziobrowski

PHONE: (717) 264-2813



DIRECTOR
Robert W. Povlich
ASSISTANT DIRECTOR
Mary K. Seville

FAX: (717) 267-2813

Memo
06.07.2023
HMP Capabilities Assessment & Mitigation Action Discussion *EB*
Re: Quincy Township

Joel Oyler, the EMC for Quincy Township, spoke with the Planning Coordinator over the phone to review the Mitigation Actions for the 2023 HMP. In discussing the existing action, no progress has been made on the COOP plan to date, so they would like to keep that action for the 2023 plan.

Figure D.2.16: Quincy Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

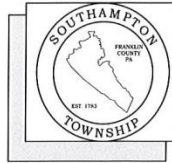
Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status			Review Comments	
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued
Evacuation plan for Shippensburg			✓	None	

A plan has been developed and will be reviewed annually

Figure D.2.17: Shippensburg Borough Mitigation Action Review

Appendix D: Worksheet Survey Responses



Southampton Township
705 Municipal Drive
Shippensburg, PA 17257
PH: (717) 532-9041 FAX: (717) 532-7234

2023 Mitigation Action Plan Review

Existing Actionable Item(s)
Natural Systems Protection (NSP)

4A4 Floodway concerns, existing residential properties

There are 9 properties back this lane off the 4100 Block of MaClay's Mill Road. Two lots are occupied, six are vacant and one is an agriculture field.

There has been no interest by the parties involved to change their current situation.

Southampton Township has not approved any permits in this area because of the Floodway Condition. The onlot septic systems have been properly pumped according to township ordinance.

Until the property owners express interest in studying possible remediation plans to open up the floodway we are taking no action.

Sincerely,

A handwritten signature in blue ink, appearing to read "SC", is written over the word "Sincerely,".

Samuel Cressler
Chairman


Figure D.2.18: Southampton Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

FRANKLIN COUNTY OF EMERGENCY SERVICES
390 NEW YORK AVENUE
CHAMBERSBURG, PA 17201-7883

FRANKLIN COUNTY COMMISSIONERS
David S. Keller, Chairman
John T. Flannery
Robert G. Ziobrowski

PHONE: (717) 264-2813



DIRECTOR
Robert W. Povlich
ASSISTANT DIRECTOR
Mary K. Seville

FAX: (717) 267-2813

Memo
04.20.2023
HMP Mitigation Action Verification JB
Re: Saint Thomas Township


Don Eshelman, the Saint Thomas Township EMC, attended the April 20, 2023 meeting for the 5-year Hazard Mitigation Plan update. At the end of the meeting, he talked with staff and informed them that mitigation that is in the 2018 HMP should be revised to only include research and development of land use regulations that regulate the placement (SFHA restrictions), bulk (or density), and the elevation of structures (to or above the BFE).

Figure D.2.19: St. Thomas Township Mitigation Action Review

FRANKLIN COUNTY OF EMERGENCY SERVICES
390 NEW YORK AVENUE
CHAMBERSBURG, PA 17201-7883

FRANKLIN COUNTY COMMISSIONERS
David S. Keller, Chairman
John T. Flannery
Robert G. Ziobrowski

PHONE: (717) 264-2813



DIRECTOR
Robert W. Povlich
ASSISTANT DIRECTOR
Mary K. Seville

FAX: (717) 267-2813

Memo
06.23.2023
HMP Capabilities Assessment & Mitigation Action Discussion PS
Re: Warren Township

Jason Lander, the EMC for Warren Township, spoke with the Planning Coordinator over the phone to review the Capabilities Assessment and Mitigation Actions for the 2023 HMP. Each section was discussed and background information was provided to assist in completing the updated information. The Borough's mitigation actions were discussed as well and they wish to keep the same mitigation action for the 2023 plan. Ms. Lander was encouraged to reach out if Warren Township has any additional needs as the HMP moves into the final stages.

Figure D.2.20: Warren Township Mitigation Action Review

Appendix D: Worksheet Survey Responses

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
Research & develop COOP plan for Wash. TWP		X				working w/ LC Dept to create updated plan.

Figure D.2.21: Washington Township Mitigation Action Review

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
COOP for Waynesboro Borough	X					
Upgrade Antitank Dam Conceptual design work		X				

Figure D.2.22.1: Waynesboro Borough Mitigation Action Review (1 of 2)

Appendix D: Worksheet Survey Responses

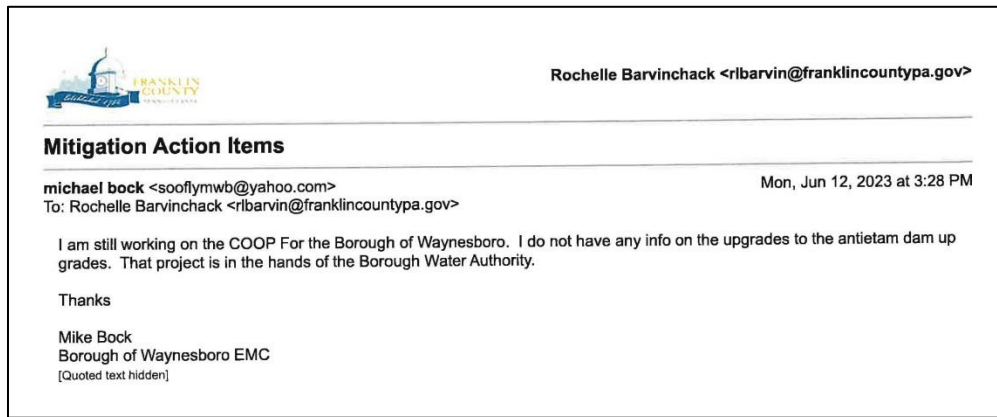


Figure D.2.22.2: Waynesboro Borough Mitigation Action Review (2 of 2)

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Greene Twp
Action Number:	CREATE SNOW EMERGENCY plan
Location (address, lat/long)	Township Wide
Mitigation Technique Category	
Hazard(s) Addressed	weather / Traffic Control
Priority (High, Medium, Low)	Low
Estimated Cost	\$ 1000
Potential Funding Streams	General Budget
Timeline	Two years
Lead Agency/Department	Greene Township
Support Agency(ies)/ Department(s)	Penn DOT
Project Point of Contact	
Name	Todd Burns
Title	Supervisor Road Master
Agency/Department	Greene Township
Phone	717-263-9660
E-mail	T Burns@greentwp.us

Figure D.3.1.1: Greene Township New Mitigation Action (1 of 2)

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Greene Township
Action Number:	Design and Engineer intersection to include additional lanes, traffic control devices, and possibly a traffic signal.
Location (address, lat/long)	Walker Road @ Kohler Road
Mitigation Technique Category	Traffic
Hazard(s) Addressed	Traffic volume / Road safety
Priority (High, Medium, Low)	medium
Estimated Cost	\$800,000 - \$1,000,000
Potential Funding Streams	Grants, Impact Fees, General Budget
Timeline	Five Years
Lead Agency/Department	Greene Township.
Support Agency(ies)/Department(s)	Penn Dot, County MTO
	Project Point of Contact
Name	Cathy Lambert
Title	Greene Township Engineer
Agency/Department	Greene Township
Phone	717-263-9166
E-mail	glambert@greentwp.us

Figure D.3.1.2: Greene Township New Mitigation Action (2 of 2)

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Action
Lurgan	Replace Culver pipe with a larger one.
Action Number:	
17	
Location (address, lat/long)	7288 Ebenezer Road, Orrstown PA 17244
Mitigation Technique Category	SIP
Hazard(s) Addressed	Washes out road with heavy rain 2-3 times a year.
Priority (High, Medium, Low)	High
Estimated Cost	\$100,000 Funding in place
Potential Funding Streams	Franklin County Conser Dist Dirt and Gravel Rd program
Timeline	2023
Lead Agency/Department	Lurgan Township
Support Agency(ies)/ Department(s)	Franklin County Conservation Dist. Dirt & gravel rd program
Project Point of Contact	
Name	Lawerence Kolb, Jr.
Title	Supervisor
Agency/Department	Lurgan Township
Phone	717-5527855
E-mail	Lurgantwp@embarqmail.com

Figure D.3.2: Lurgan Township New Mitigation Action

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Montgomery
Action Number:	Stream Stabilization and Road Relocation to mitigate Flooding
Location (address, lat/long)	Shimpstown Rd between Corner Rd & Punchbowl Rd
Mitigation Technique Category	
Hazard(s) Addressed	Flooding
Priority (High, Medium, Low)	High Stranded Residents
Estimated Cost	\$400,000.00
Potential Funding Streams	Chesapeake Bay Foundation / Franklin Co. ARPA
Timeline	Complete 2025
Lead Agency/Department	Montgomery Twp
Support Agency(ies)/Department(s)	FLSLS / Land studies
Project Point of Contact	
Name	Greg Weller
Title	Supervisor
Agency/Department	Montgomery Twp
Phone	717-328-3743 ext 101
E-mail	greg.montgomerytwp@gmail.com

Figure D.3.3.1: Montgomery Township New Mitigation Action (1 of 2)

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Montgomery
Action Number:	Stream crossing Replacement
Location (address, lat/long)	14000 block Shimpstown Rd
Mitigation Technique Category	Box Culvert Replace
Hazard(s) Addressed	Bridge damaged
Priority (High, Medium, Low)	High
Estimated Cost	300,000.00
Potential Funding Streams	ARPA
Timeline	2024
Lead Agency/Department	Montgomery Twp
Support Agency(ies)/Department(s)	Martin and Martin Engineers
Project Point of Contact	
Name	Greg Weller
Title	Supervisor
Agency/Department	Montgomery Twp
Phone	717-328-3743 ext 101
E-mail	greg.montgomerytwp@gmail.com

Figure D.3.3.2: Montgomery Township New Mitigation Action (2 of 2)

Appendix D: Worksheet Survey Responses

Mitigation Action Worksheet

Municipality(ies):	Action
St. Thomas Township	Write and develop snow emergency plan.
Action Number:	
Location (address, lat/long)	Township
Mitigation Technique Category	EAP
Hazard(s) Addressed	Winter Emergencies
Priority (High, Medium, Low)	Low
Estimated Cost	Low
Potential Funding Streams	General Fund
Timeline	Short
Lead Agency/Department	Local EMA/Road Master
Support Agency(ies)/ Department(s)	
	Project Point of Contact
Name	Don Eshleman
Title	EMC
Agency/Department	Township EMA
Phone	717-830-6689
E-mail	deshleman28@gmail.com

Figure D.3.4: St. Thomas Township New Mitigation Action

Appendix E: Franklin County HMP Data Collection Tools

Hazard	Probability (1-4)	Wt	Impact (1-4)	Wt	Spatial (1-4)	Wt	Warning Time (1-4)	Wt	Duration (1-4)	Wt	Risk Factor (RF)
Building and Structure Collapse		30%		30%		20%		10%	4	10%	0.4
Civil Disturbance		30%		30%		20%		10%	2	10%	0.2
Cyber-terrorism		30%		30%		20%		10%	2	10%	0.2
Dam Failure		30%		30%		20%		10%	4	10%	0.4
Drought		30%		30%		20%		10%	4	10%	0.4
Earthquake		30%		30%		20%		10%	1	10%	0.1
Environmental Hazards (HAZMAT Release)		30%		30%		20%		10%	2	10%	0.2
Extreme Temperatures		30%		30%		20%		10%	3	10%	0.3
Flood, Flash Flood, Ice Jam		30%		30%		20%		10%	3	10%	0.3
Hailstorm		30%		30%		20%		10%	1	10%	0.1
Hurricane, Tropical Storm, Nor'easter		30%		30%		20%		10%	4	10%	0.4
Invasive species		30%		30%		20%		10%	4	10%	0.4
Landslide		30%		30%		20%		10%	1	10%	0.1
Lightning Strike		30%		30%		20%		10%	1	10%	0.1
Mass Food and Animal Feed Contamination		30%		30%		20%		10%	2	10%	0.2
Nuclear Incident		30%		30%		20%		10%	4	10%	0.4
Opioid Addiction Response		30%		30%		20%		10%	1	10%	0.1
Pandemic and Infectious Disease		30%		30%		20%		10%	4	10%	0.4
Radon Exposure		30%		30%		20%		10%	4	10%	0.4
Subsidence, Sinkhole		30%		30%		20%		10%	1	10%	0.1
Terrorism		30%		30%		20%		10%	2	10%	0.2
Tornado, Windstorm		30%		30%		20%		10%	1	10%	0.1
Transportation Accident		30%		30%		20%		10%	1	10%	0.1
Urban Fire and Explosion		30%		30%		20%		10%	1	10%	0.1
Utility Interruption		30%		30%		20%		10%	2	10%	0.2
Wildfire		30%		30%		20%		10%	2	10%	0.2
Winter Storm		30%		30%		20%		10%	3	10%	0.3

White Cells	Your data entry fields - enter a number (1, 2, 3, or 4 only)
Gray Cells	Static field - not to be changed
Color Cells	Calculation Area - not to be changed

Probability: 1 - Unlikely: Less than 1% annual probability 2 - Possible: Between 1 and 50% annual probability 3 - Likely: Between 50 and 90% annual probability 4 - Highly Likely: Greater than 90% annual probability
Impact: 1 - Very few injuries; Minor property damage; Minimal impact to critical facilities 2 - Minor injuries; Greater than 10% property damage in zone; Critical facilities impacted greater than 1 day 3 - Multiple deaths/injuries; Greater than 25% property damage in zone; Critical facilities impacted for greater than 1 week 4 - High number of deaths/injuries; Greater than 50% property damage in zone; Critical facilities impacted for greater than 30 days
Spatial: 1 - Less than 1% of municipality affected 2 - Between 1 and 10% of municipality affected 3 - Between 10 and 50% of municipality affected 4 - Between 50 and 100% of municipality affected
Warning Time: 1 - More than 24 hrs 2 - 12 to 24 hrs 3 - 6 to 12 hrs 4 - less than 6 hrs
Duration: For consistency across the state and county, these numbers are tied to the assessments in the PA HMP dated 2018, updated in 2019.

RF Scoring Range	
Catastrophic	3.0 - 4.0
Major	2.5 - 2.9
Moderate	2.0 - 2.4
Minor	1.5 - 1.9
Insignificant	1.0 - 1.4

Figure E.1.1: Hazard Assessment Survey – Page 1 of 8

Appendix E: Franklin County HMP Data Collection Tools


	Hazard Mitigation Assessment Definitions Franklin County, PA
Building and Structure Collapse	<p>Buildings and other engineered structures, including bridges, may collapse if their structural integrity is compromised, especially due to effects from other natural or human-made hazards. Older buildings or structures, structures that are not built to standard codes, or structures that have been weakened are more susceptible to be affected by these hazards.</p>
Civil Disturbance	<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> <p style="padding-left: 40px;"><u>Famine</u> - A widespread scarcity of food leading to malnutrition and increased mortality</p> <p style="padding-left: 40px;"><u>Economic Collapse, Recession</u> - Very slow or negative growth</p> <p style="padding-left: 40px;"><u>Misinformation</u> - Erroneous information spread unintentionally</p> <p style="padding-left: 40px;"><u>Civil disturbance, Public Unrest, Mass Hysteria, Riot</u> - group acts of violence against property and individuals</p> <p style="padding-left: 40px;"><u>Strike, Labor Dispute</u> - Controversies related to the terms and conditions of contract negotiations</p>
Cyber-terrorism	<p>Cyber-terrorism refers to acts of terrorism committed using computers, networks, and the Internet. The most widely cited definition comes from Denning's Testimony before the Special Oversight Panel on Terrorism: "Cyber-terrorism...is generally understood to mean unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. Further, to qualify as cyber-terrorism, an attack should result in violence against persons or property, or at least cause enough harm to generate fear."</p>
Dam Failure	<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. There are seven dams in or near Franklin County that are considered "high-hazard" dams by the Pennsylvania Department of Environmental Protection. This does not indicate an increased likelihood of failure of these dams, simply that if they were to fail, the impact would be extensive. These dams are:</p> <ul style="list-style-type: none"> - Roxbury Dam (Franklin County, PA) - Whitetail Land Co. A Dam (Franklin County, PA) - Long Pine Run Dam (Adams County, PA) - Carbaugh Run Dam (Adams County, PA) - Antietam Dam (Adams County, PA) - Meadow Grounds Dam (Fulton County, PA) - Lower Lake Royer Dam (Washington County, MD)

Figure E.1.2: Hazard Assessment Survey – Page 2 of 8


	Hazard Mitigation Assessment Definitions Franklin County, PA
Drought	<p>Drought is a natural climatic condition which occurs in virtually all climates, the consequences 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. The 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.</p>
Earthquake	<p>An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 1-20 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 the 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.</p>
Environmental Hazards	<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 Franklin County Hazard Mitigation Plan, environmental hazards include the following:</p> <p><u>Hazardous materials releases</u> - at fixed facilities or in transit, including toxic chemicals, infectious substances, biohazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive.</p> <p><u>Coal Mining incidents</u> - including the release of harmful chemicals and waste materials into water bodies or the atmosphere, explosions, fires, and other hazards and threats to life safety stemming from mining.</p> <p><u>Oil and gas well incidents</u> - including the release of harmful chemicals and waste materials into water bodies or the atmosphere, explosions, fires, and other hazards and threats to life stemming from oil and gas extraction.</p>
Extreme Temperatures	<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 degrees 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.</p>

Figure E.1.3: Hazard Assessment Survey – Page 3 of 8

Appendix E: Franklin County HMP Data Collection Tools


	Hazard Mitigation Assessment Definitions Franklin County, PA
Hurricane, Tropical Storm, Nor'easter	<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 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).</p>
Invasive Species	<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.</p>
Landslide	<p>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-caused 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.</p>
Lightning Strike	<p>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 degrees 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.</p>

Figure E.1.4: Hazard Assessment Survey – Page 4 of 8


	Hazard Mitigation Assessment Definitions Franklin County, PA
<p>Mass Food and Animal Feed Contamination</p>	<p>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 food borne illnesses and/or interruptions in the food supply. Contamination may occur due to natural food borne illnesses and chemical, biological, radiological, or nuclear exposure. Most food borne 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 and poultry; and Toxoplasma in meats. Contamination usually occurs accidentally during the production/preparation process but can also be the result of intentional acts.</p>
<p>Nuclear Incidents</p>	<p>Nuclear incidents generally refer to events involving the release of significant levels of radioactivity or exposure of workers or the general public to radiation. Nuclear accidents/incidents can be placed into three categories:</p> <p><u>Critical incidents</u> - which involve loss of control of nuclear assemblies or power reactors</p> <p><u>Loss of coolant accidents</u> - 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.</p> <p><u>Loss of containment accidents</u> - 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, chronic health effects, and psychological effects.</p> <p>Franklin County is a support county for incidents at Three Mile Island. We would not be in the evacuation zones of any accident there, but we could be expected to house up to 1361 evacuees from municipalities in the evacuation zones. Portions of Franklin County do fall into the 50-mile contamination zone for food and animal feed if such an incident were to occur.</p>
<p>Opioid Addiction Response</p>	<p>Opioid addiction occurs when an individual becomes physically dependent on opioids, which include opiates and narcotics. Opioids are a synthetic substance found in certain prescription pain medications: morphine, codeine, methadone, oxycodone, hydrocodone, fentanyl, and hydromorphone, and street drugs like heroine. Opioids block the body's ability to feel pain and can create a sense of euphoria. Individuals often build a tolerance to opioid drugs, which leads them to take more of the medication than originally prescribed.</p>
<p>Pandemic and Infectious Disease</p>	<p>A pandemic occurs when infection from 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.</p>

Figure E.1.5: Hazard Assessment Survey – Page 5 of 8


	Hazard Mitigation Assessment Definitions Franklin County, PA
<p>Radon Exposure</p>	<p>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 occupational settings. According to the EPA, Radon is estimated to cause about 21,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer. An estimated 40% of the homes in Pennsylvania are believed to have elevated Radon levels.</p>
<p>Subsidence, Sinkholes</p>	<p>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. The collapse can take place slowly over time or quickly in a single event. In addition to natural processes, human activity such as water, natural gas, and oil extraction can cause subsidence and sinkhole formation. Franklin County has considerable deposits of limestone that is utilized in several quarry operations. It is estimated that 32 percent of the land is considered limestone. Therefore, we should be aware of the potential hazard of sinkholes.</p>
<p>Terrorism</p>	<p>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; and the use of chemical, biological, nuclear, and radiological weapons. Increasingly, cyber-attacks have become a more pressing concern for governments across America.</p>
<p>Tornado, Windstorm</p>	<p>A wind storm can occur during severe thunderstorms, winter storms, coastal storms, or tornadoes. Straight-line winds such as 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. The damage caused by a tornado is the result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour.</p>

Figure E.1.6: Hazard Assessment Survey – Page 6 of 8


	Hazard Mitigation Assessment Definitions Franklin County, PA
<p>Transportation Accident</p>	<p>Transportation accidents can result from any for of air, rail, water, or road travel. It is unlikely that small accidents would significantly impact the larger community. However, certain accidents could have secondary regional impacts such as a hazardous materials release or disruption in critical supply/access routes, especially if vital transportation corridors or junctions are present (e.g. I-81, SR-30, I-76, SR 997, SR, 11, and SR 16). Traffic congestion in certain circumstances can also be hazardous. Traffic congestion is a condition that occurs when traffic demand approaches or exceeds the available capacity of the road network. This hazard should be carefully evaluated during emergency planning since it is a key factor in timely disaster or hazard response, especially in areas with high population density.</p>
<p>Urban Fire and Explosion</p>	<p>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.</p>
<p>Utility Interruption</p>	<p>Utility interruption hazards are hazards that impair the functioning of important utilities in the energy, telecommunications, public works, and information network sectors. Utility interruption hazards include the following:</p> <p><u>Geomagnetic Storms</u> - including temporary disturbances of the Earth's magnetic field resulting in disruptions of communication, navigation, and satellite systems.</p> <p><u>Fuel of Resource Shortage</u> - resulting from supply chain breaks of secondary to other hazard events.</p> <p><u>Electromagnetic Pulse</u> - originating from an explosion or fluctuating magnetic field and causing damaging current surges in electrical and electronics systems.</p> <p><u>Information Technology Failures</u> - due to software bugs, viruses, or improper use</p> <p><u>Ancillary Support Equipment</u> - electrical generating, transmission, system control, and distribution system equipment for the energy industry.</p> <p><u>Public Works Failure</u> - damage to of failure of highways, flood control systems, deep-water ports and harbors, public buildings, bridges, and dams.</p> <p><u>Telecommunications System Failure</u> - damage to data transfer, communications, and processing equipment.</p>

Figure E.1.7: Hazard Assessment Survey – Page 7 of 8

Appendix E: Franklin County HMP Data Collection Tools


	Hazard Mitigation Assessment Definitions Franklin County, PA
Utility Interruption (cont)	<u>Transmission Facility or Linear Utility Accident</u> - liquefied natural gas leakages, explosions, or facility problems.
Wildfire	<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.</p>
Winter Storm	<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.</p>

Figure E.1.8: Hazard Assessment Survey – Page 8 of 8

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Performing the capability assessment is important to formulate a viable mitigation strategy later in the planning process. A capability assessment has two components: an inventory of a jurisdiction's existing planning and regulatory tools and an analysis of its capacity to use them effectively. The assessment process helps identify existing gaps, conflicts and/or weaknesses that may need to be addressed through future mitigation planning goals, objectives, and actions. It also highlights the measures in place or already undertaken that merit continued support and enhancement through future mitigation efforts. The capability assessment also helps to ensure that proposed mitigation actions are practical considering the local ability to implement them.

The community should highlight and describe any successful mitigation projects.

For this exercise, please complete the attached Capability Assessment Survey for your jurisdiction. Only one form needs to be filled out per municipality. There are 7 parts of the capability assessment. Please email your response along with any attachments to Rochelle Barvinchack at rlbarvin@franklincountypa.gov or mail the completed form and attachments to: Franklin County Department of Emergency Services, Attn: Rochelle Barvinchack, 390 New York Ave, Chambersburg, PA 17201.

Municipality: _____ ***Name/Title:*** _____

Figure E.2.1: Municipal Capabilities Survey – Page 1 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Section 1: Planning and Regulatory Capability

Please indicate whether the following planning or regulatory tools and programs are currently in place for your jurisdiction and answer the questions below for each as appropriate.

Tool/Program	Status				Title	Author/Owner		
	In place?		Date Adopted	Next Update (if known)				
	Y	N						
<i>EXAMPLE: Mitigation Plan</i>	<i>X</i>		<i>11/18/18</i>	<i>Oct 2023</i>	<i>Franklin County Hazard Mitigation Plan</i>	<i>Franklin County Dept of Emergency Services</i>		
If no plan is in place, what resources do you need to implement one?								
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?			The plan is based on input from all participating community partners and identifies existing and potential risks within the County in order to plan for and mitigate those risks.					
Can this capability be improved? If so, what resources are needed to make the improvement?			The plan can be improved through the continued monitoring of risks identified in the plan and updating risk assessments on an annual basis at minimum.					
Building Code Standards								
If no standards are in place, what resources do you need to implement them?								
If there are standards in place, what about this resource makes it a capability for the community to reduce risk?								
Can this capability be improved? If so, what resources are needed to make the improvement?								
Capital Improvement Plan								
If no plan is in place, what resources do you need to implement one?								
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?								
Can this capability be improved? If so, what resources are needed to make the improvement?								

Figure E.2.2: Municipal Capabilities Survey – Page 2 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
Comprehensive Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Continuity of Operations Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Disaster Recovery Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.3: Municipal Capabilities Survey – Page 3 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner	
	In place?		Date Adopted			Next Update (if known)
	Y	N				
Economic Development Plan						
If no plan is in place, what resources do you need to implement one?						
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?						
Can this capability be improved? If so, what resources are needed to make the improvement?						
Emergency Operations Plan						
If no plan is in place, what resources do you need to implement one?						
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?						
Can this capability be improved? If so, what resources are needed to make the improvement?						
Evacuation Plan						
If no plan is in place, what resources do you need to implement one?						
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?						
Can this capability be improved? If so, what resources are needed to make the improvement?						

Figure E.2.4: Municipal Capabilities Survey – Page 4 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
Farmland Preservation Program							
If no program is in place, what resources do you need to implement one?							
If there is a program in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Fire Code Regulations							
If no regulations are in place, what resources do you need to implement them?							
If there are regulations in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Floodplain Management Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.5: Municipal Capabilities Survey – Page 5 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
Floodplain Regulations							
If no regulations are in place, what resources do you need to implement one?							
If there are regulations in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Hazard Mitigation Plan	Y		2018/19	2023	Franklin County Hazard Mitigation Plan Franklin County Dept of Emergency Services		
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Historic Preservation Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.6: Municipal Capabilities Survey – Page 6 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
National Flood Insurance Program							
If no program is in place, what resources do you need to implement one?							
If there is a program in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
National Flood Insurance Program – CRS							
If no program is in place, what resources do you need to implement one?							
If there is a program in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Natural Resource Protection Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.7: Municipal Capabilities Survey – Page 7 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
Open Space Management Plan							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Storm Water Management Plan/ Ordinance							
If no plan is in place, what resources do you need to implement one?							
If there is a plan in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Subdivision Regulations							
If no regulations are in place, what resources do you need to implement one?							
If there are regulations in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.8: Municipal Capabilities Survey – Page 8 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Tool/Program	Status			Title	Author/Owner		
	In place?		Date Adopted				
	Y	N					
Zoning Regulations							
If no regulations are in place, what resources do you need to implement one?							
If there are regulations in place, what about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Other (describe):							
What about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							
Other (describe):							
What about this resource makes it a capability for the community to reduce risk?							
Can this capability be improved? If so, what resources are needed to make the improvement?							

Figure E.2.9: Municipal Capabilities Survey – Page 9 of 16

Franklin County HMP Capability Assessment Survey

Section 2: Administrative and Technical Capability

Please indicate whether your jurisdiction maintains the following departments/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 explain the relation to hazard mitigation for that resource or with attachments.

Staff/Personnel Resources	Yes	No	Department/ Agency	Relation to Hazard Mitigation
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				
Scientists or staff familiar with the hazards of the Community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program				
Grant writers or fiscal staff to handle large/complex Grants				
Other (describe):				

Figure E.2.10: Municipal Capabilities Survey – Page 10 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Section 3: Fiscal 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). Then, identify the primary department or agency responsible for its administration or allocation and explain the relation to hazard mitigation in the space provided or with attachments.

Financial Resources	Yes	No	Department or Agency	Relation to Hazard Mitigation
Capital Improvements Program				
Community Development Block Grants (CDBG)				
Development Impact Fees				
FEMA – Hazard Mitigation Assistance				
FEMA – Public Assistance 406 Mitigation				
Funding programs - State				
Funding programs – Philanthropic				
Gas / Electric Utility Fees				
General Obligation, Revenue, and/or Special Tax Bonds				
Partnering Arrangements or Intergovernmental Agreements				
Special Purpose Taxes				
Storm Water Utility Fees				
Water / Sewer Fees				

Figure E.2.11: Municipal Capabilities Survey – Page 11 of 16

Franklin County HMP Capability Assessment Survey

Section 4: Community Political Capability

Political capability in this instance is being measured by the degree to which local political leadership (including appointed boards) is willing to enact policies and programs that reduce hazard vulnerabilities in your community, even if met with some opposition. Examples may include guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum State or Federal requirements (e.g., building codes, floodplain management, etc.). Rate the jurisdiction's political capability to enact policies and programs that reduce hazard vulnerabilities on a scale from 0 to 5. Generally, a higher the score corresponds to a higher degree of community political capability.


 Score:

Section 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 in Sections 1-5 of this survey.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			
Administrative and Technical Capability			
Fiscal Capability			
Community Political Capability			
Community Resiliency Capability			

Figure E.2.12: Municipal Capabilities Survey – Page 12 of 16

Franklin County HMP Capability Assessment Survey

Section 6: Education and Outreach

Education and outreach capabilities include programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information.

Resource	Yes	No	Responsible Agency/ Organization	Relation to Hazard Mitigation
Firewise USA Certification				
If no program is in place, what resources do you need to implement one?				
Can this capability be improved? If so, what resources are needed to make the improvement?				
Seasonal Emergency Management & Mitigation Outreach				
If no program is in place, what resources do you need to implement one?				
Can this capability be improved? If so, what resources are needed to make the improvement?				
StormReady Certification				
If no program is in place, what resources do you need to implement one?				
Can this capability be improved? If so, what resources are needed to make the improvement?				
Other (describe):				
If no program is in place, what resources do you need to implement one?				
Can this capability be improved? If so, what resources are needed to make the improvement?				

Figure E.2.13: Municipal Capabilities Survey – Page 13 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

Section 7: National Flood Insurance Program (NFIP) Survey

Please answer the questions in the following three tables (Floodplain Identification and Mapping, Floodplain Management, and Floodplain Insurance) as they relate to your municipalities capabilities and posture on NFIP implementation.

NFIP - FLOODPLAIN IDENTIFICATION AND MAPPING			
<i>Requirement</i>	<i>Recommended Action</i>	<i>Yes/No</i>	<i>Comments</i>
Does the municipality maintain accessible copies of an effective Flood Insurance Rate Map (FIRM)/Digital Flood Insurance Rate Map (DFIRM)? Does the municipality maintain accessible copies of the most recent Flood Insurance Study (FIS)?	Place these documents in the local libraries or make available publicly.		
Has the municipality adopted the most current DFIRM/FIRM and FIS?	State the date of adoption, if approved.		
Does the municipality support request for map updates?	If yes, state how.		
Does the municipality share with Federal Emergency Management Agency (FEMA) any new technical or scientific data that could result in map revisions within 6 months of creation or identification of new data?	If yes, specify how.		
Does the municipality provide assistance with local floodplain determinations?	If yes, specify how.		
Does the municipality maintain a record of approved Letters of Map Change?	If yes, specify the responsible office.		

Figure E.2.14: Municipal Capabilities Survey – Page 14 of 16

Franklin County HMP Capability Assessment Survey

NFIP - FLOODPLAIN MANAGEMENT			
Requirement	Recommended Action	Yes/No	Comments
Has the municipality adopted a compliant floodplain management ordinance that, at a minimum, regulates the following:	If yes, answer questions (1) through (4) below.		
a. Does the municipality issue permits for all proposed development in the Special Flood Hazard Areas (SFHAs)?	If yes, specify the office responsible.		
b. Does the municipality obtain, review, and utilize any Base Flood Elevation (BFE) and floodway data, and/or require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres?	If yes, specify the office responsible.		
c. Does the municipality identify measures to keep all new and substantially improved construction reasonably safe from flooding to or above the BFE, including anchoring, using flood-resistant materials, and designing or locating utilities and service facilities to prevent water damage?	If yes, specify the office responsible.		
d. Does the municipality document and maintain records of elevation data that document lowest floor elevation for new or substantially improved structures?	If yes, specify the office responsible.		
If a compliant floodplain ordinance was adopted, does the municipality enforce the ordinance by monitoring compliance and taking remedial action to correct violations?	If yes, specify how.		
Has the municipality considered adopting activities that extend beyond the minimum requirements? Examples include: <ul style="list-style-type: none"> • Participation in the Community Rating System • Prohibition of production or storage of chemicals in SFHA • Prohibition of certain types of structures, such as hospitals, nursing homes, and jails in SFHA • Prohibition of certain types of 	If yes, specify activities.		

Figure E.2.15: Municipal Capabilities Survey – Page 15 of 16

Appendix E: Franklin County HMP Data Collection Tools

Franklin County HMP Capability Assessment Survey

residential housing (manufactured homes) in SFHA <ul style="list-style-type: none"> Floodplain ordinances that prohibit any new residential or nonresidential structures in SFHA 			
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NFIP - FLOOD INSURANCE			
<i>Requirement</i>	<i>Recommended Action</i>	<i>Yes/No</i>	<i>Comments</i>
Does the municipality educate community members about the availability and value of flood insurance?	If yes, specify how.		
Does the municipality inform community property owners about changes to the DFIRM/FIRM that would impact their insurance rates?	If yes, specify how.		
Does the municipality provide general assistance to community members regarding insurance issues?	If yes, specify how.		

Figure E.2.16: Municipal Capabilities Survey – Page 16 of 16

Appendix E: Franklin County HMP Data Collection Tools

Mitigation Action Worksheet

Municipality(ies):	Action
Action Number:	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	
<i>Hazard(s) Addressed</i>	
<i>Priority (High, Medium, Low)</i>	
<i>Estimated Cost</i>	
<i>Potential Funding Streams</i>	
<i>Timeline</i>	
<i>Lead Agency/Department</i>	
<i>Support Agency(ies)/ Department(s)</i>	
Project Point of Contact	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	

Figure E.3.1: Mitigation Action Worksheet – Page 1 of 2

Appendix E: Franklin County HMP Data Collection Tools

Mitigation Technique Category

- Local Plans and Regulations (LPR) – These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) – These actions involve (1) modifying existing structures and infrastructure to protect them from a hazard, or (2) removing them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also includes projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

Costs:

If an estimated cost is known, please provide or use the following ranges:

Low = < \$10,000 *Medium* = \$10,000 to \$100,000 *High* = > \$100,000

If costs have not been estimated, please use the following categories:

<i>Low</i>	Possible to fund under existing budget. Project is part of, or can be part of, an existing on-going program.
<i>Medium</i>	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
<i>High</i>	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Timeline:	Short = 1 to 5 years	Long-Term = 5 years or greater
	OG = On-going program	DOF = Depending on funding

Figure E.3.2: Mitigation Action Worksheet – Page 2 of 2

Appendix E: Franklin County HMP Data Collection Tools

Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	

Figure E.3.3: Existing Mitigation Action Review Worksheet

Appendix F: Special Flood Hazard Zone Definitions

Zone	Description
Special Flood Hazard Areas – High Risk	
A	Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.
AE, A1-A30	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. (Zone AE is used on new and revised maps in place of Zones A1-A30)
AH	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are 1-3 feet. BFEs derived from detailed hydraulic analyses are shown in this zone.
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are 1-3 feet. Average flood depths derived from detailed hydraulic analyses are shown within this zone.
AR	Areas that result from the decertification of a previously accredited flood protection system that is determined to be in the process of being restored to provide base flood protection.
A99	Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction Federal flood protection system. These are areas of special flood hazard where enough progress has been made on the construction of a protection system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. Zone A99 may be used only when the flood protection system has reached specified statutory progress toward completion. No BFEs or flood depths are shown.
Coastal High Hazard Areas – High Risk	
V	Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed coastal analyses have not been performed, no BFEs or flood depths are shown.
VE, V1-V30	Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic coastal analyses are shown within these zones. (Zone VE is used on new and revised maps in place of Zones V1–V30)
Moderate and Minimal Risk Areas	
B, X (shaded)	Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. (Zone X (shaded) is used on new and revised maps in place of Zone B.)
C, X (unshaded)	Minimal risk areas outside the 1-percent and .2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. (Zone X (unshaded) is used on new and revised maps in place of Zone C.)
Undetermined Risk Areas	
D	Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

Figure F.1: Special Flood Hazard Zone Terminology

Appendix G: Franklin County DFIRM

The Franklin County DFIRM consists of 118 panels. **Figure G.1** below shows the definitions for the icons found on the following county DFIRM maps. **Figures G.2** thru **G.119** shows these individual panels that make up the Franklin County DFIRM.






































	Unknown		College		Communications Tower		Nursing Home
	Dam, Class B-1		School		Radio Tower		Bank
	Dam, Class C-3		Electric Substation		Treatment Plant		Broadcast Station
	Dam, Class C-4		Transformer Bank		Agriculture Storage		Gas Station
	EMS		Railroad Switch		Fuel Storage		Government Building
	Fire House		Sanitary Sewer		Reservoir		Hotel
	Police Station		Natural Gas Substation		Storage Tank		Medical Clinic
	Jail		SARA Facility		Water		Post Office
	Hospital		Tier II Facility		Day Care Center		Restaurant
							Residence/Business

Figure G.1: Legend for Franklin County DFIRM Maps

Appendix G: Franklin County DFIRM

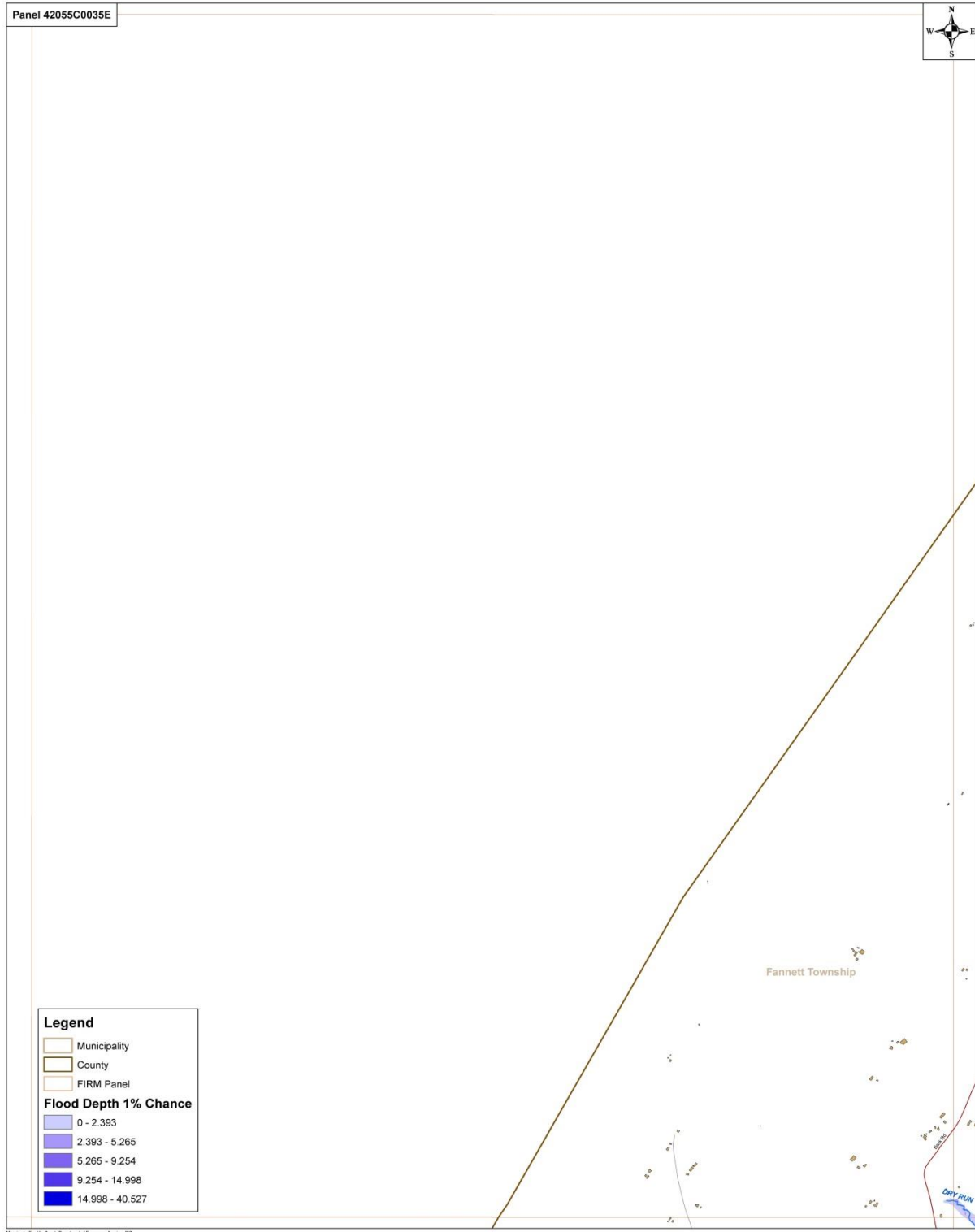


Figure G.2: Quadrant 1, Panel Number 42055C0035E

Appendix G: Franklin County DFIRM

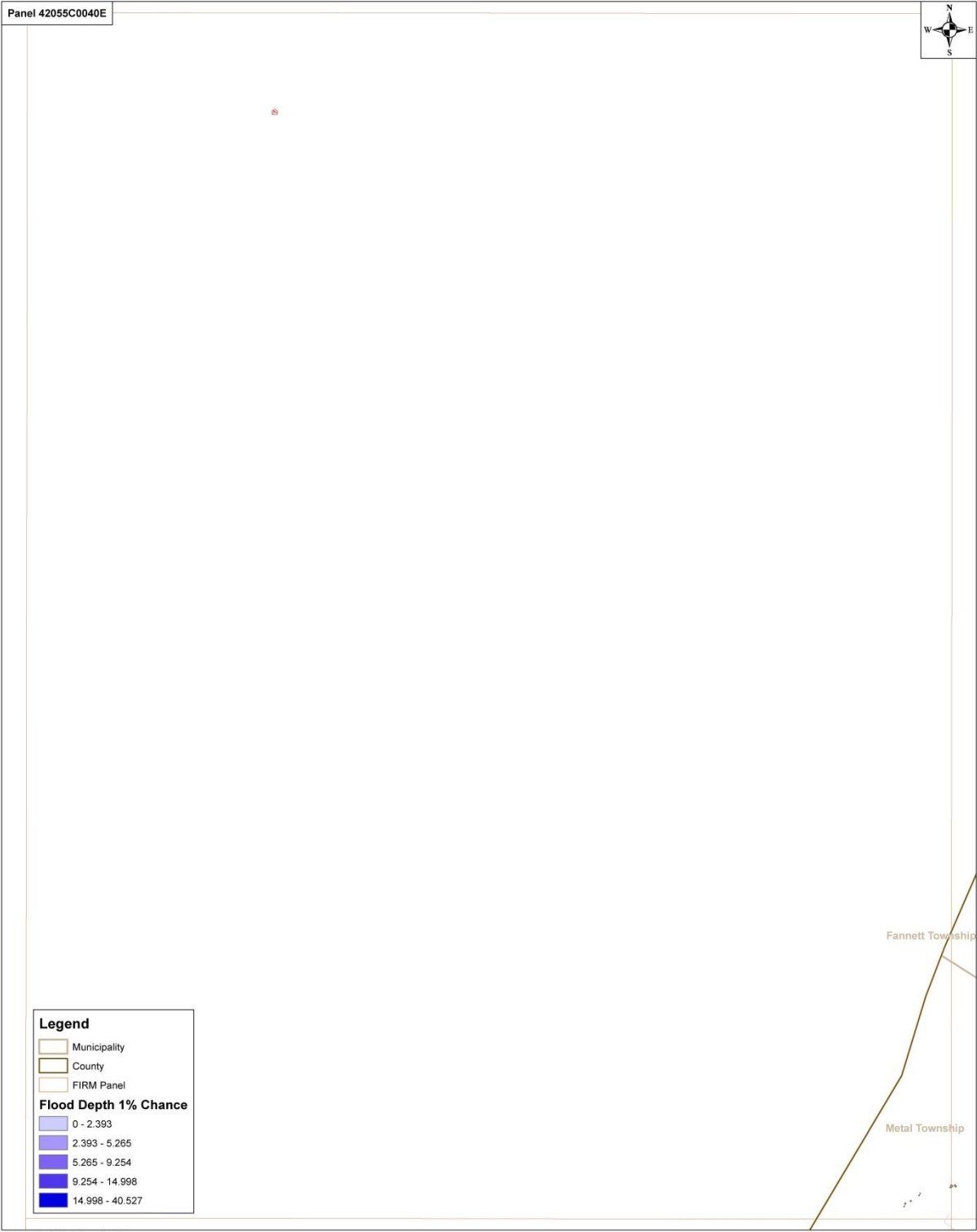


Figure G.3: Quadrant 1, Panel Number 42055C0040E

Appendix G: Franklin County DFIRM

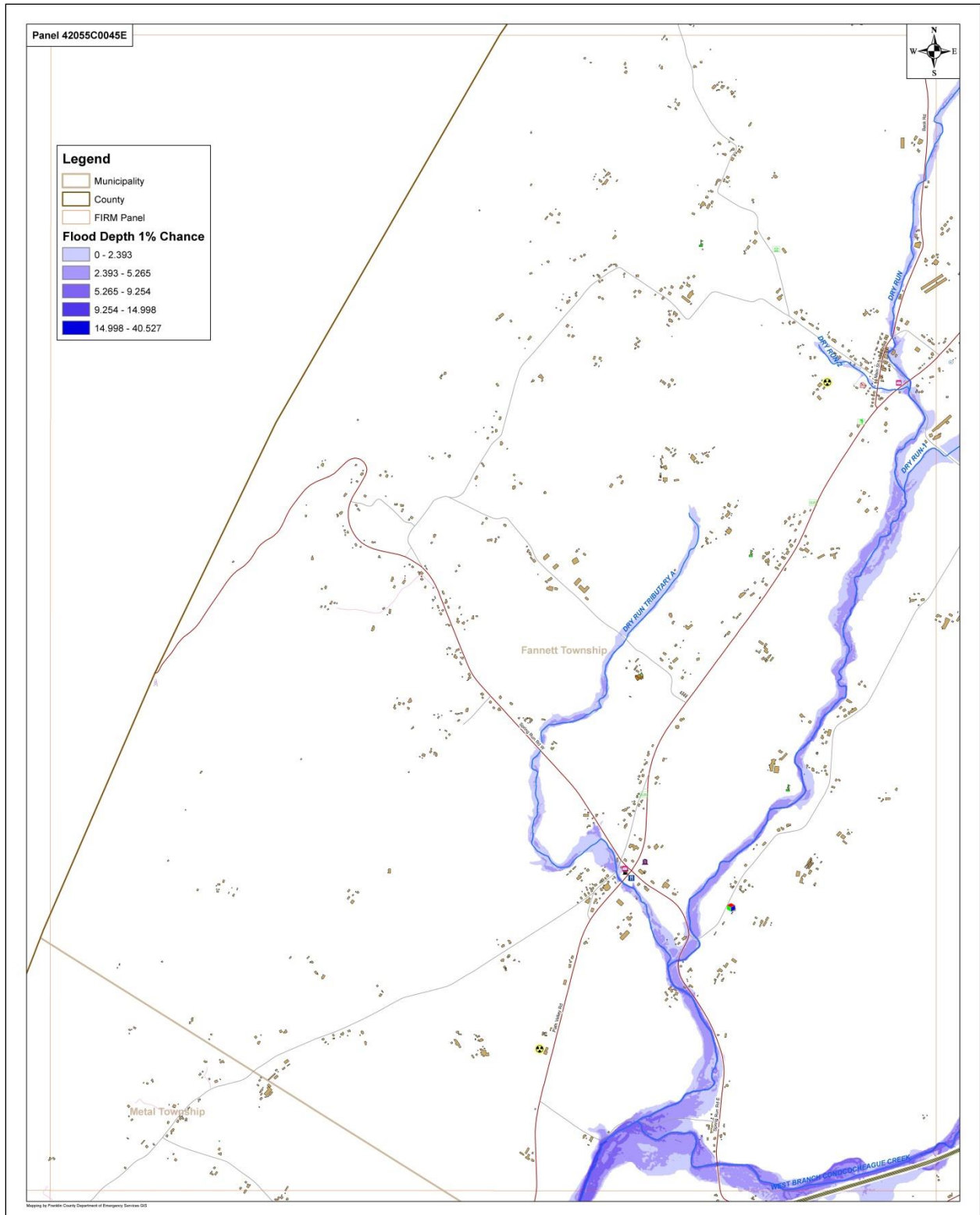


Figure G.4: Quadrant 1, Panel Number 42055C0045E

Appendix G: Franklin County DFIRM

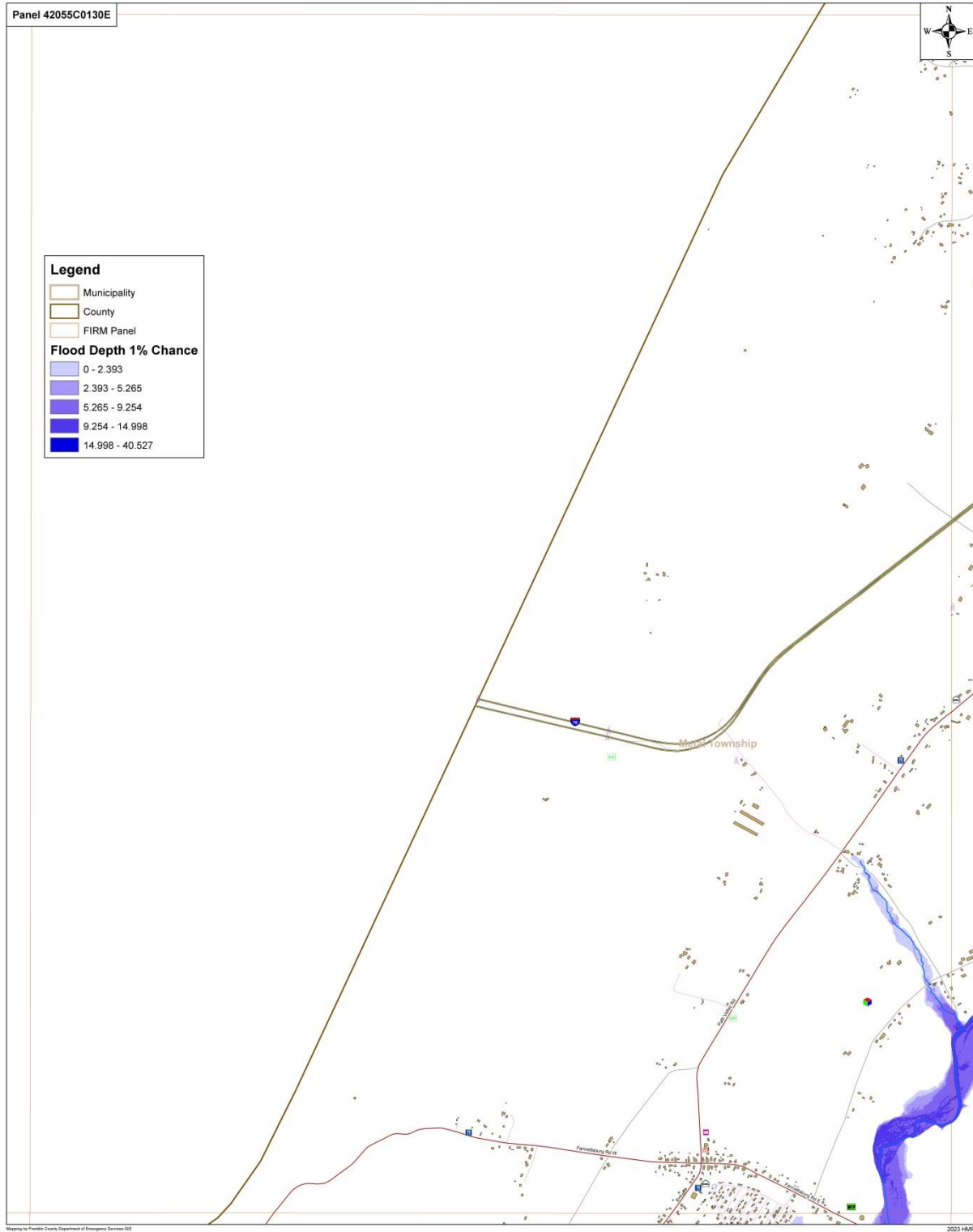


Figure G.5: Quadrant 1, Panel Number 42055C0130E

Appendix G: Franklin County DFIRM

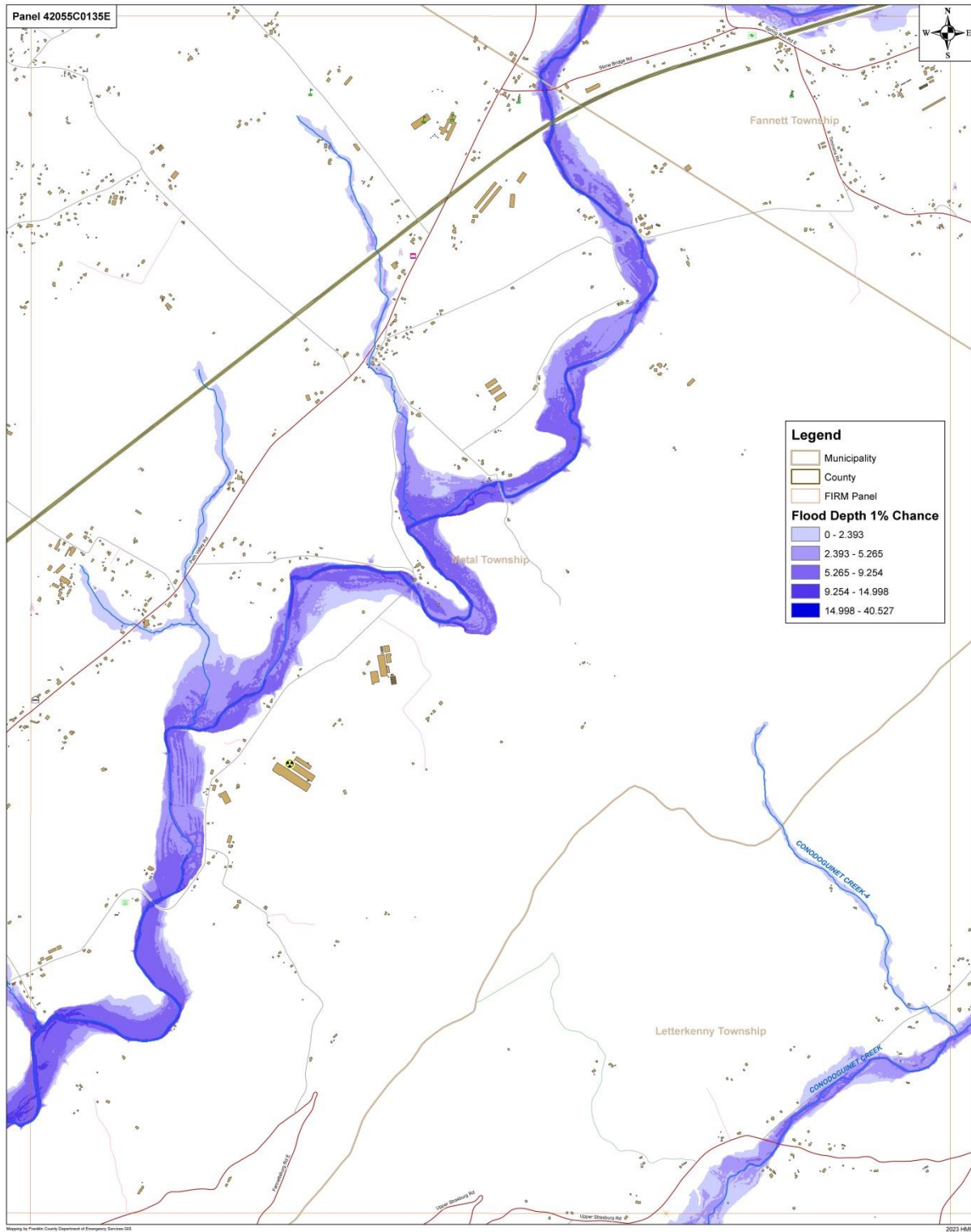


Figure G.6: Quadrant 1, Panel Number 42055C0135E

Appendix G: Franklin County DFIRM

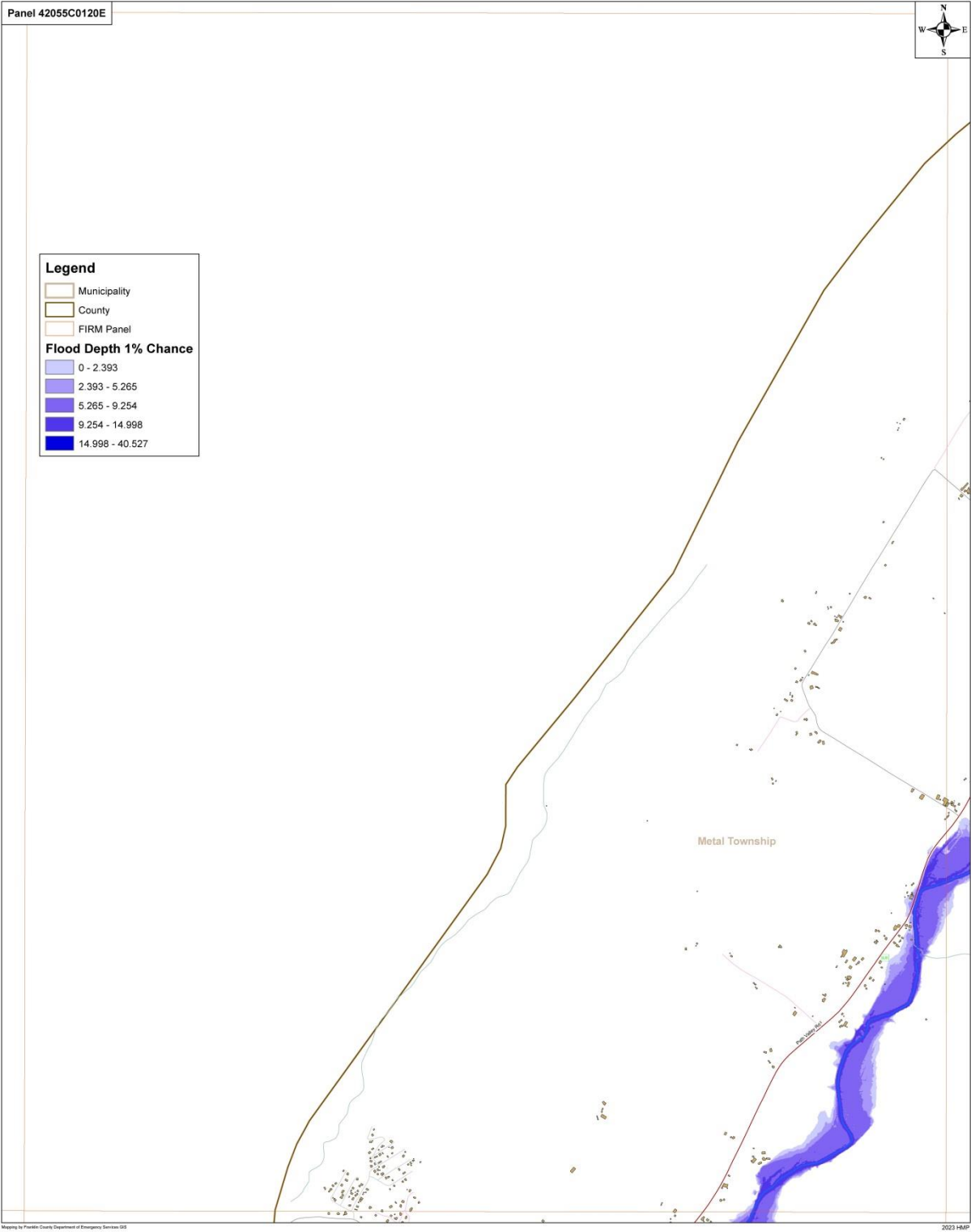


Figure G.7: Quadrant 1, Panel Number 42055C0120E

Appendix G: Franklin County DFIRM

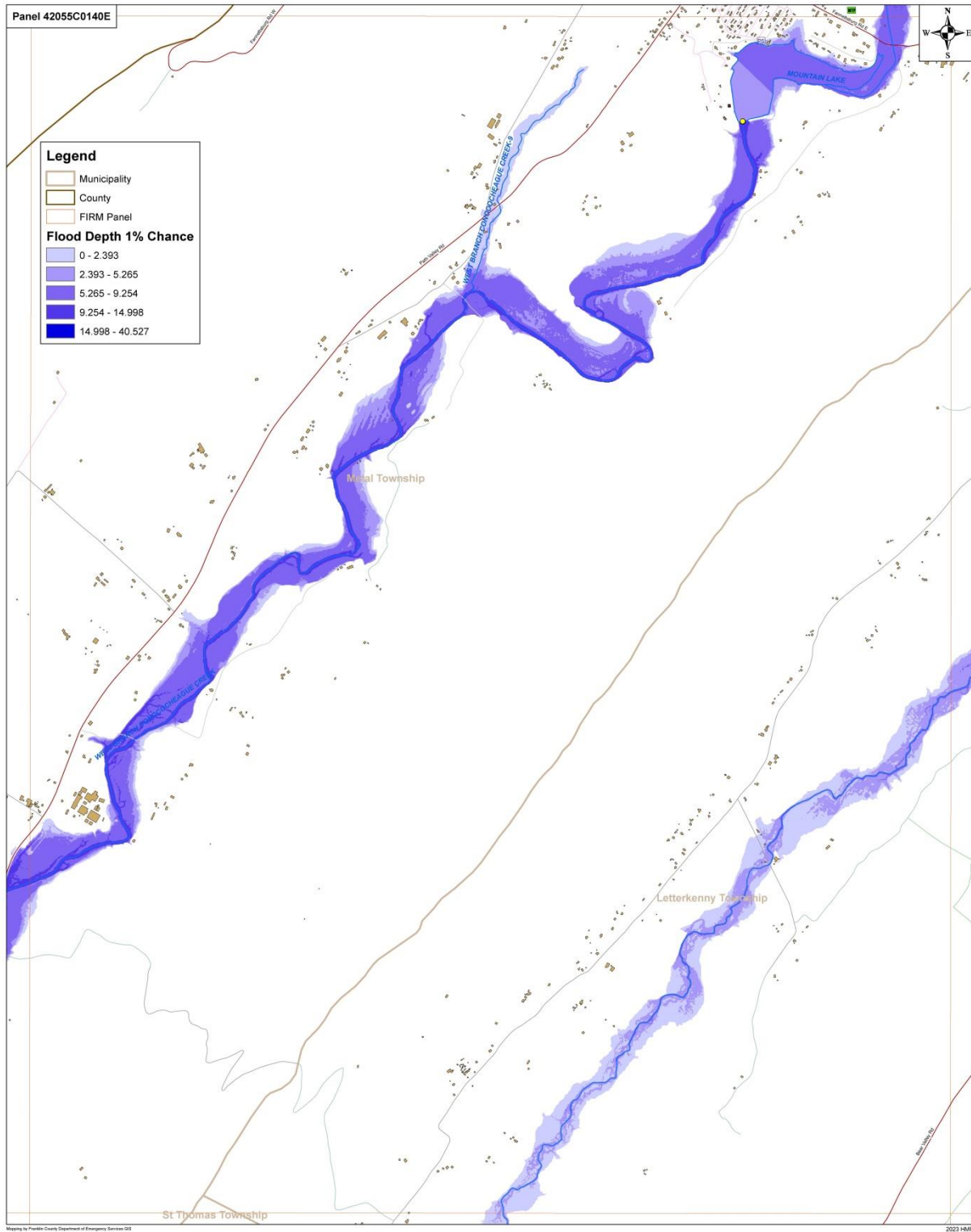


Figure G.8: Quadrant 1, Panel Number 42055C0140E

Appendix G: Franklin County DFIRM

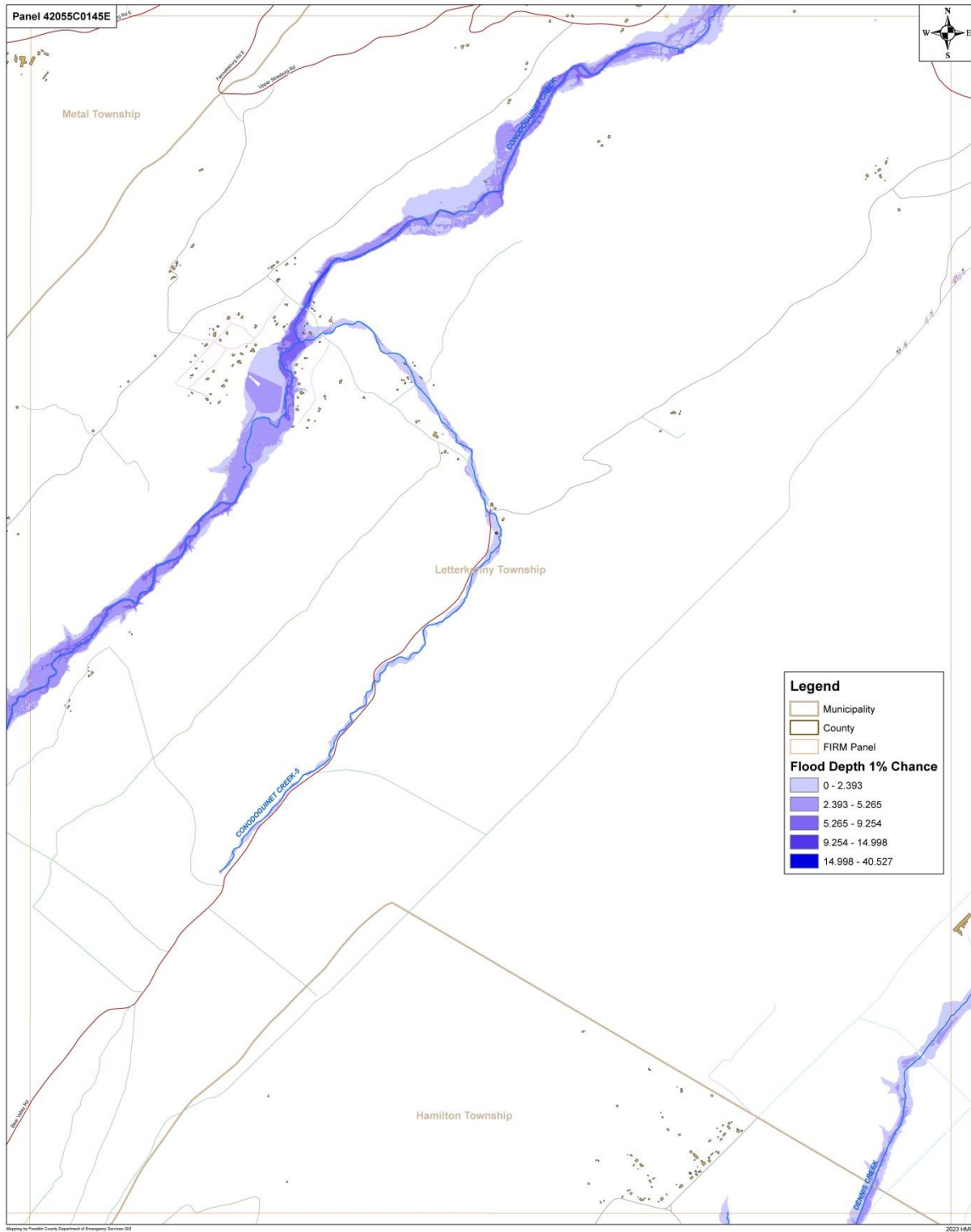


Figure G.9: Quadrant 1, Panel Number 42055C0145E

Appendix G: Franklin County DFIRM

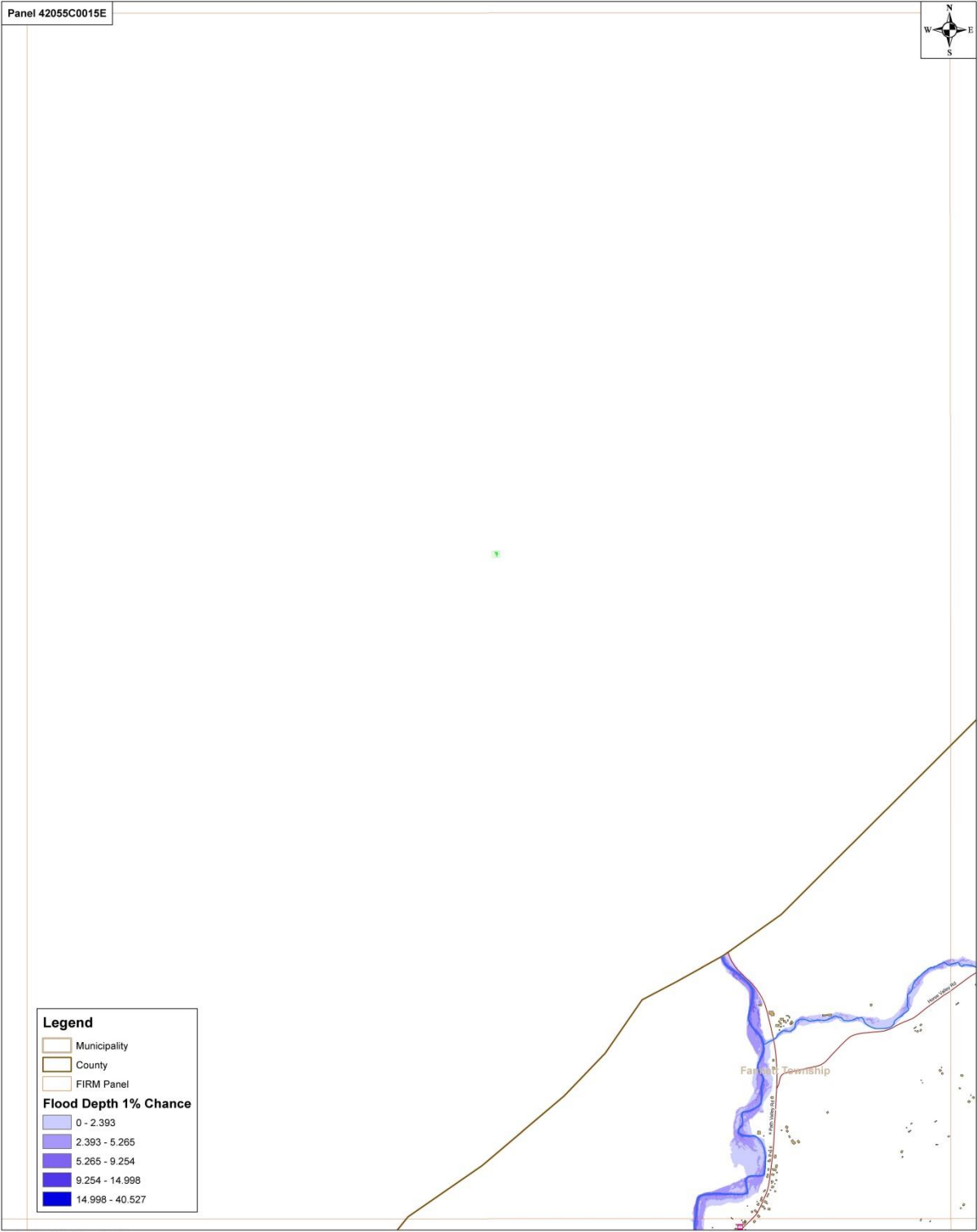


Figure G.10: Quadrant 2, Panel Number 42055C0015E

Appendix G: Franklin County DFIRM

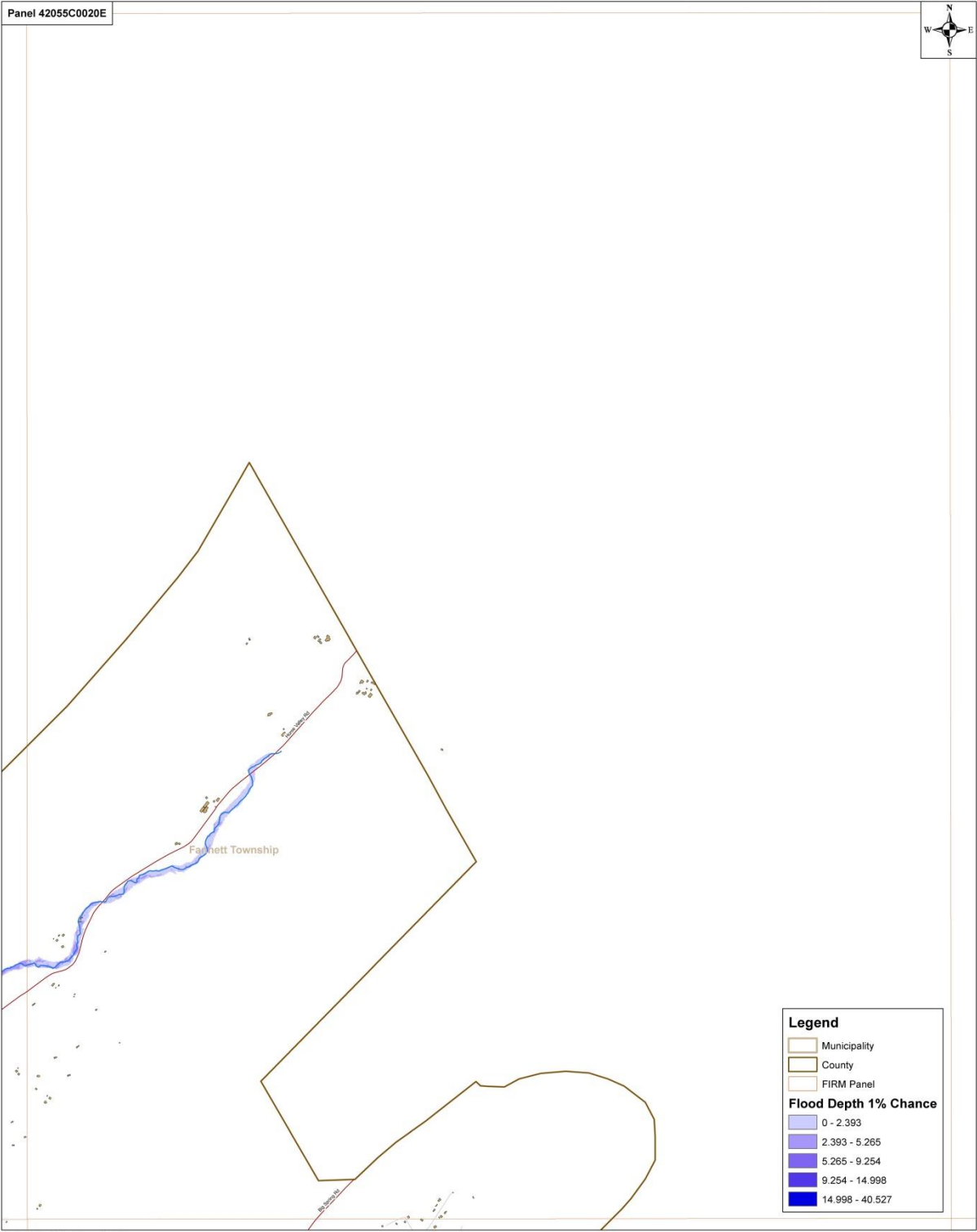


Figure G.11: Quadrant 2, Panel Number 42055C0020E

Appendix G: Franklin County DFIRM

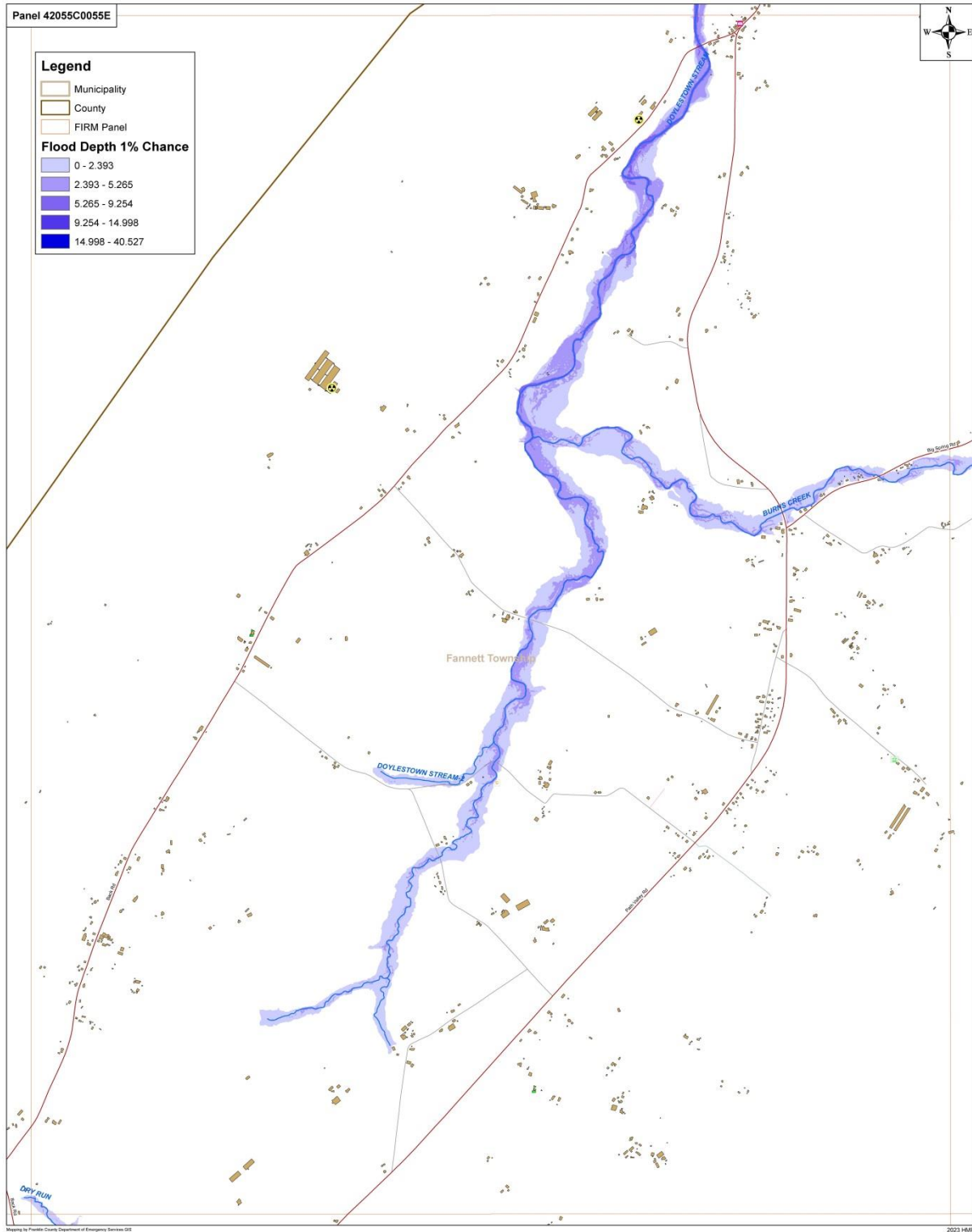


Figure G.12: Quadrant 2, Panel Number 42055C0055E

Appendix G: Franklin County DFIRM

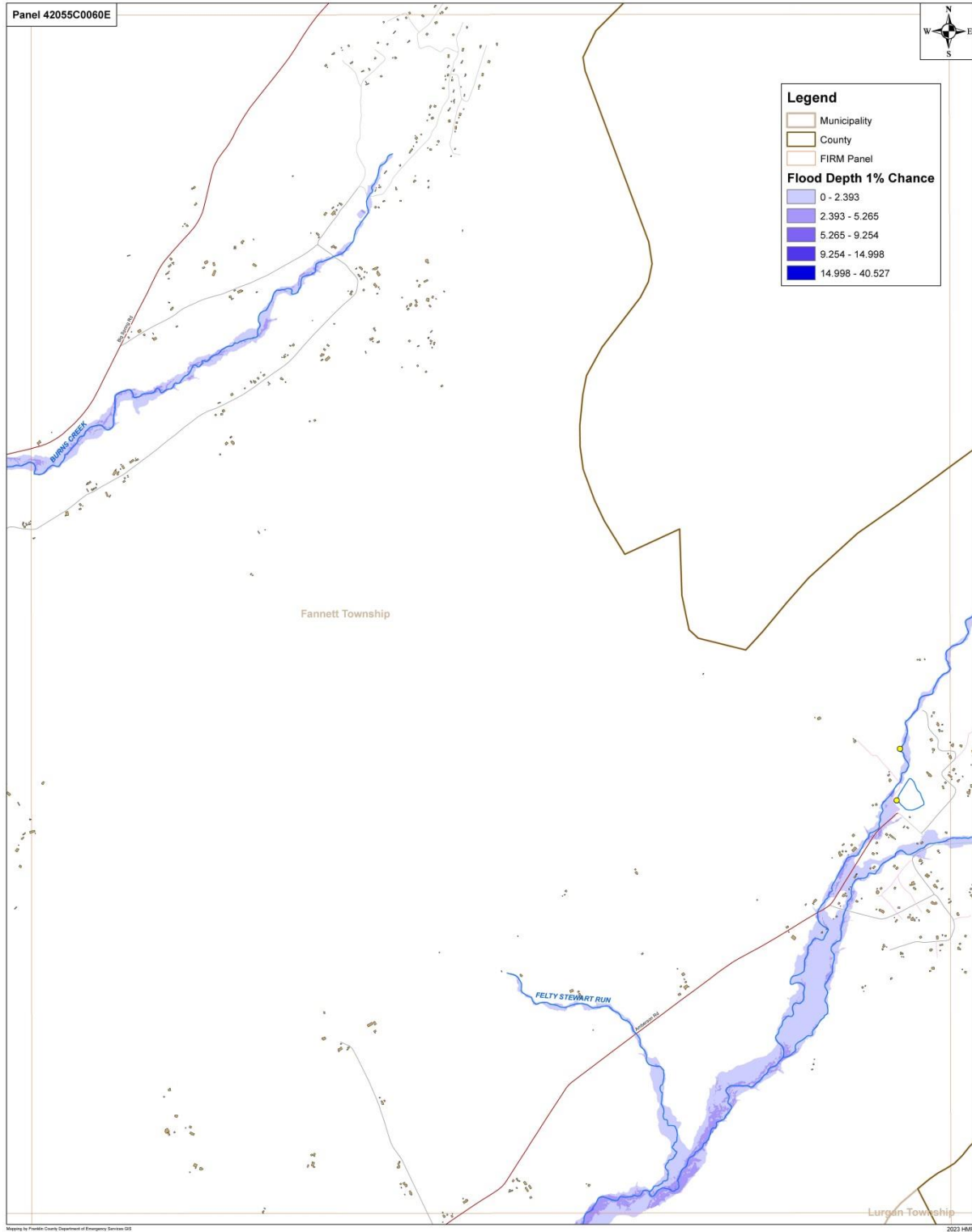


Figure G.13: Quadrant 2, Panel Number 42055C0060E

Appendix G: Franklin County DFIRM

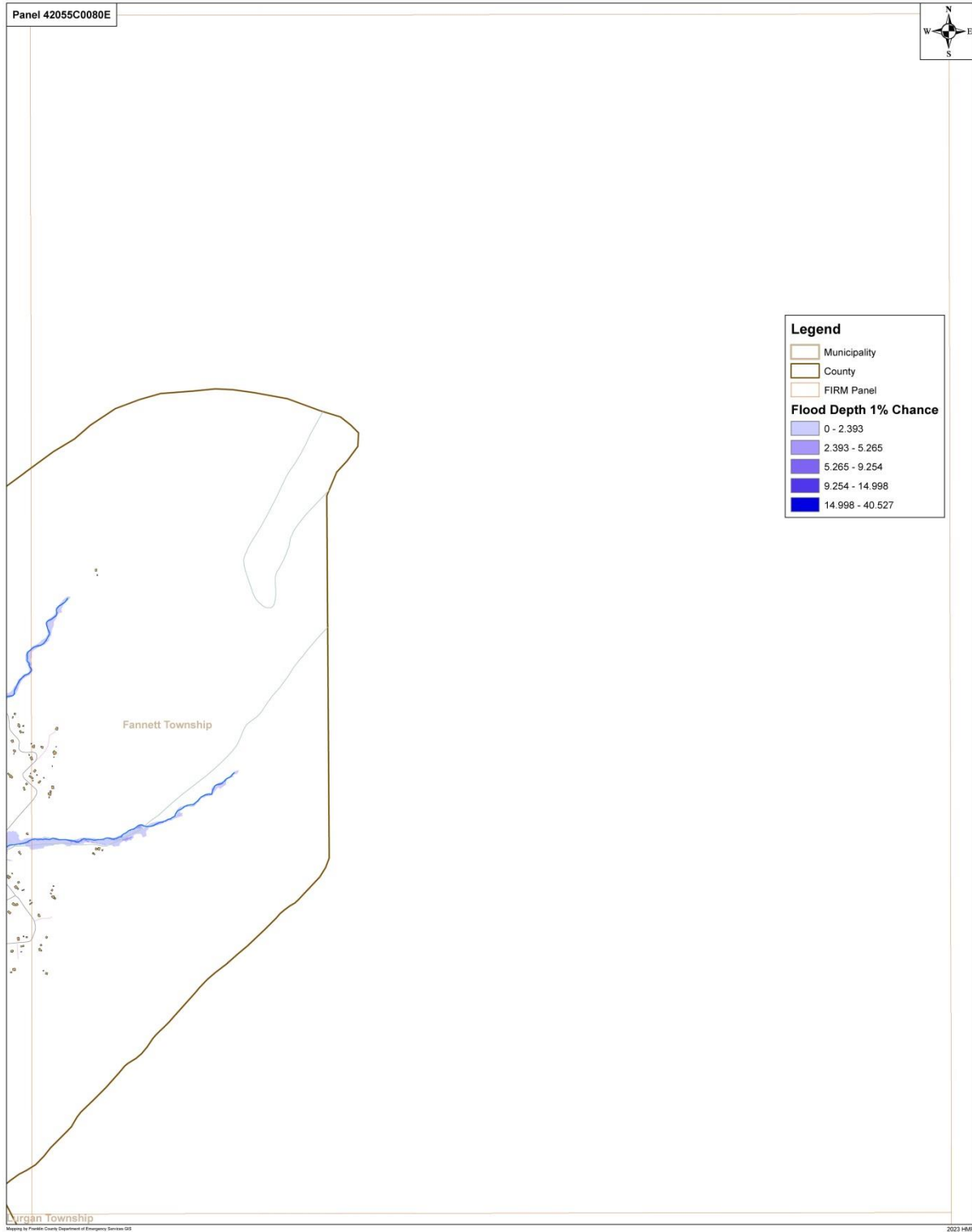


Figure G.14: Quadrant 2, Panel Number 42055C0080E

Appendix G: Franklin County DFIRM

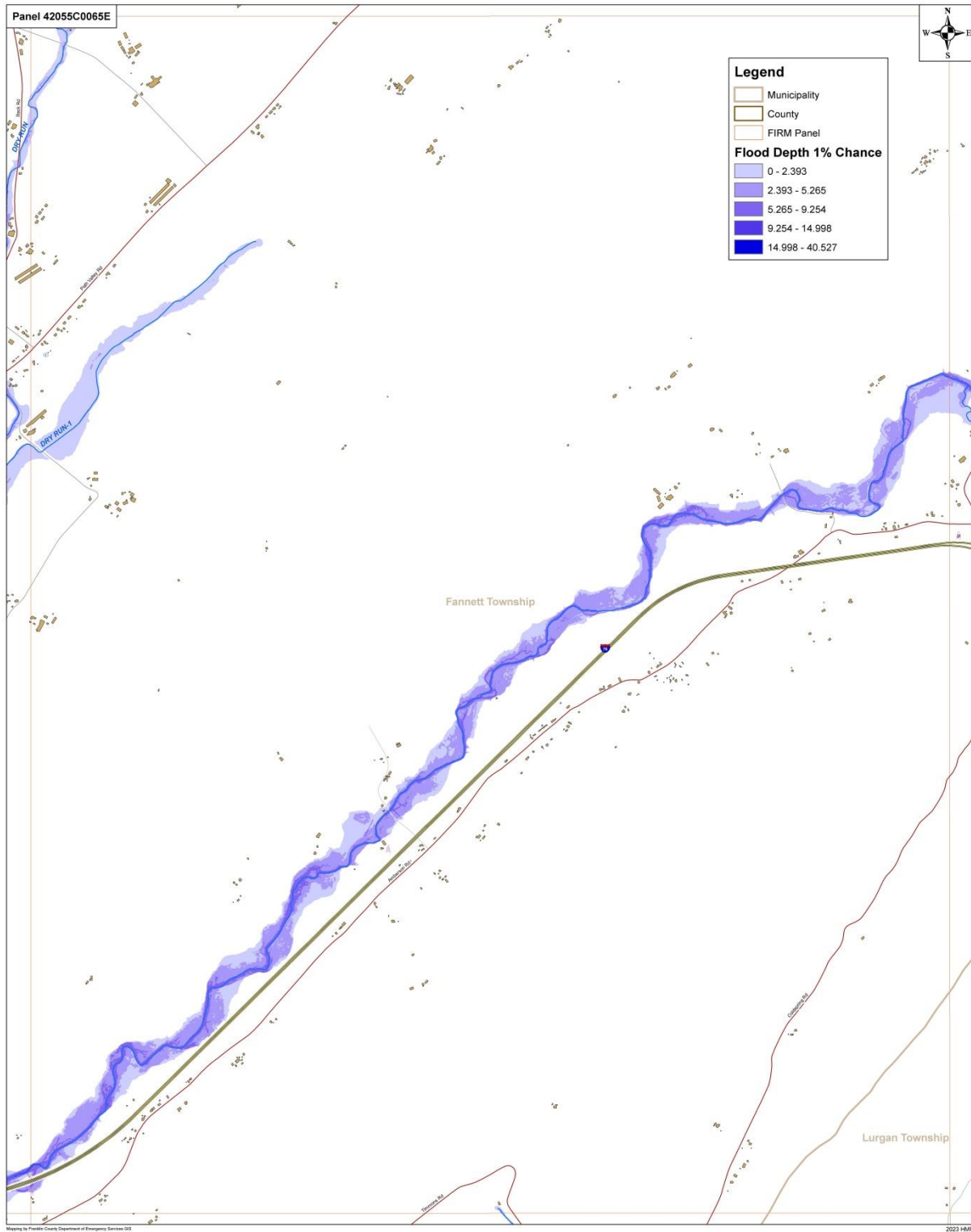


Figure G.15: Quadrant 2, Panel Number 42055C0065E

Panel 42055C0070E

Map of Trout Run showing flood depth for a 1% chance event. The map includes a legend for flood depth ranges (0 to 40.527) and a north arrow. The map shows Trout Run flowing through Lurgan Township and Trout Run Township, with flood depths indicated by color shading.

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

xvi

Appendix G: Franklin County DFIRM

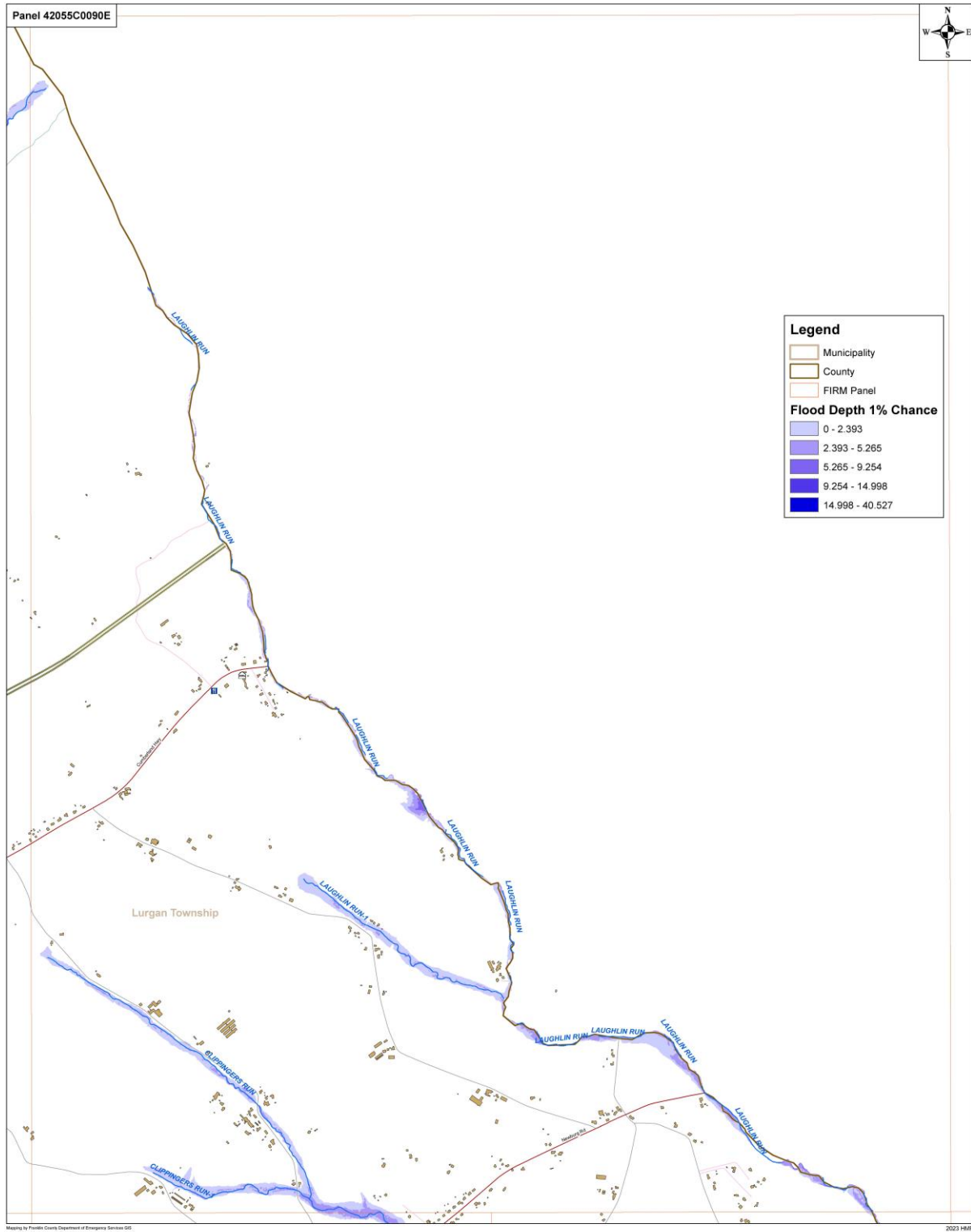


Figure G.17: Quadrant 2, Panel Number 42055C0090E

Appendix G: Franklin County DFIRM

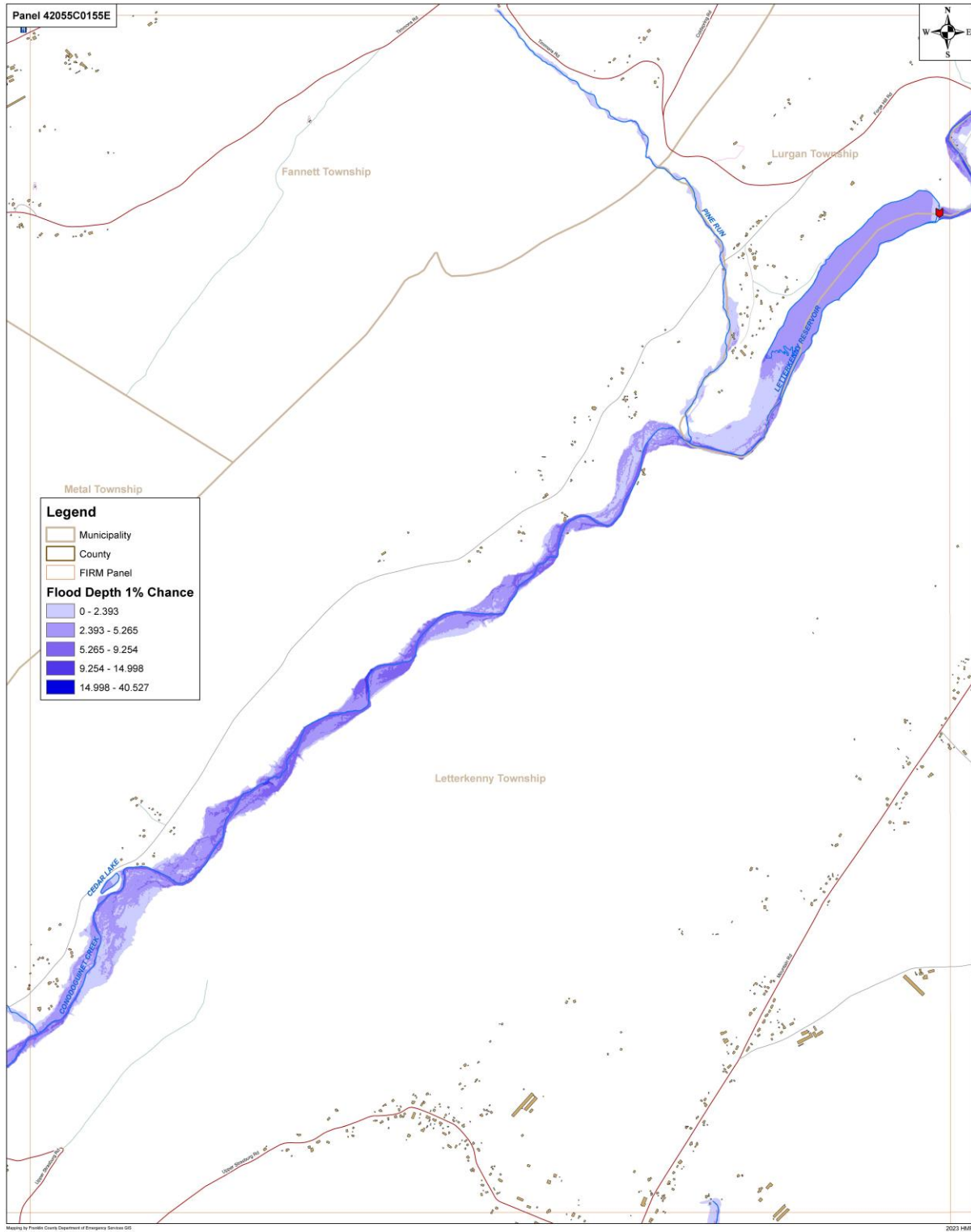


Figure G.18: Quadrant 2, Panel Number 42055C0155E

Appendix G: Franklin County DFIRM

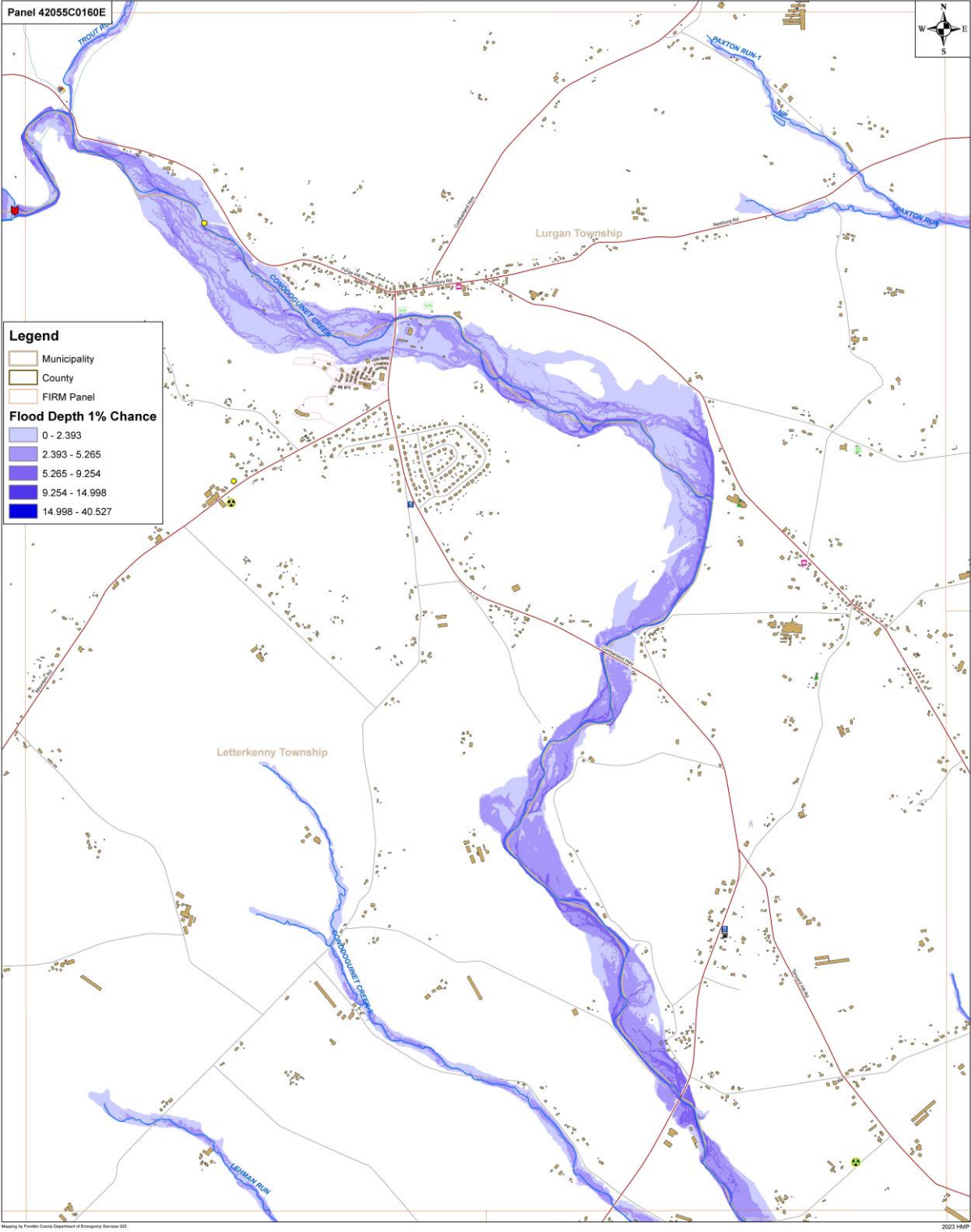


Figure G.19: Quadrant 2, Panel Number 42055C0160E

Appendix G: Franklin County DFIRM

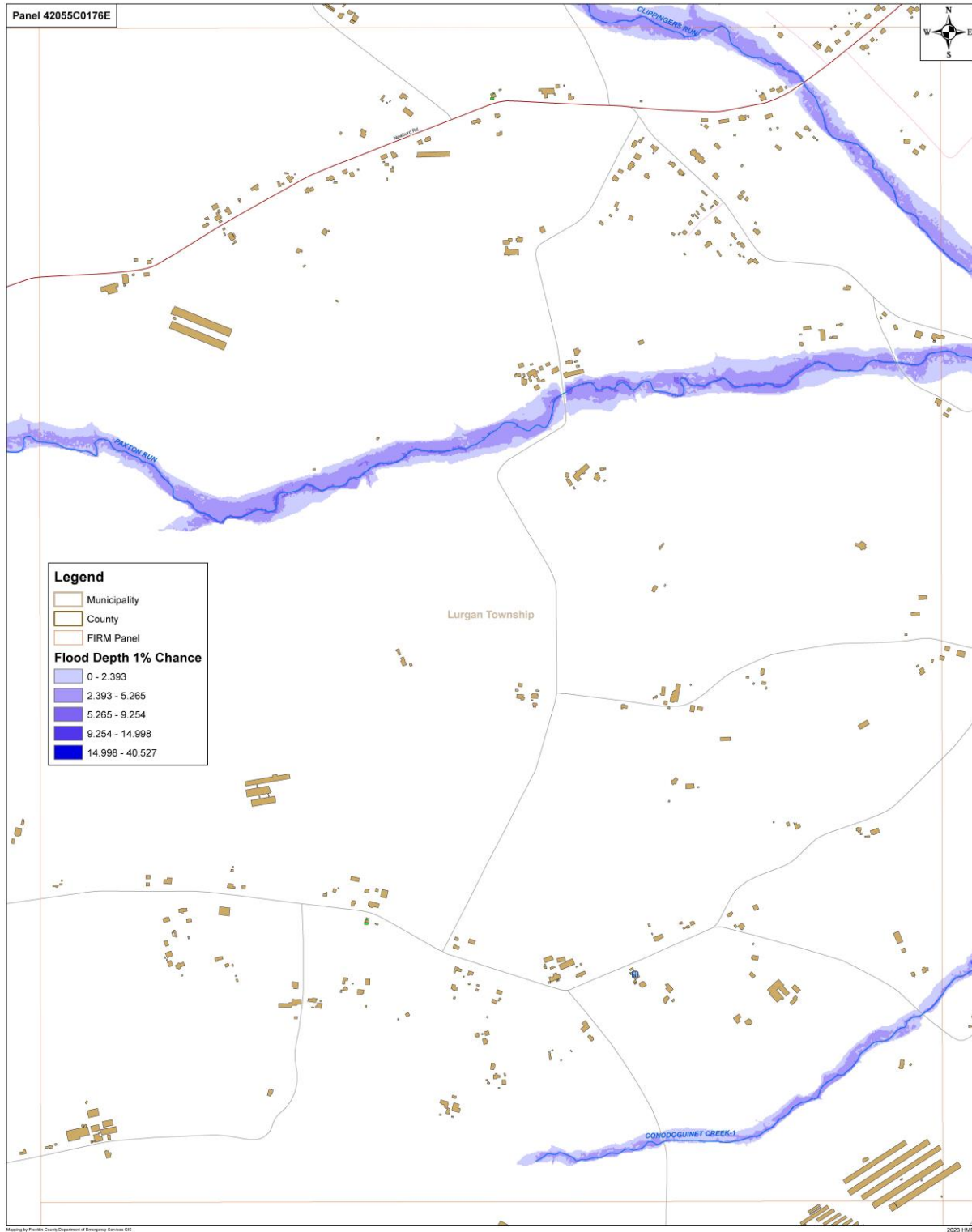


Figure G.20: Quadrant 2, Panel Number 42055C0176E

Appendix G: Franklin County DFIRM

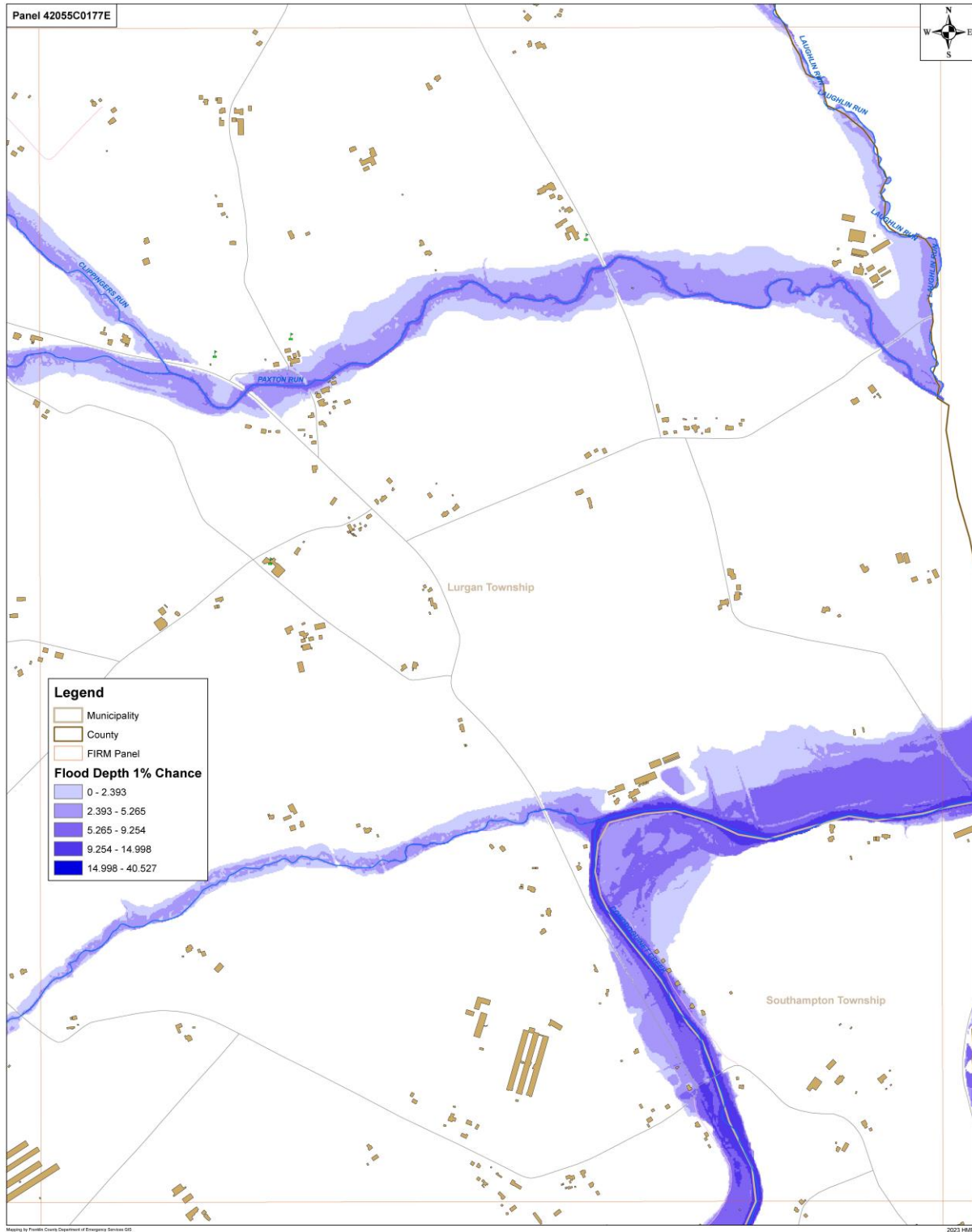


Figure G.21: Quadrant 2, Panel Number 42055C0177E

Appendix G: Franklin County DFIRM

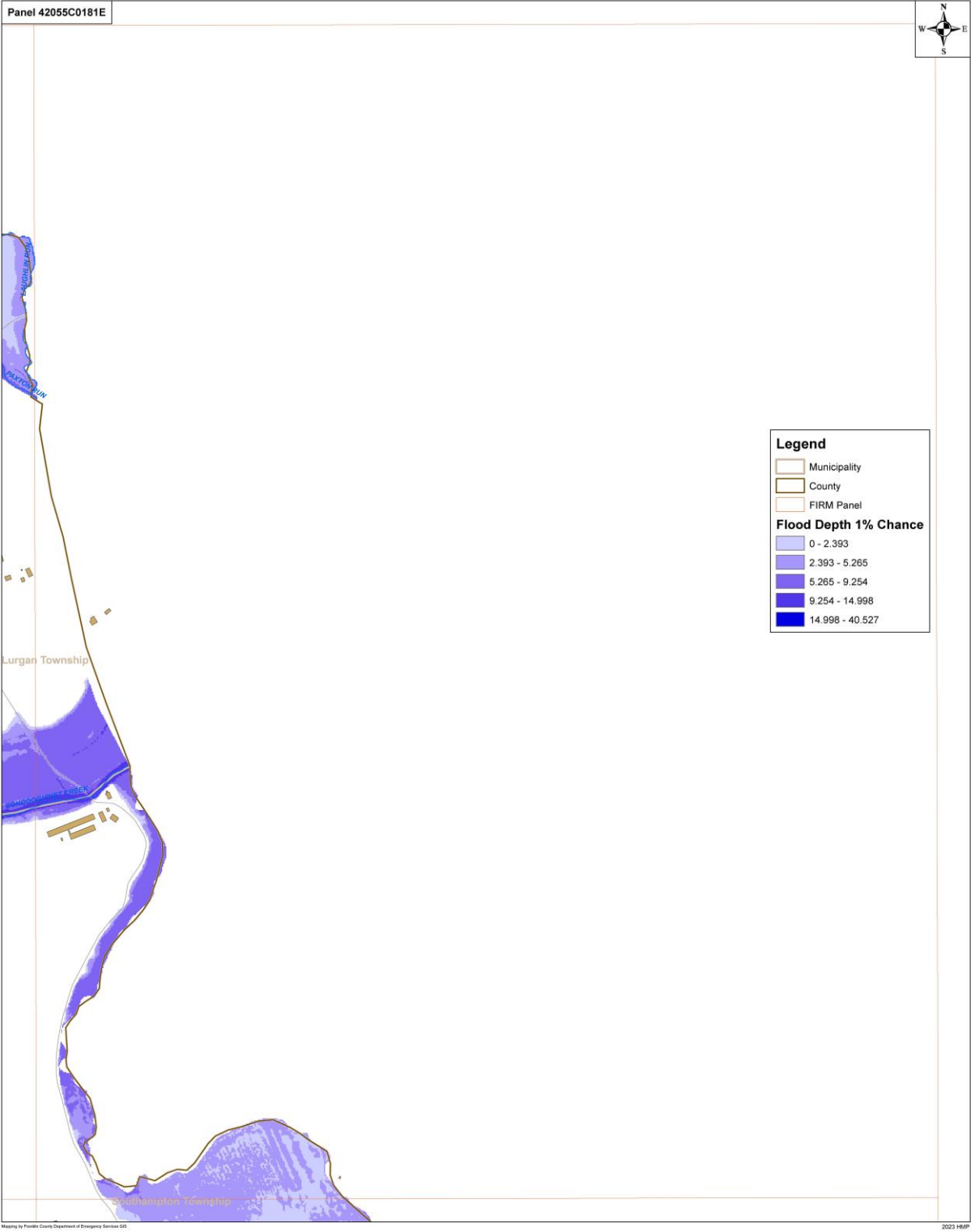


Figure G.22: Quadrant 2, Panel Number 42055C0181E

Appendix G: Franklin County DFIRM

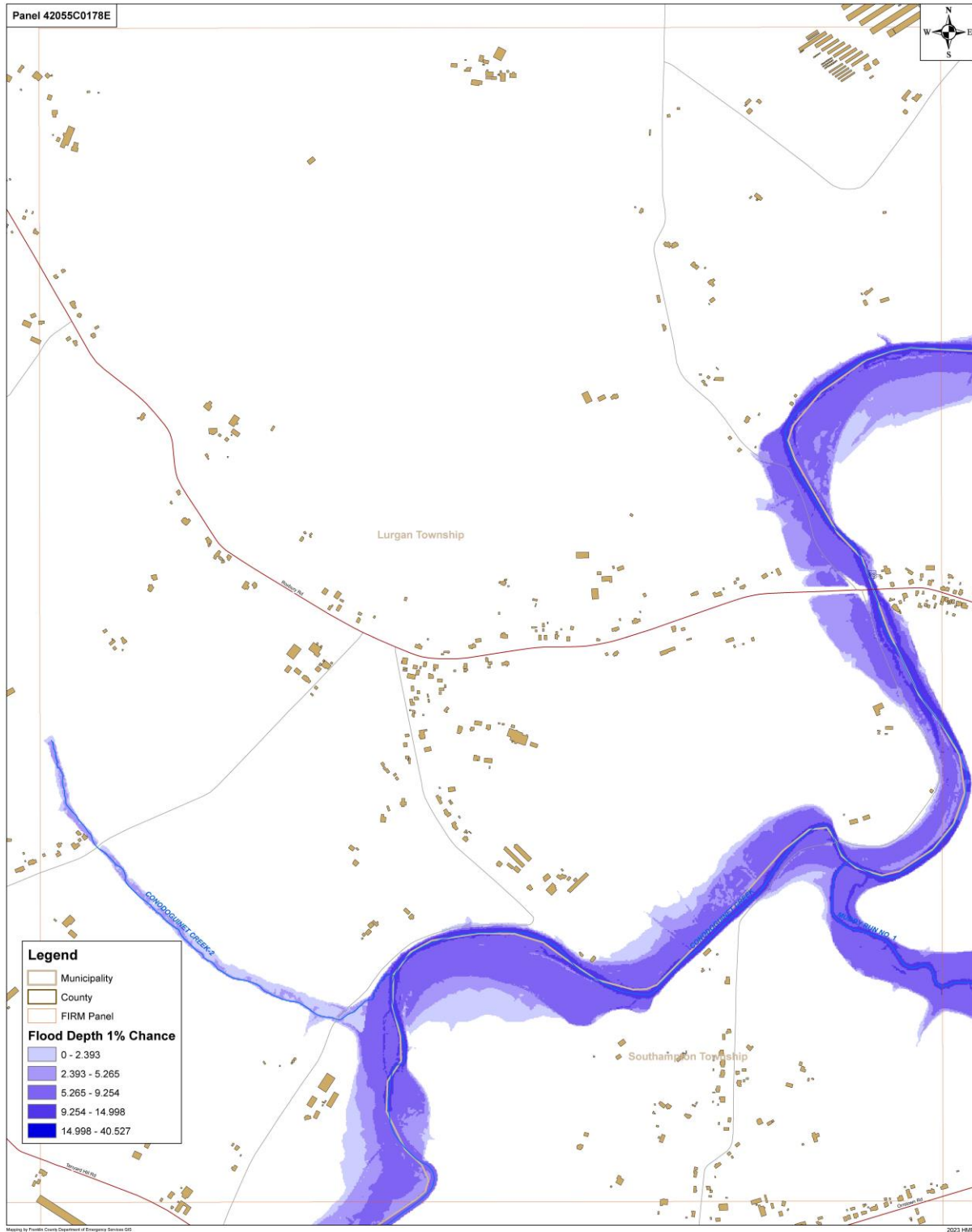


Figure G.23: Quadrant 2, Panel Number 42055C0178E

Appendix G: Franklin County DFIRM

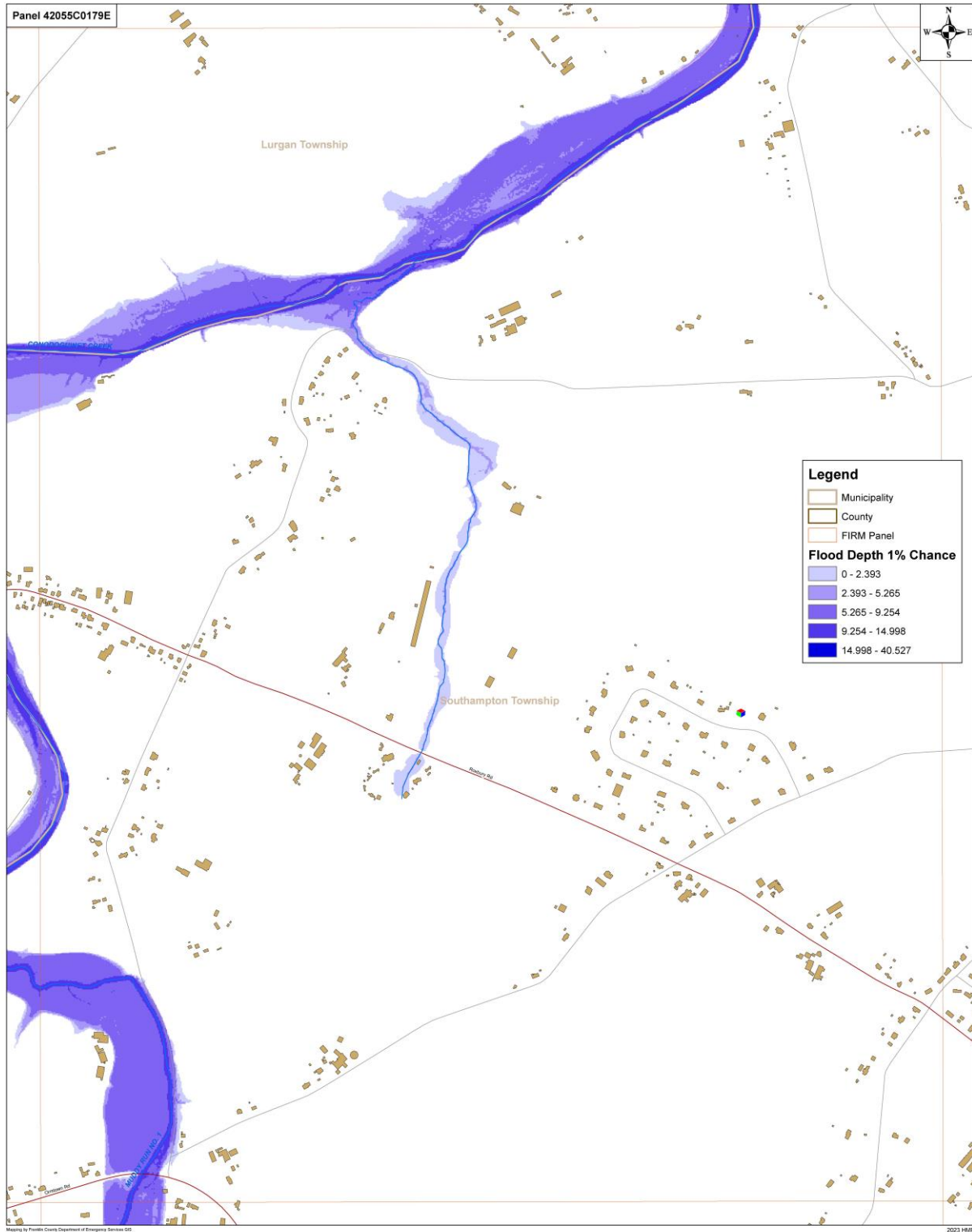


Figure G.24: Quadrant 2, Panel Number 42055C0179E

Appendix G: Franklin County DFIRM

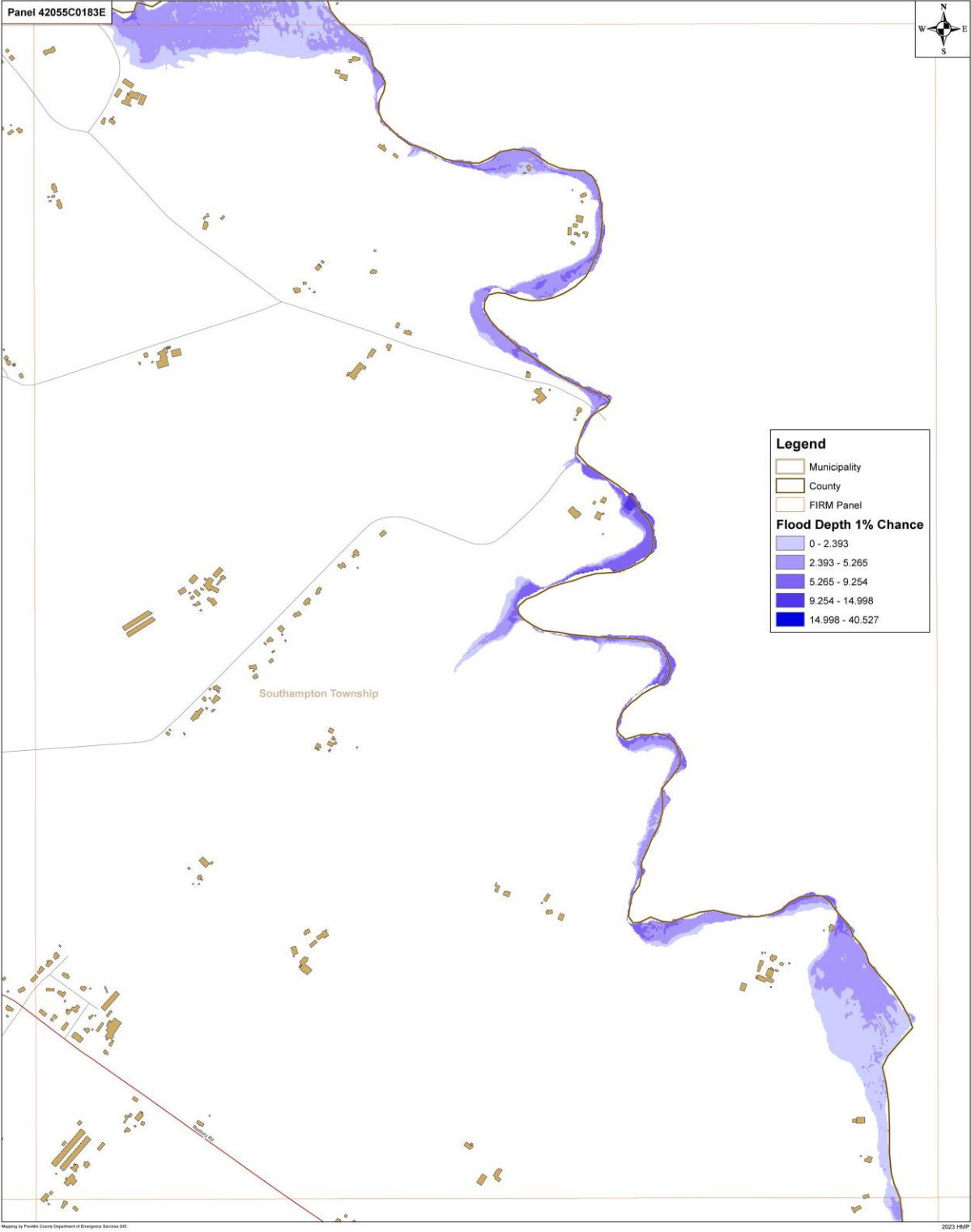


Figure G.25: Quadrant 2, Panel Number 42055C0183E

Appendix G: Franklin County DFIRM

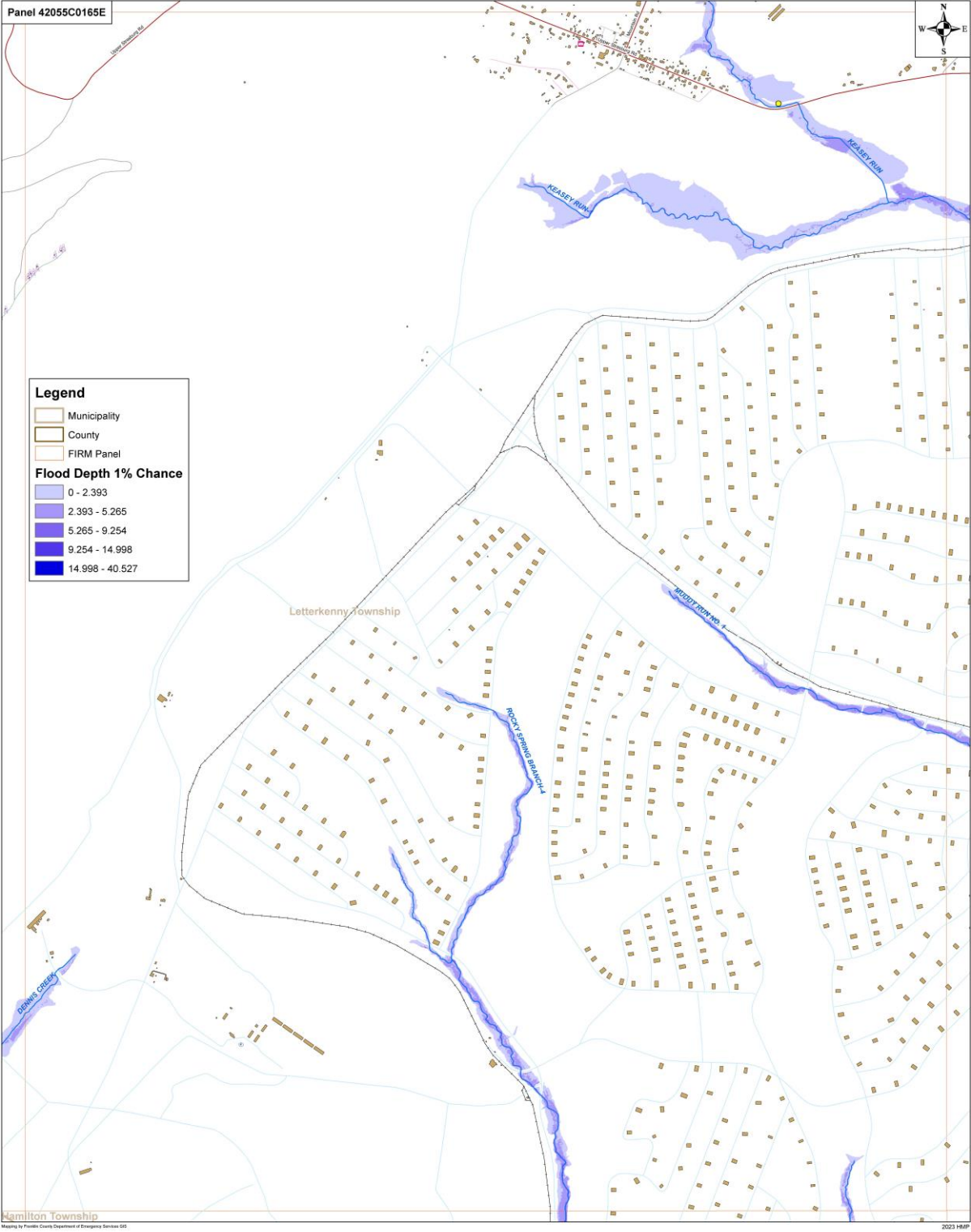


Figure G.26: Quadrant 2, Panel Number 42055C0165E

Appendix G: Franklin County DFIRM

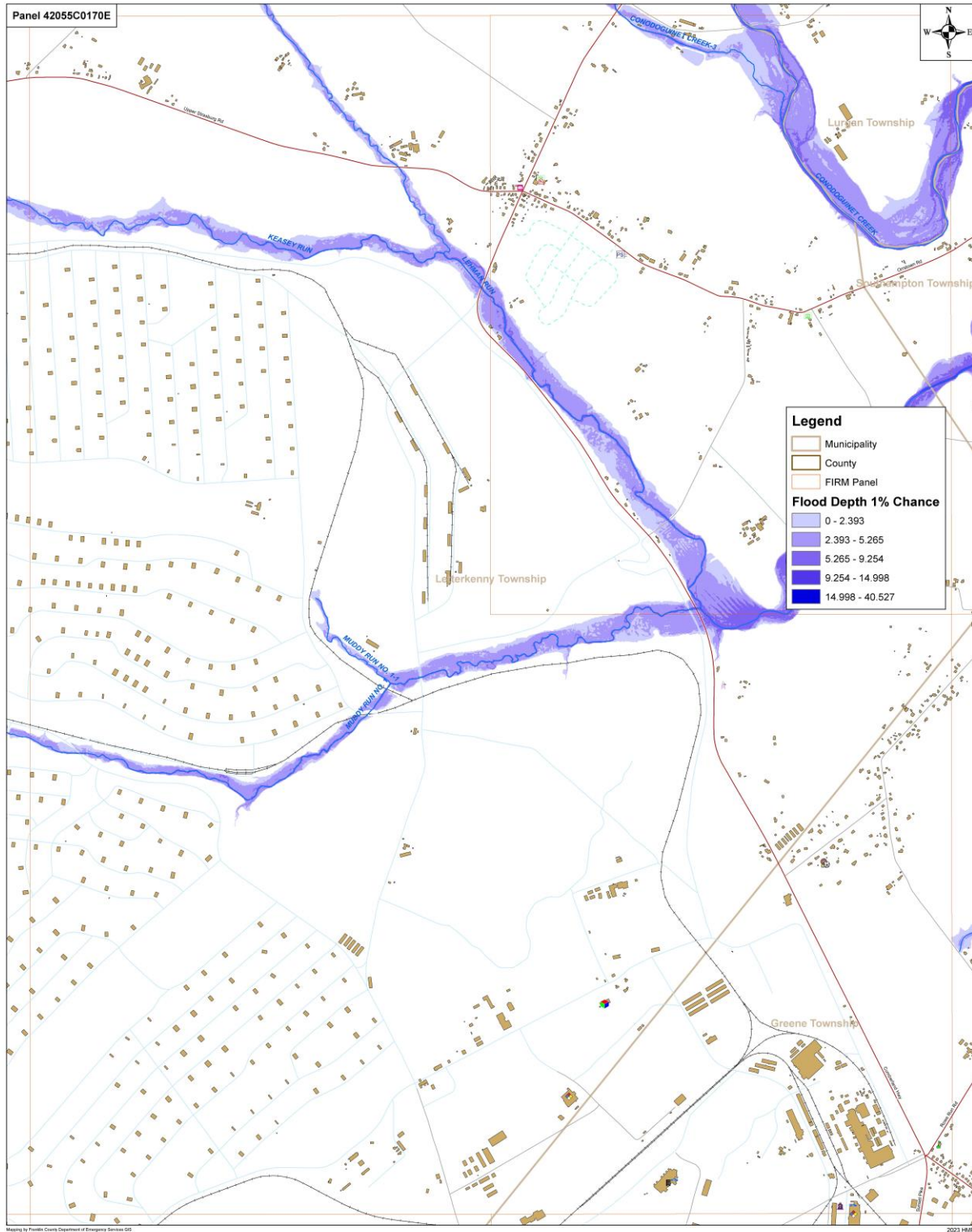


Figure G.27: Quadrant 2, Panel Number 42055C0170E

Appendix G: Franklin County DFIRM

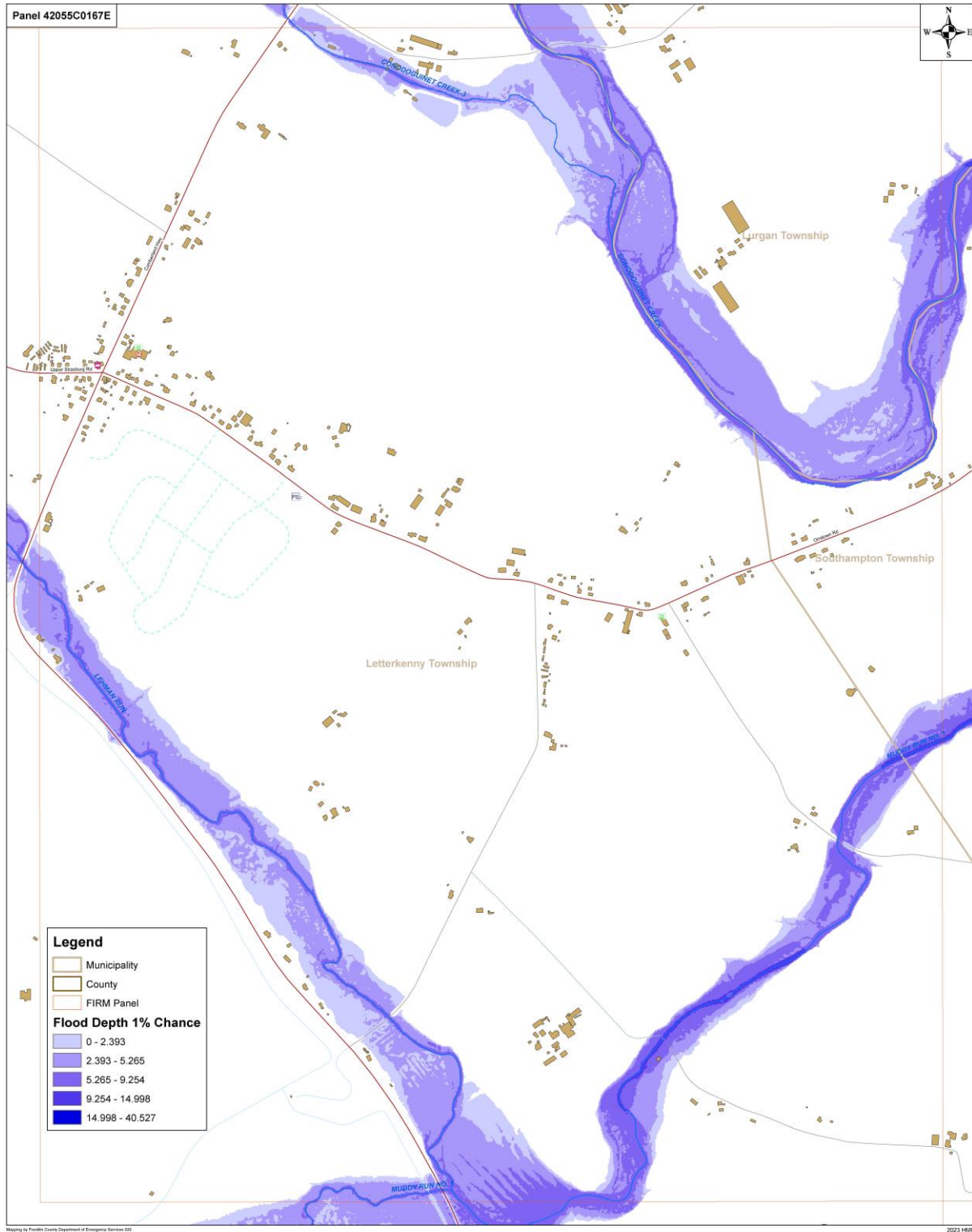


Figure G.28: Quadrant 2, Panel Number 42055C0167E

Appendix G: Franklin County DFIRM

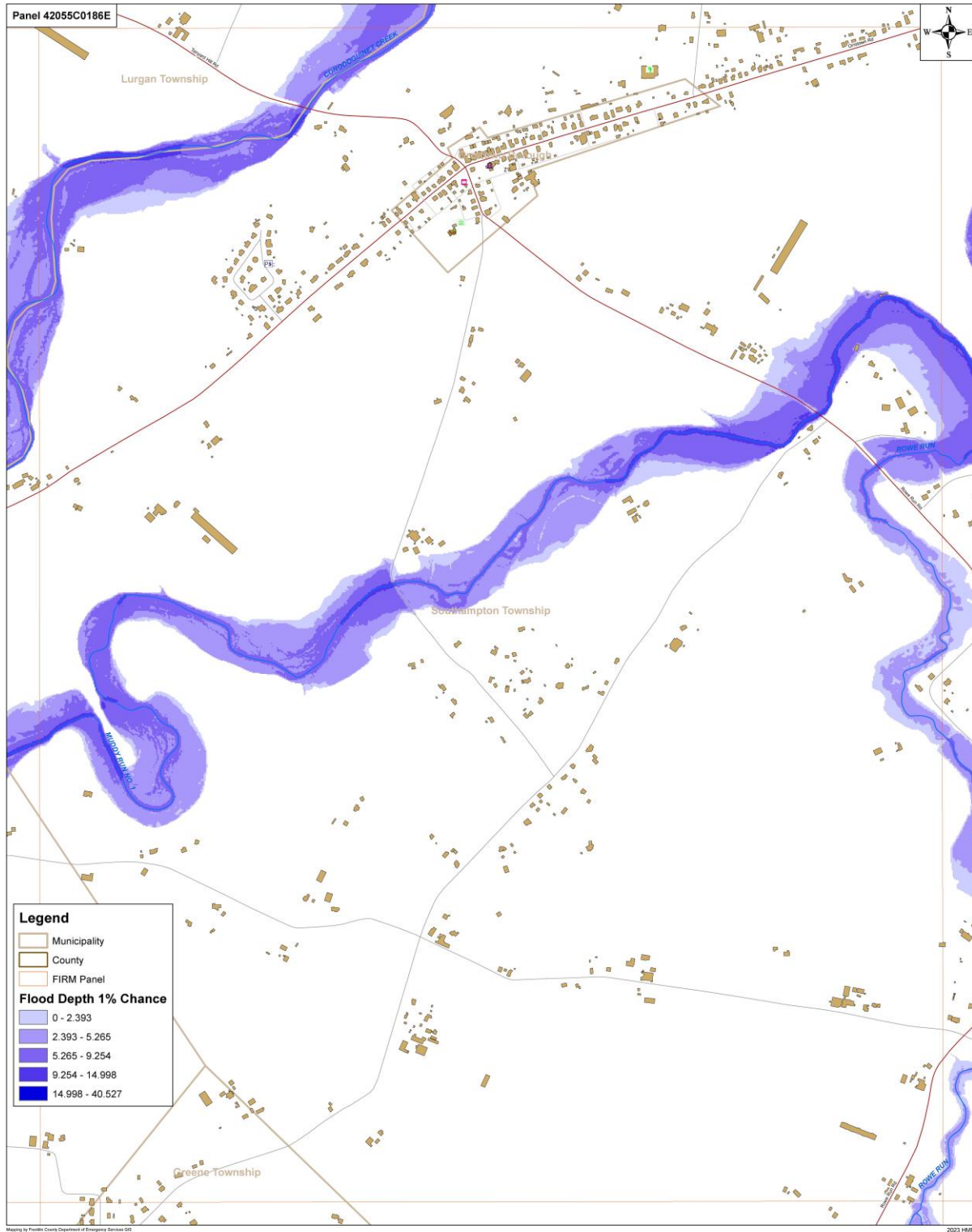


Figure G.29: Quadrant 2, Panel Number 42055C0186E

Appendix G: Franklin County DFIRM



Figure G.30: Quadrant 2, Panel Number 42055C0187E

Appendix G: Franklin County DFIRM

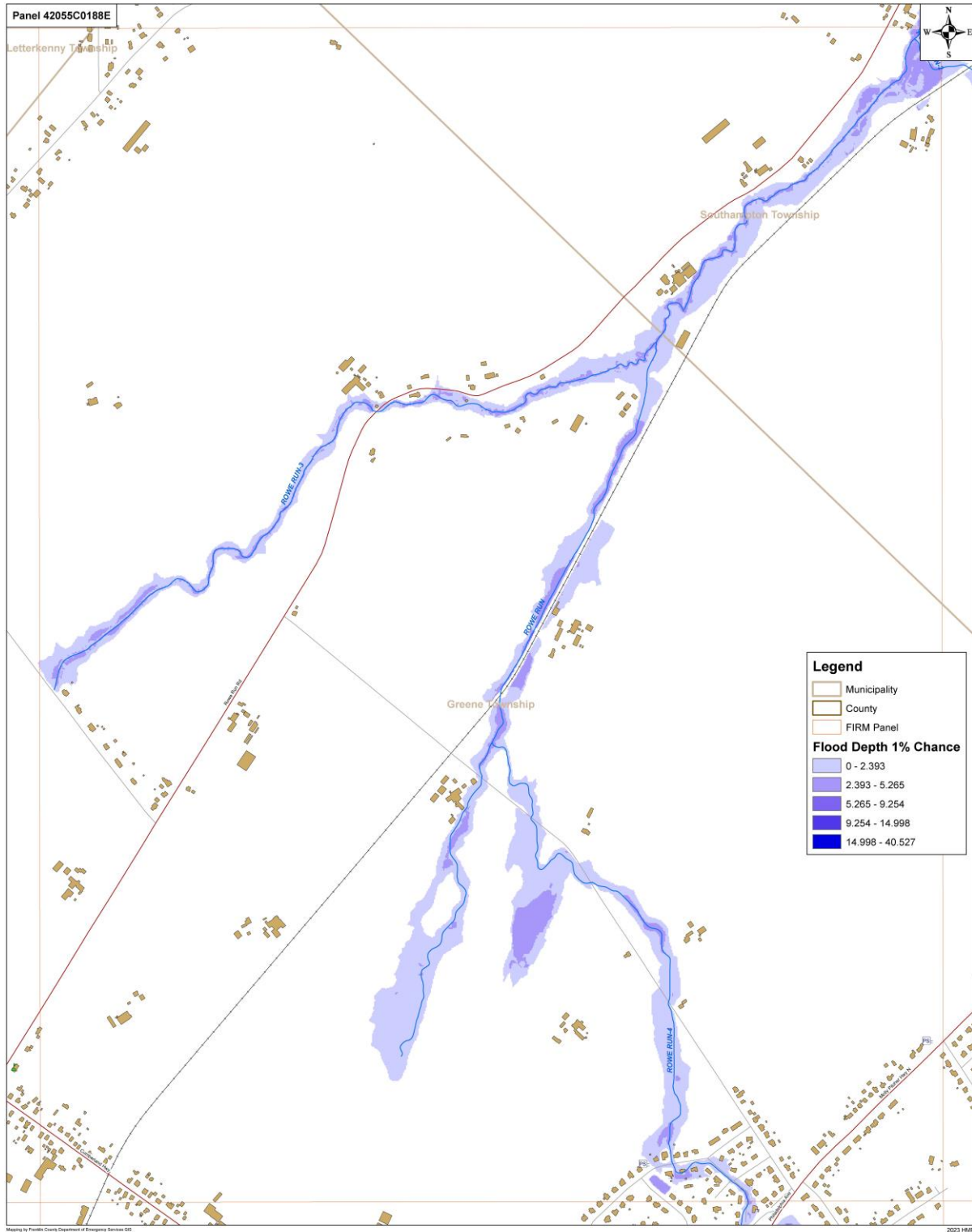


Figure G.31: Quadrant 2, Panel Number 42055C0188E

Appendix G: Franklin County DFIRM

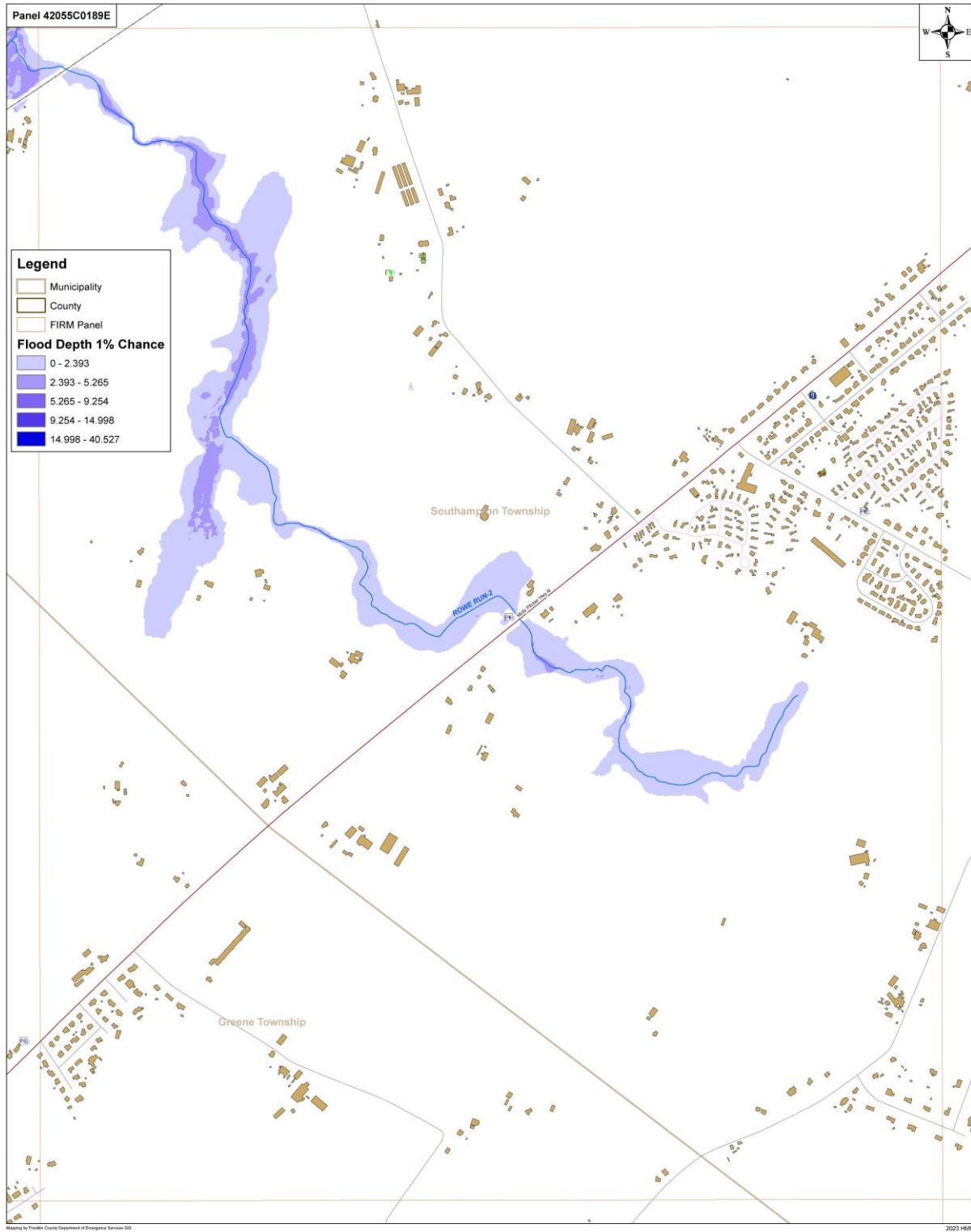


Figure G.32: Quadrant 2, Panel Number 42055C0189E

Appendix G: Franklin County DFIRM

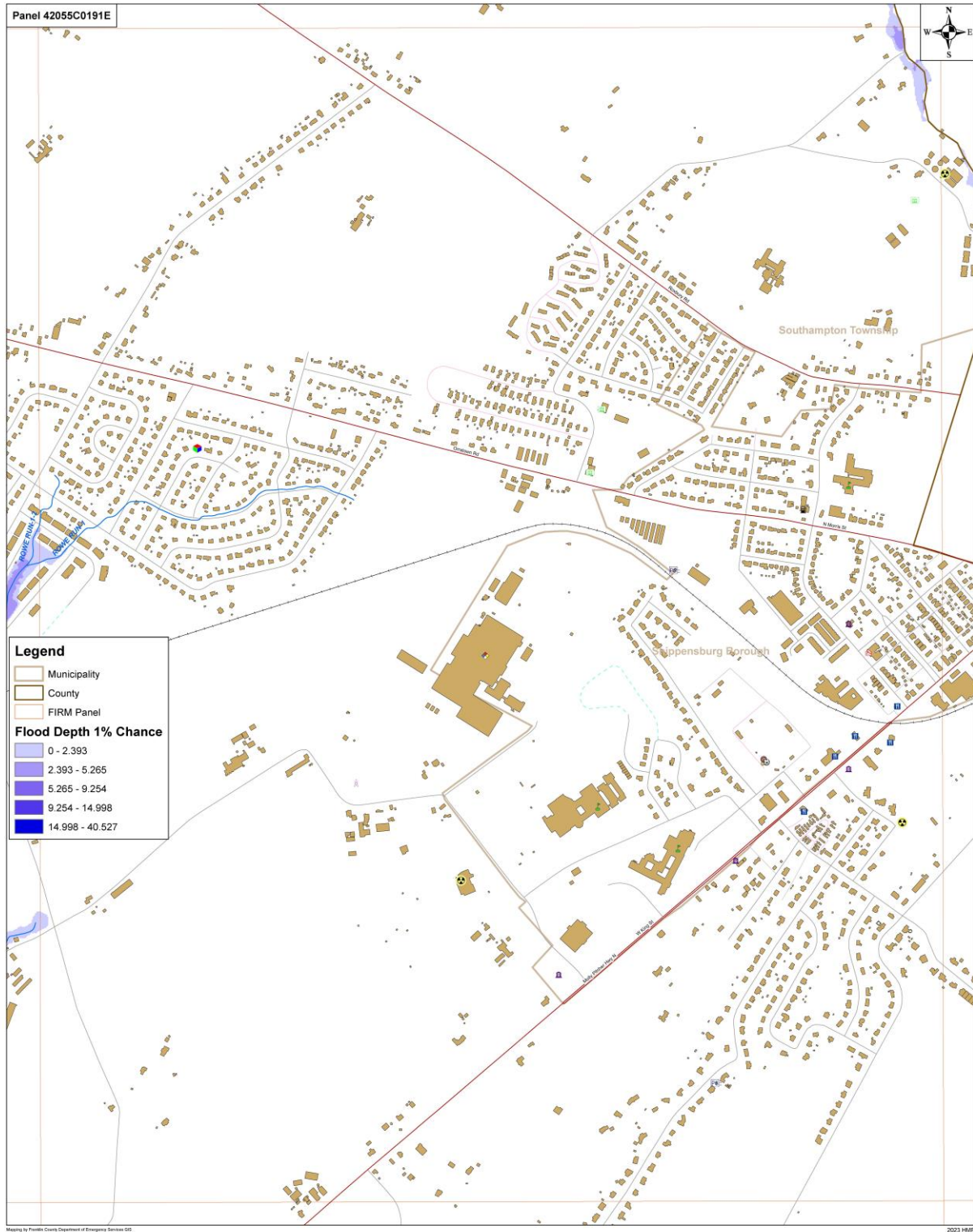


Figure G.33: Quadrant 2, Panel Number 42055C0191E

Appendix G: Franklin County DFIRM

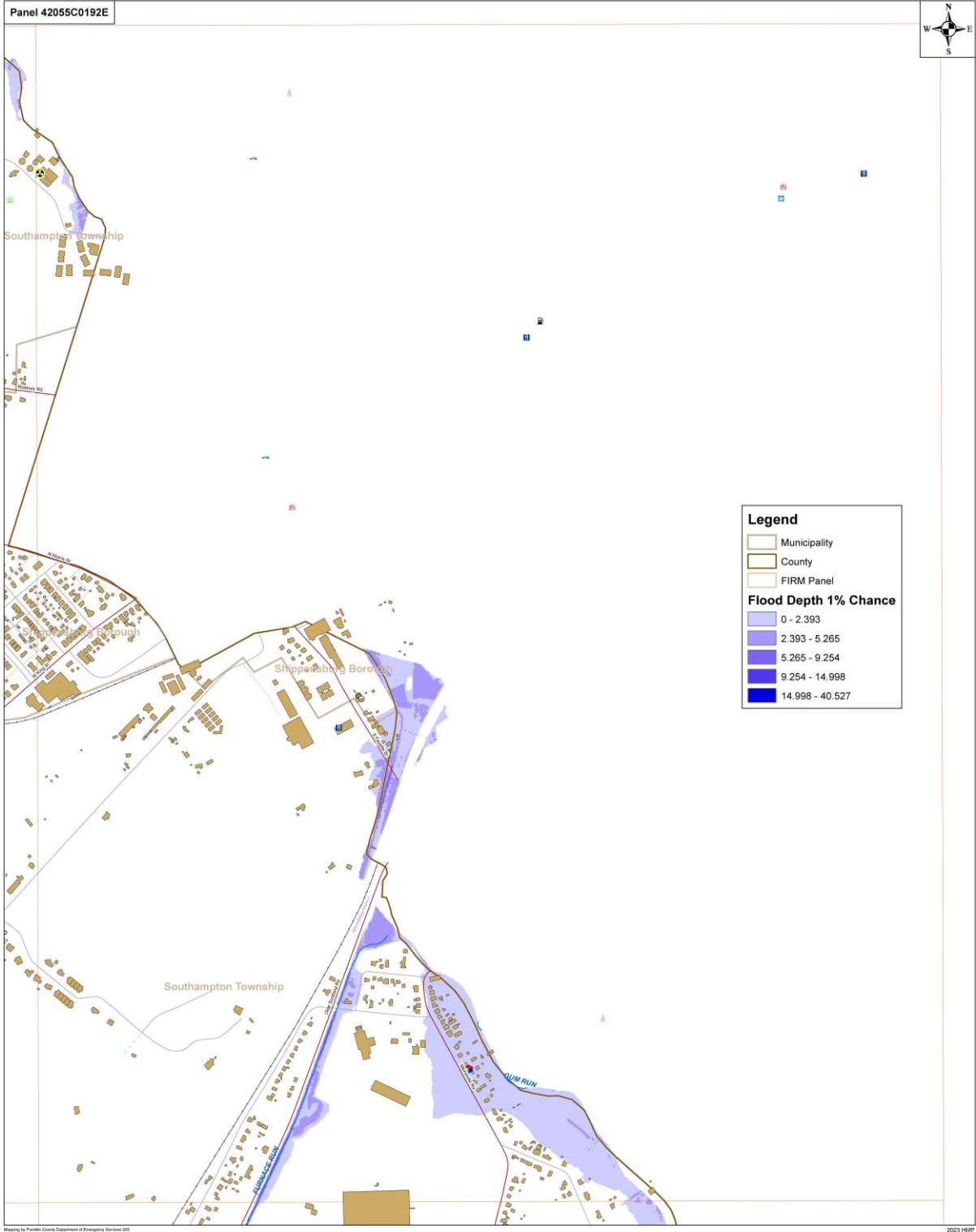


Figure G.34: Quadrant 2, Panel Number 42055C0192E

Appendix G: Franklin County DFIRM

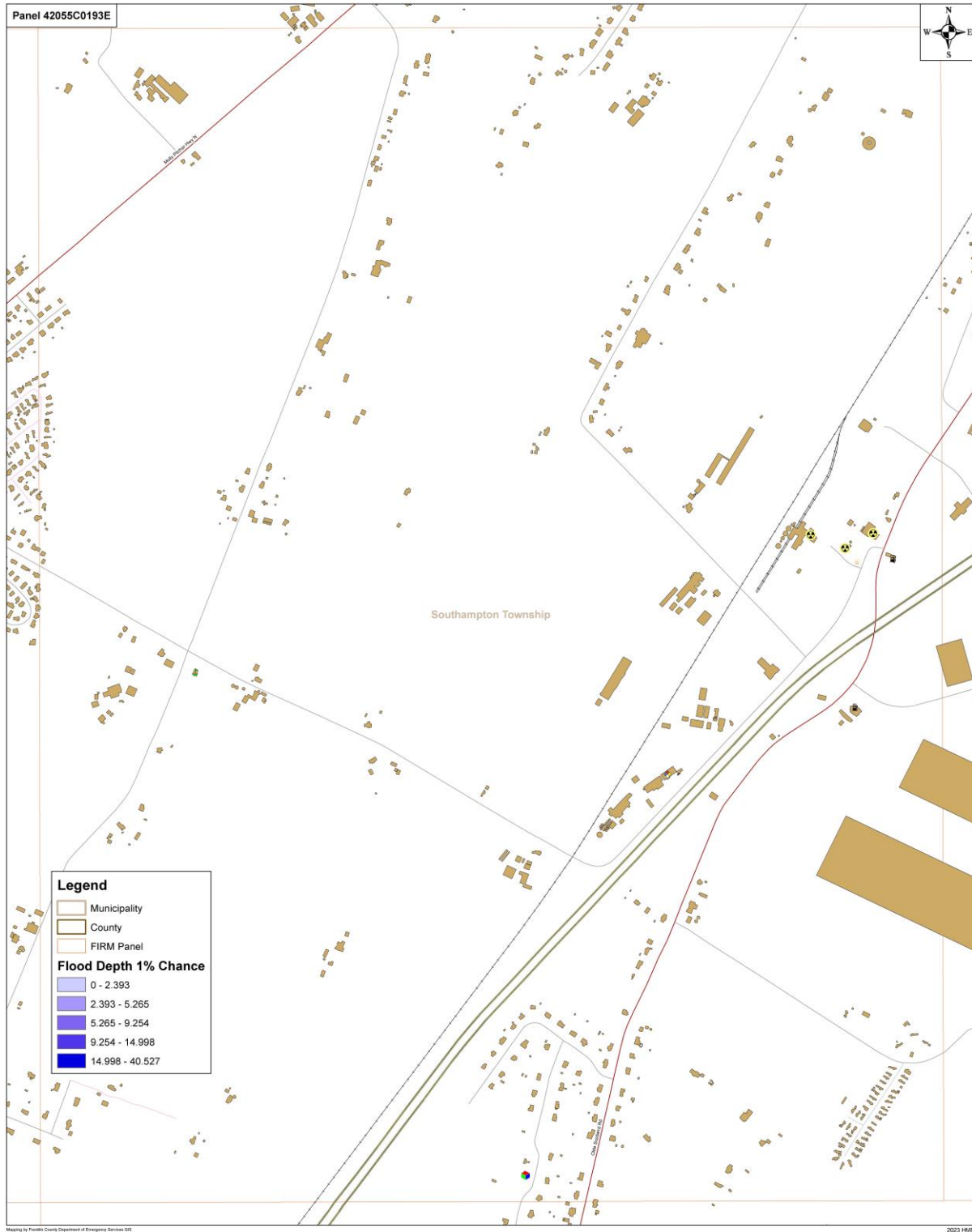


Figure G.35: Quadrant 2, Panel Number 42055C0193E

Appendix G: Franklin County DFIRM

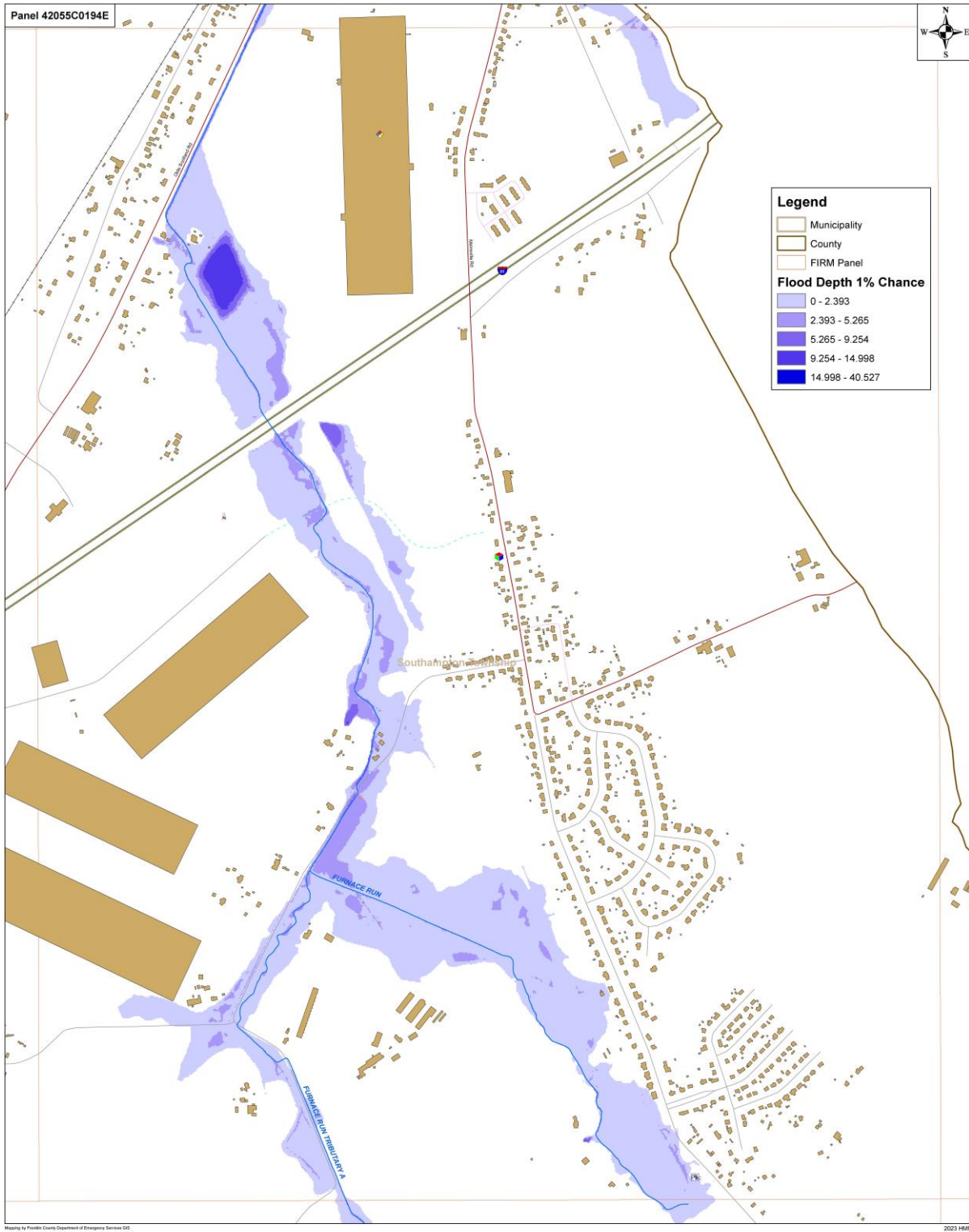


Figure G.36: Quadrant 2, Panel Number 42055C0194E

Appendix G: Franklin County DFIRM

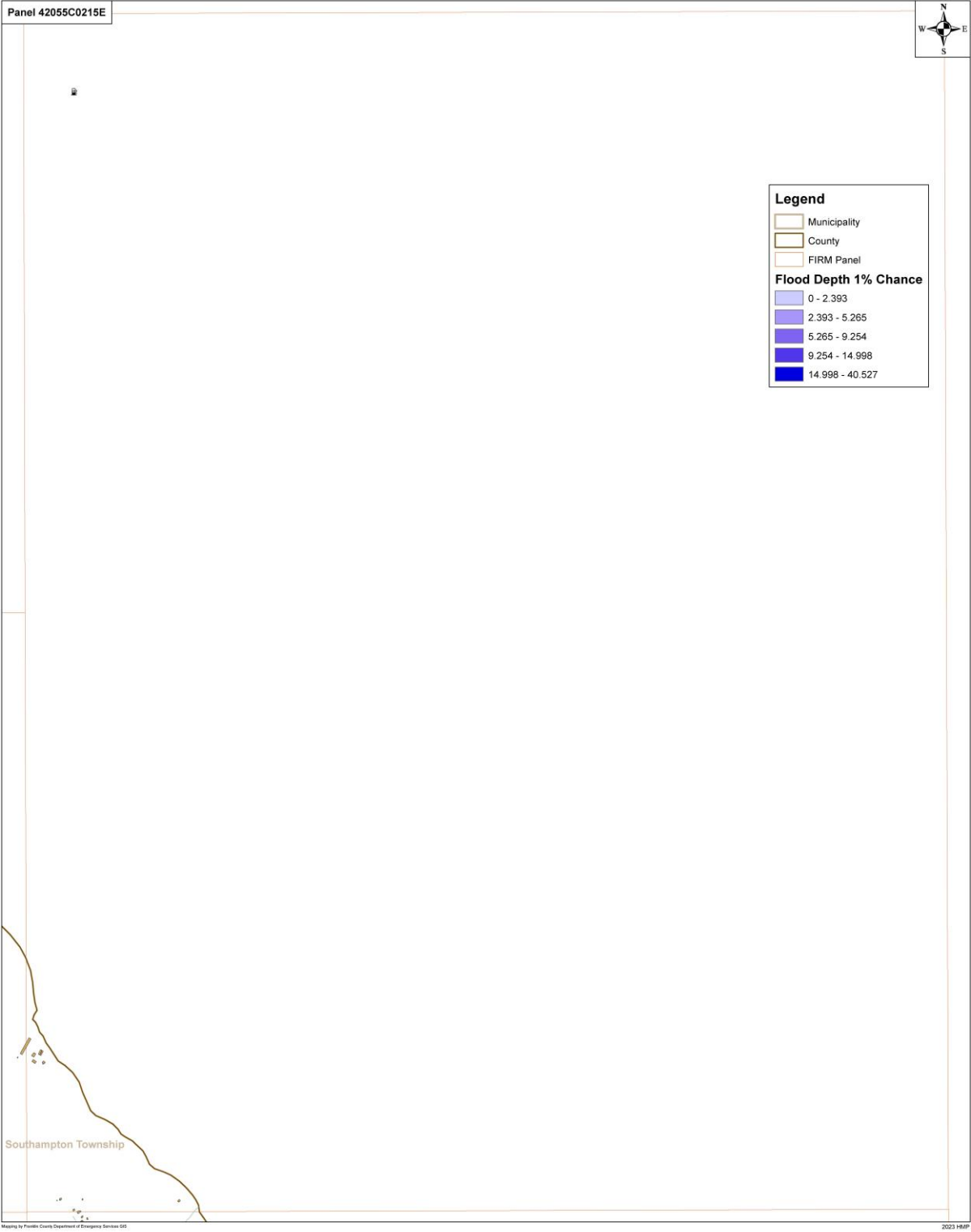


Figure G.37: Quadrant 2, Panel Number 42055C0215E

Appendix G: Franklin County DFIRM

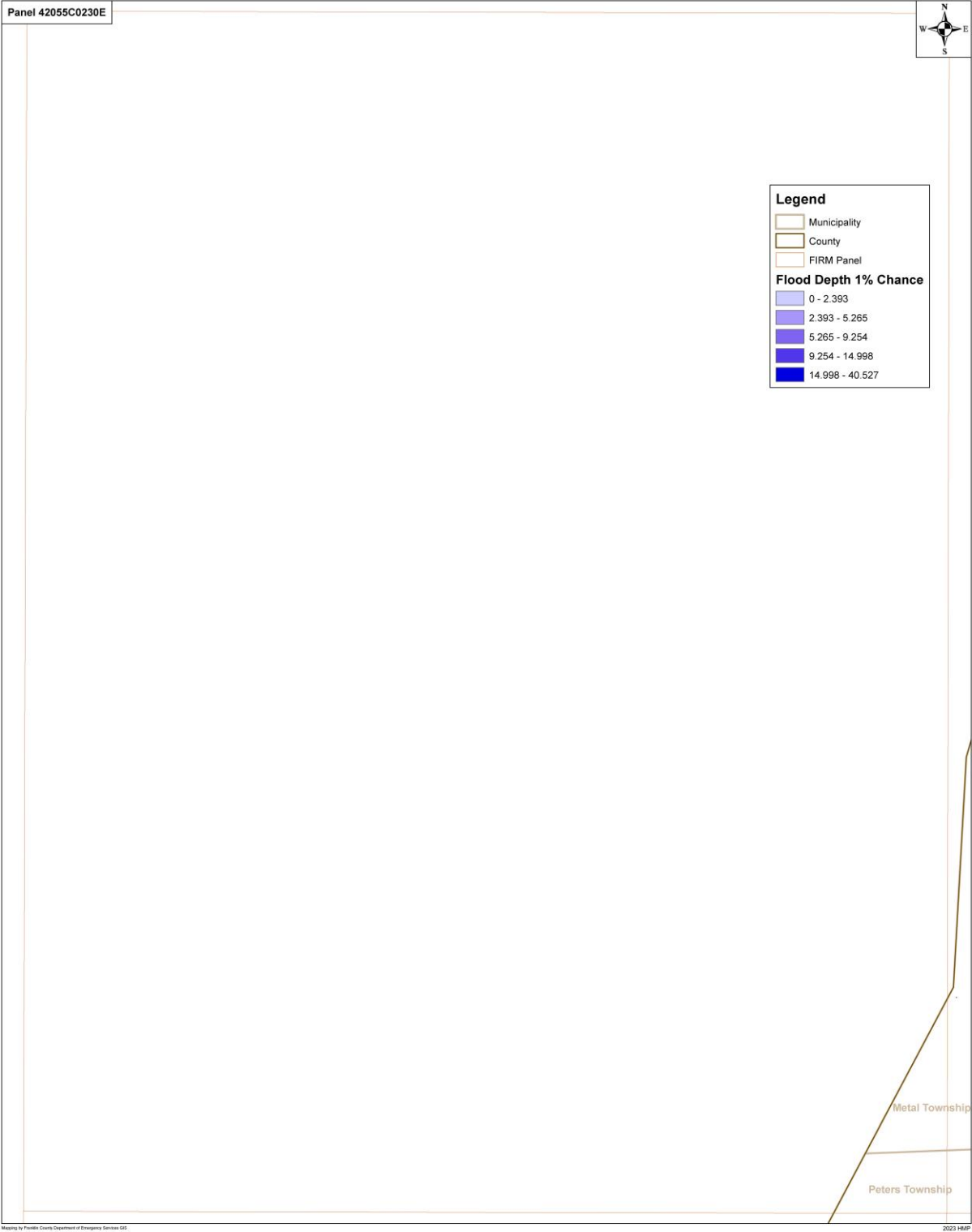


Figure G.38: Quadrant 3, Panel Number 42055C0230E

Appendix G: Franklin County DFIRM

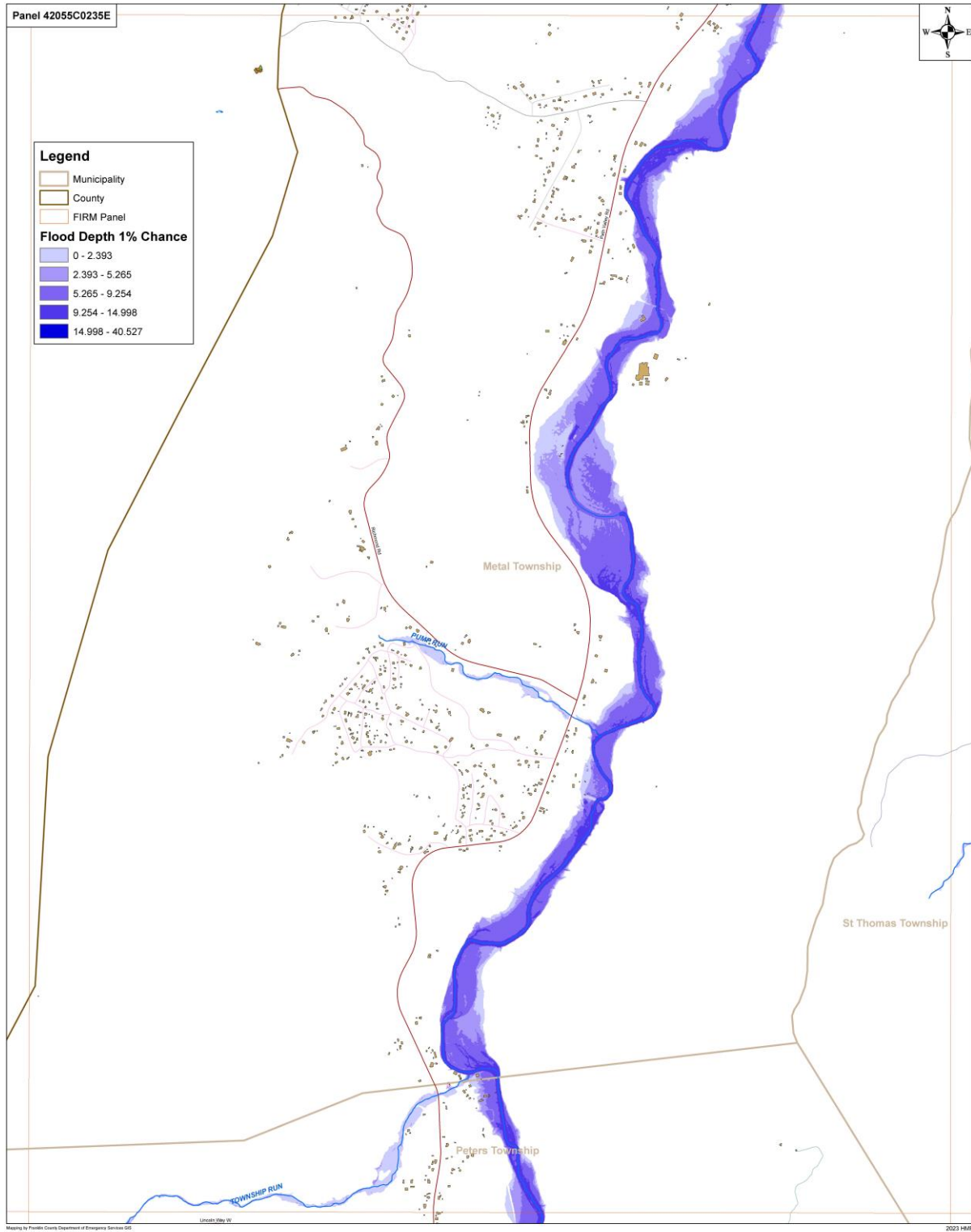


Figure G.39: Quadrant 3, Panel Number 42055C0235E

Appendix G: Franklin County DFIRM

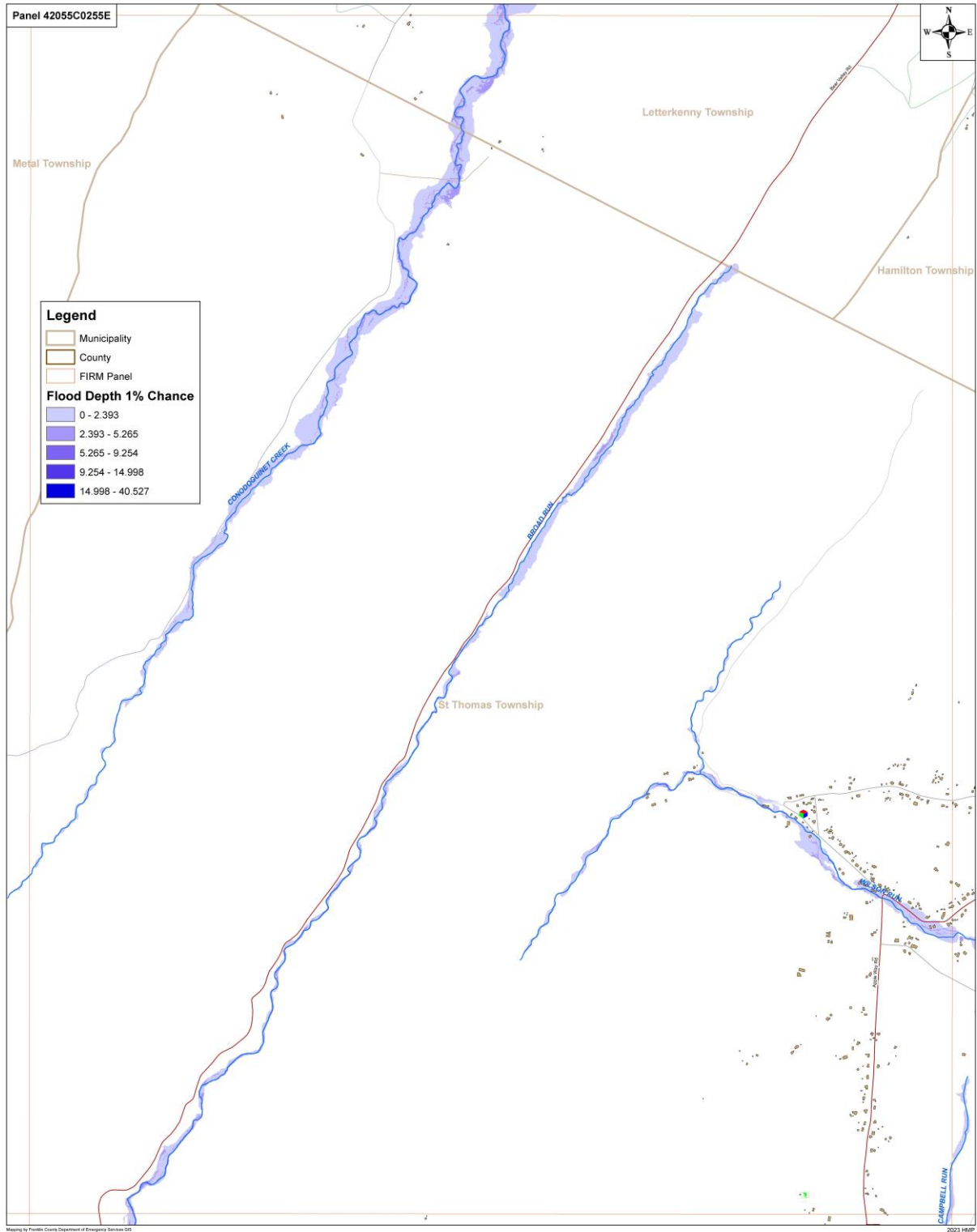


Figure G.40: Quadrant 3, Panel Number 42055C0255E

Appendix G: Franklin County DFIRM

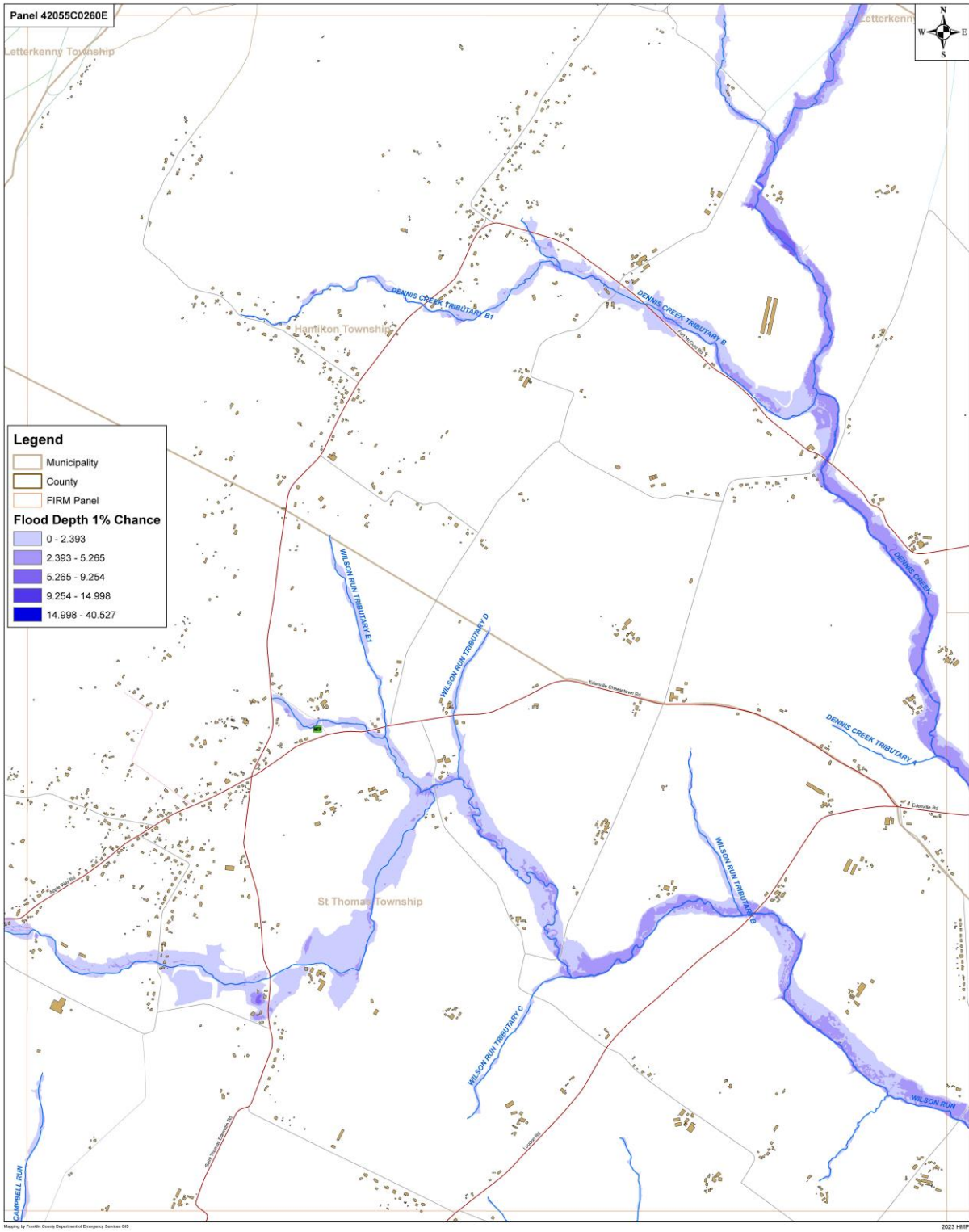


Figure G.41: Quadrant 3, Panel Number 42055C0260E

Appendix G: Franklin County DFIRM

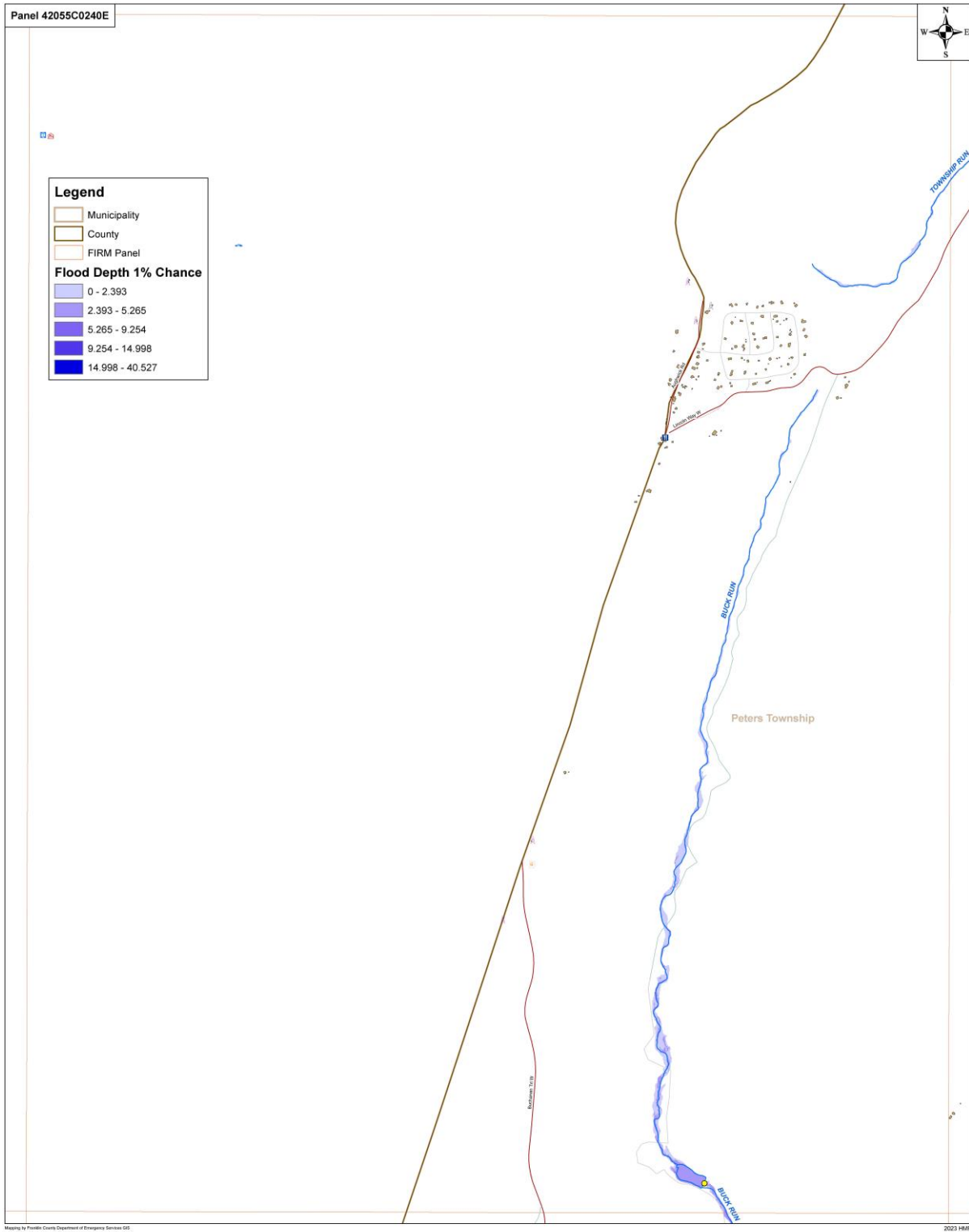


Figure G.42: Quadrant 3, Panel Number 42055C0240E

Appendix G: Franklin County DFIRM

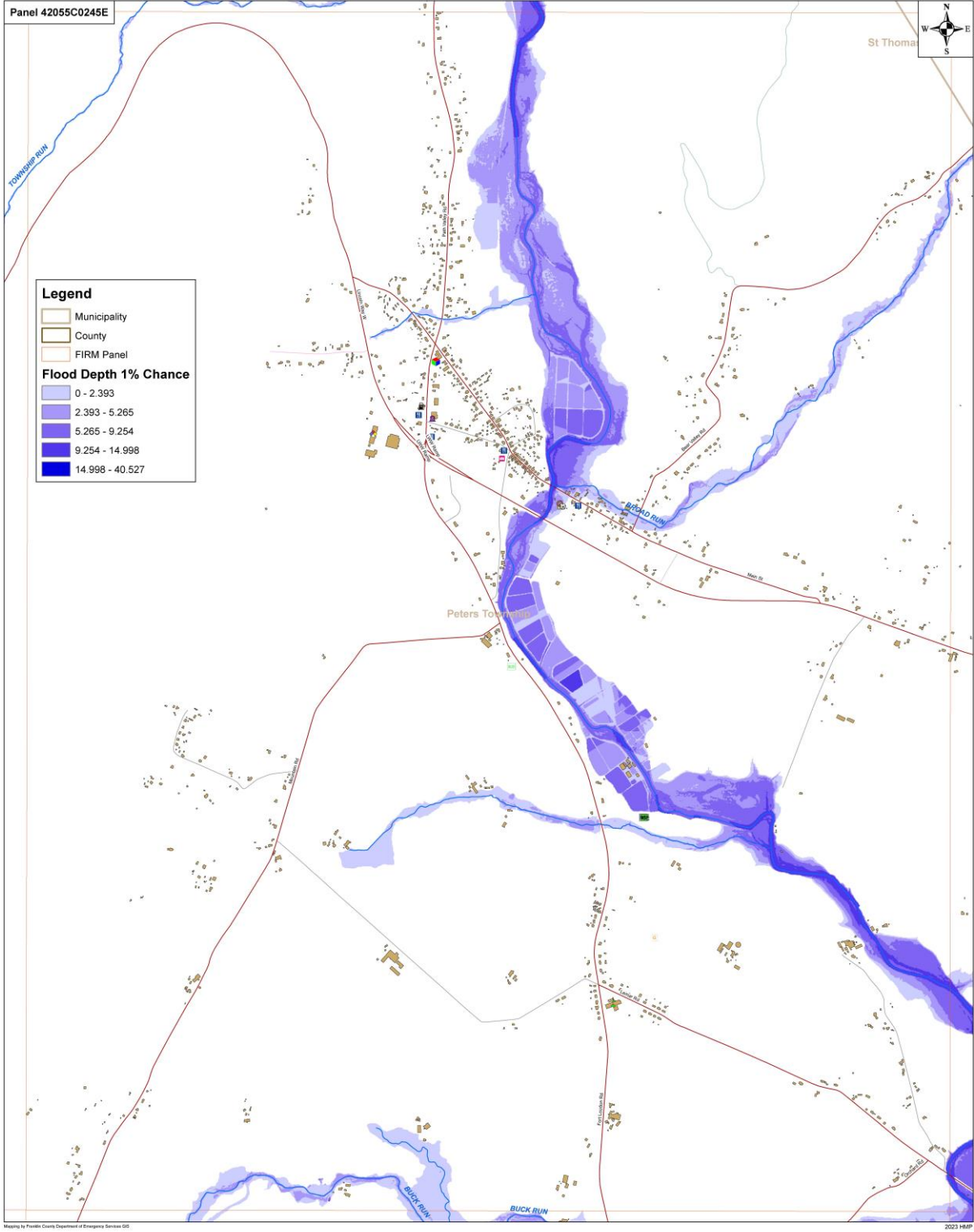


Figure G.43: Quadrant 3, Panel Number 42055C0245E

Appendix G: Franklin County DFIRM

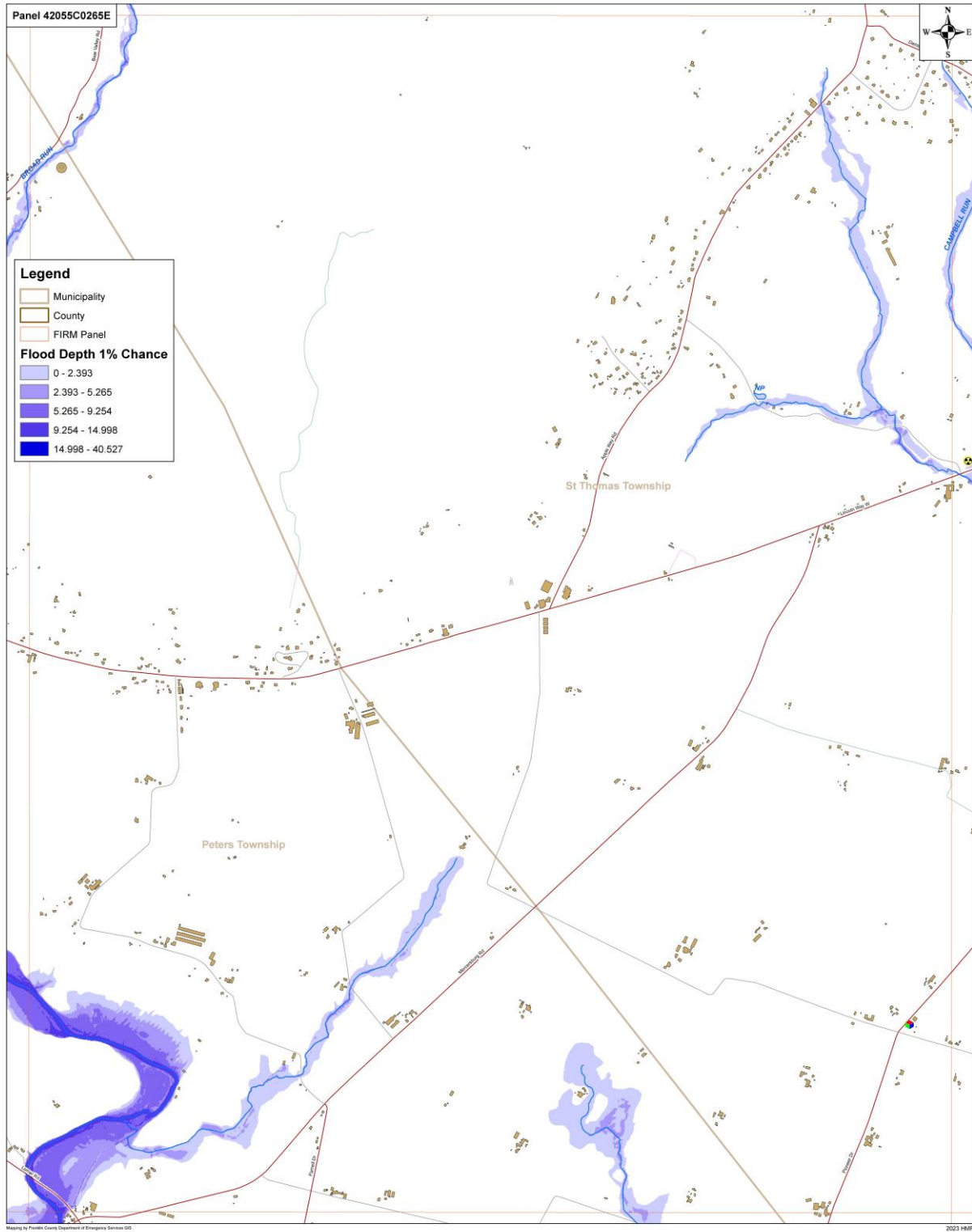


Figure G.44: Quadrant 3, Panel Number 42055C0265E

Appendix G: Franklin County DFIRM

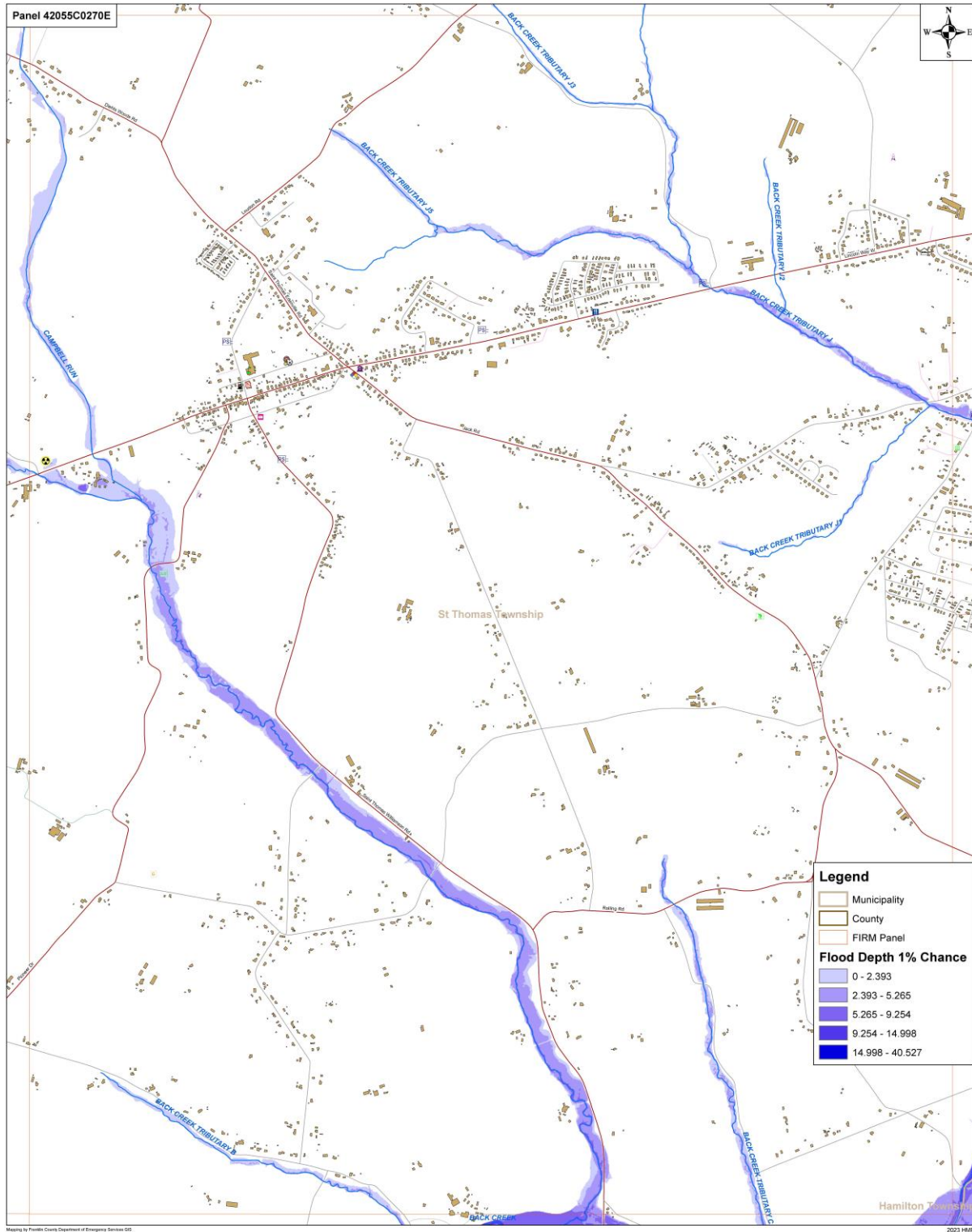


Figure G.45: Quadrant 3, Panel Number 42055C0270E

Appendix G: Franklin County DFIRM

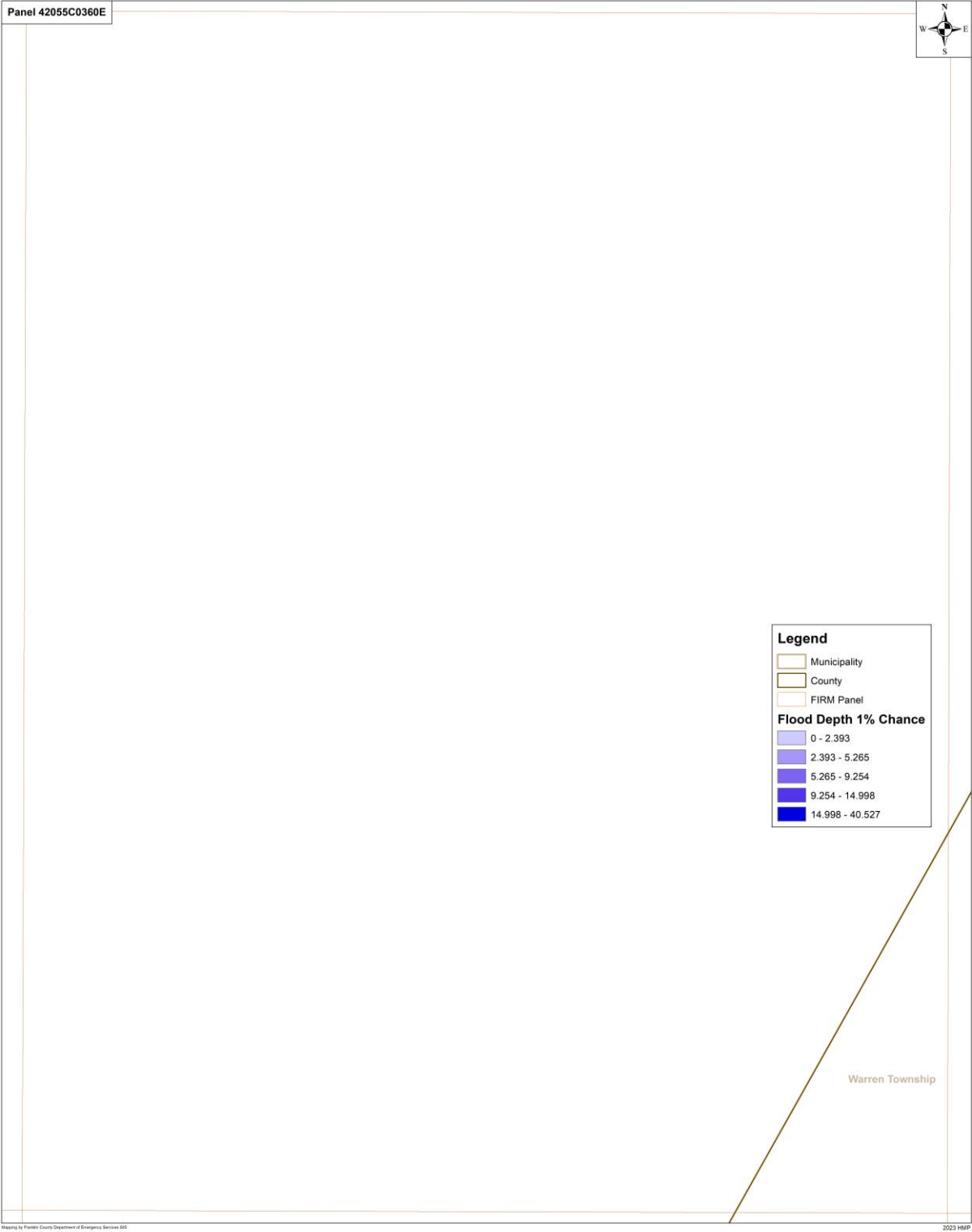


Figure G.46: Quadrant 3, Panel Number 42055C0360E

Appendix G: Franklin County DFIRM

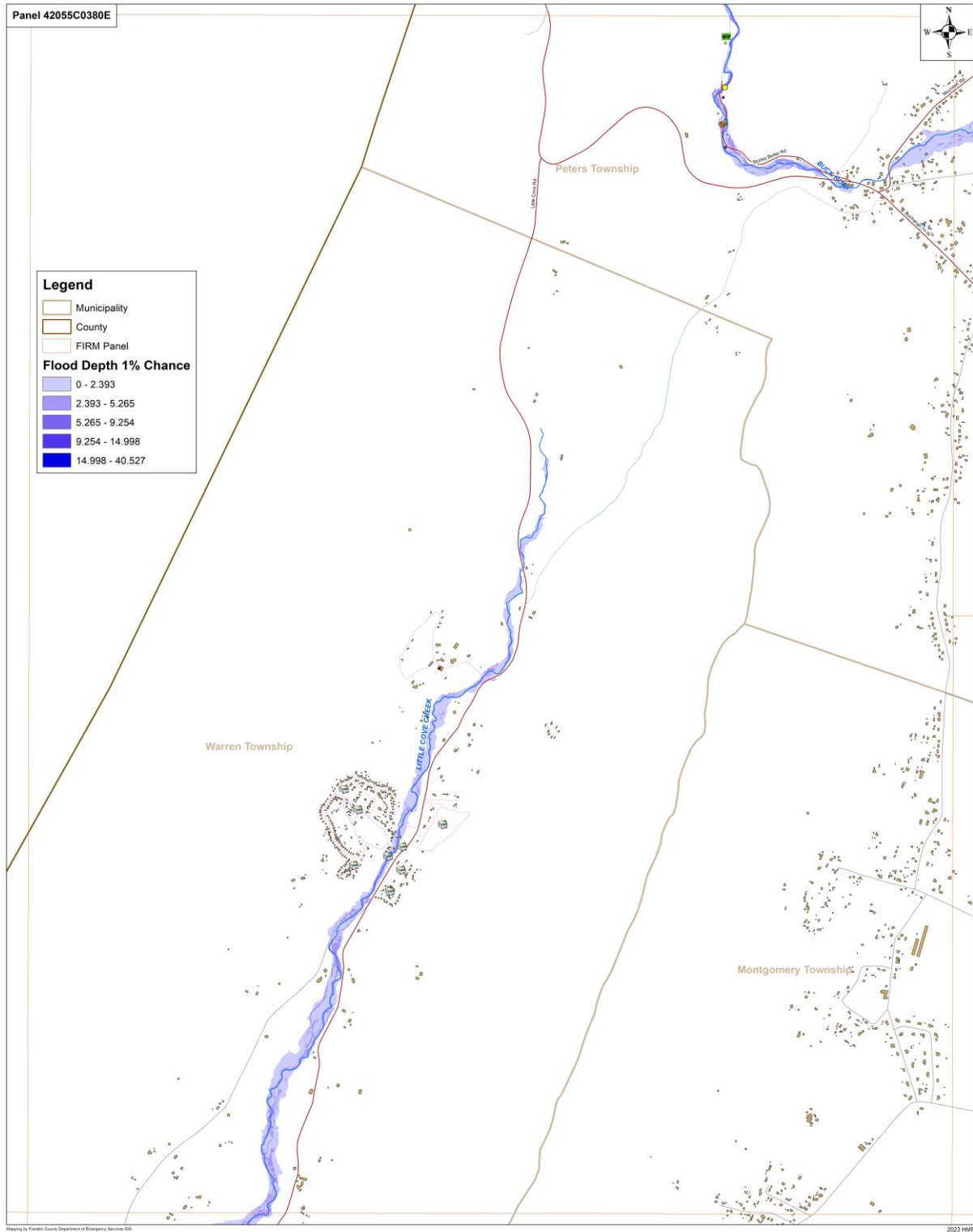


Figure G.47: Quadrant 3, Panel Number 42055C0380E

Appendix G: Franklin County DFIRM

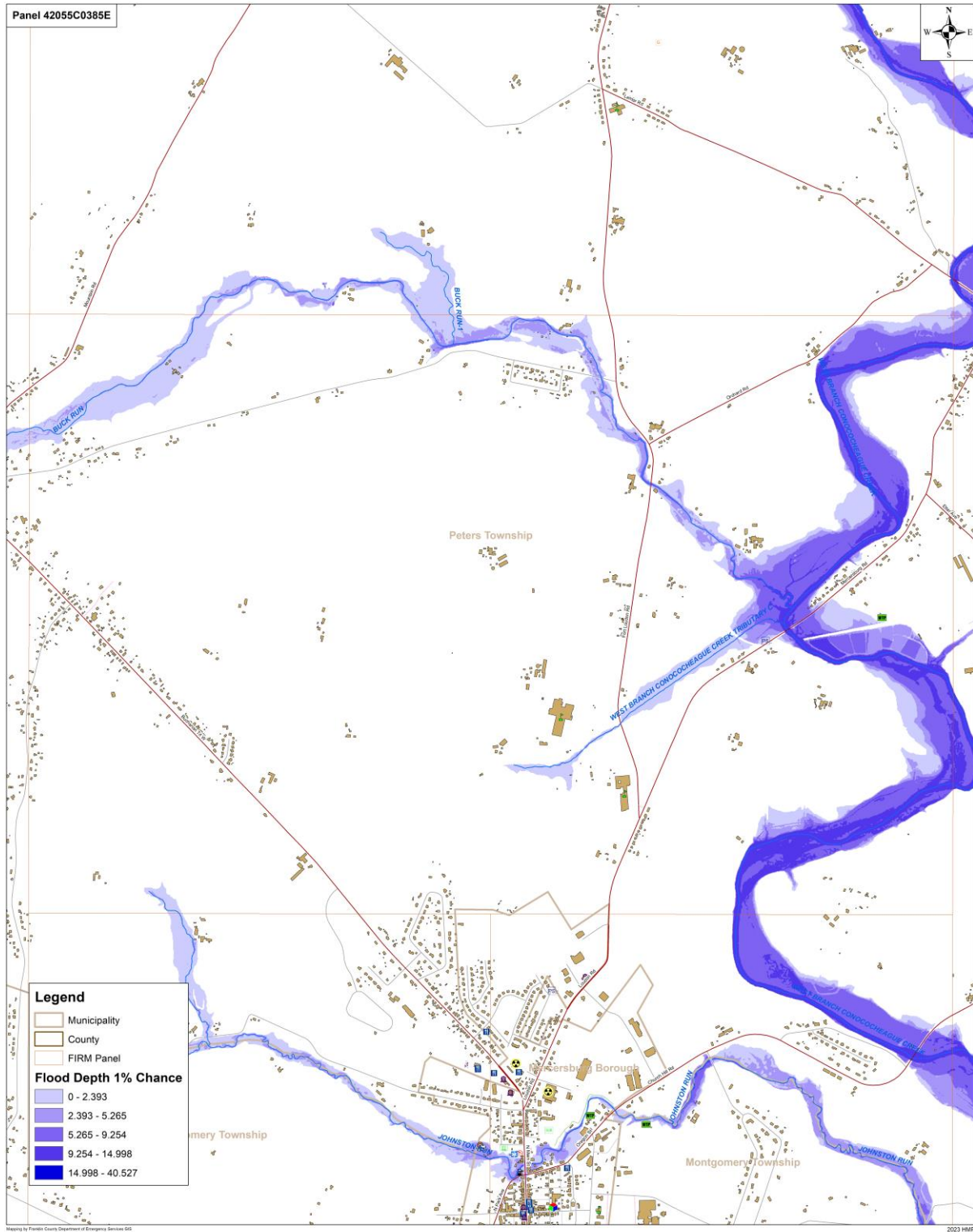


Figure G.48: Quadrant 3, Panel Number 42055C0385E

Appendix G: Franklin County DFIRM

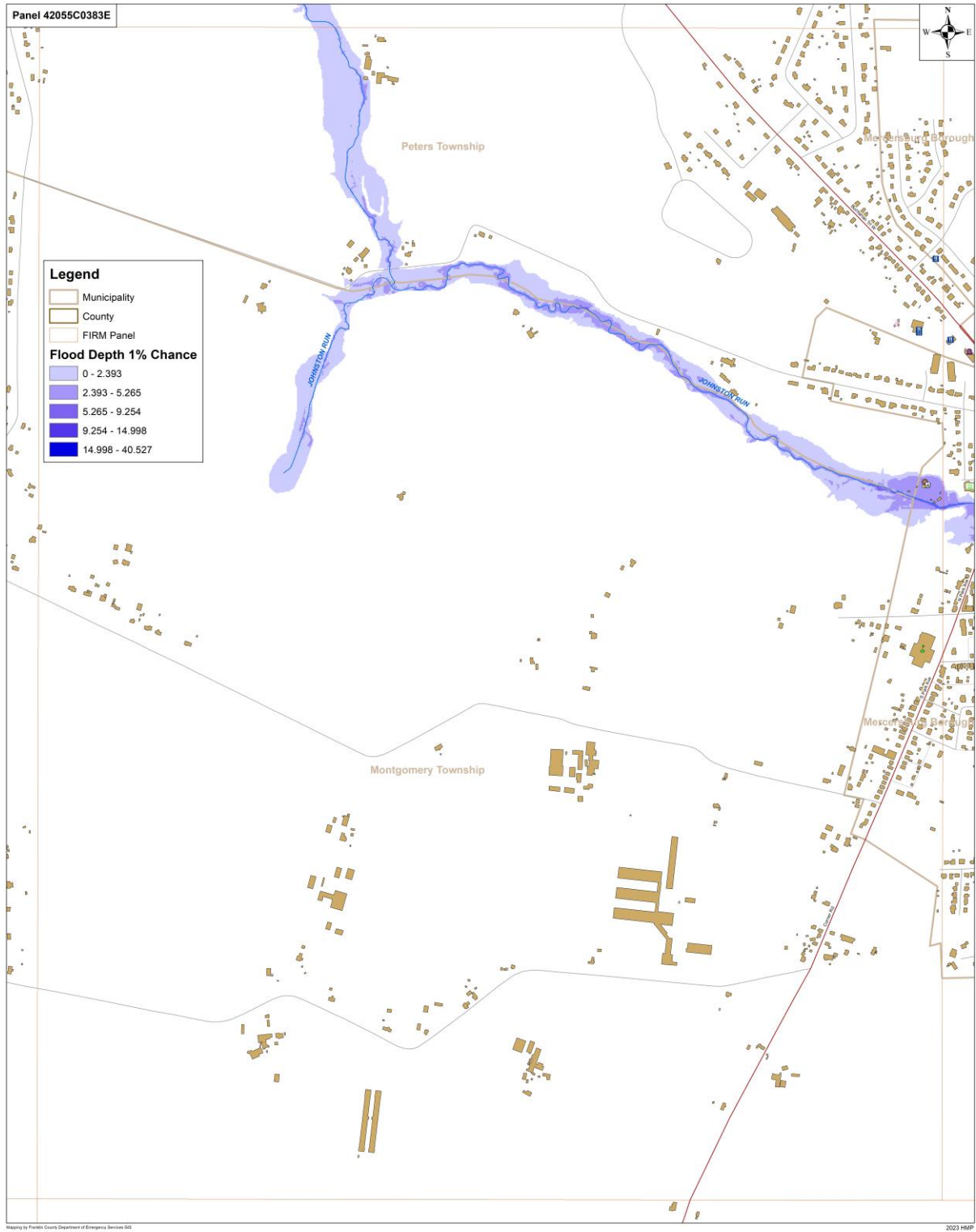


Figure G.49: Quadrant 3, Panel Number 42055C0383E

Appendix G: Franklin County DFIRM

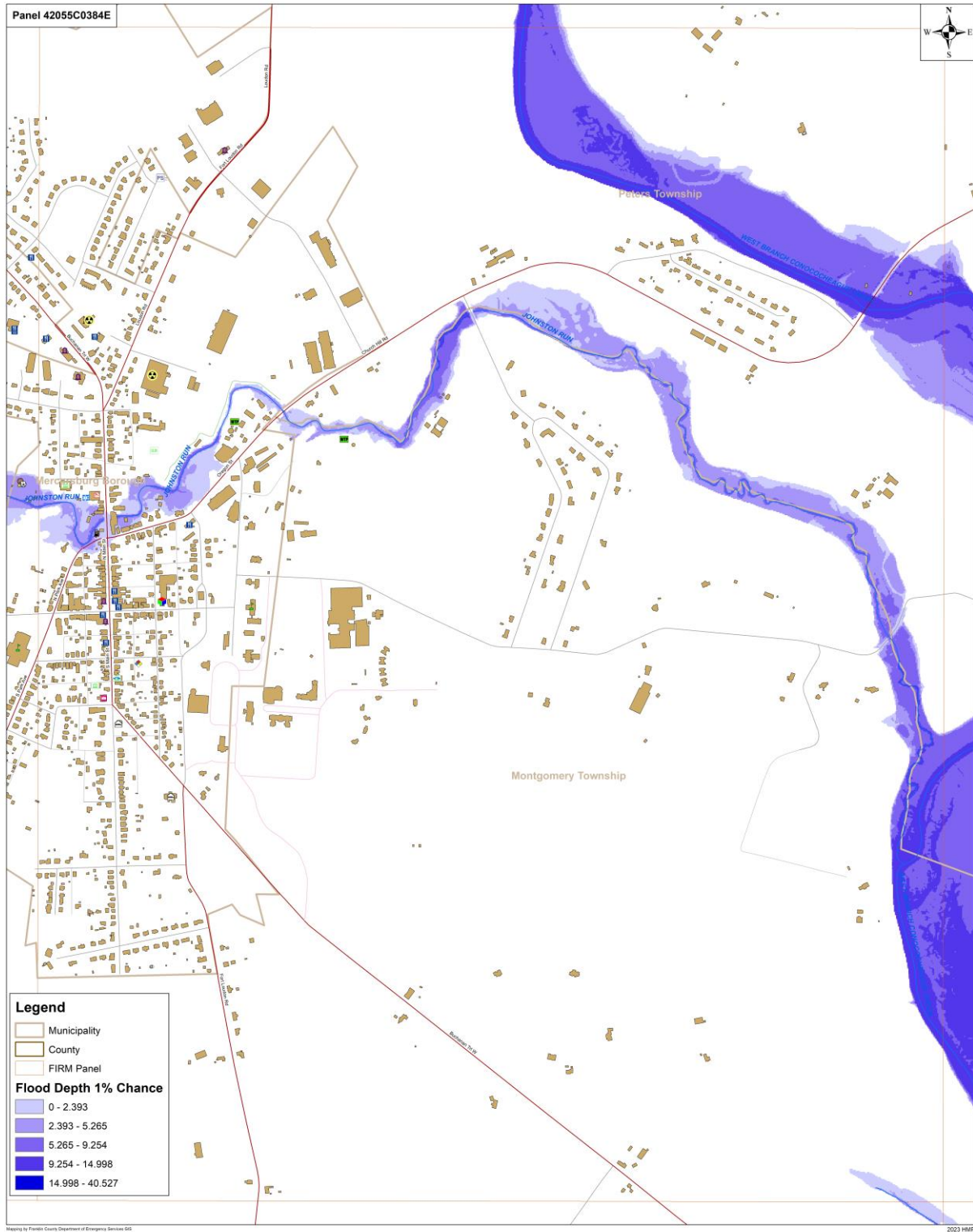


Figure G.50: Quadrant 3, Panel Number 42055C0384E

Appendix G: Franklin County DFIRM

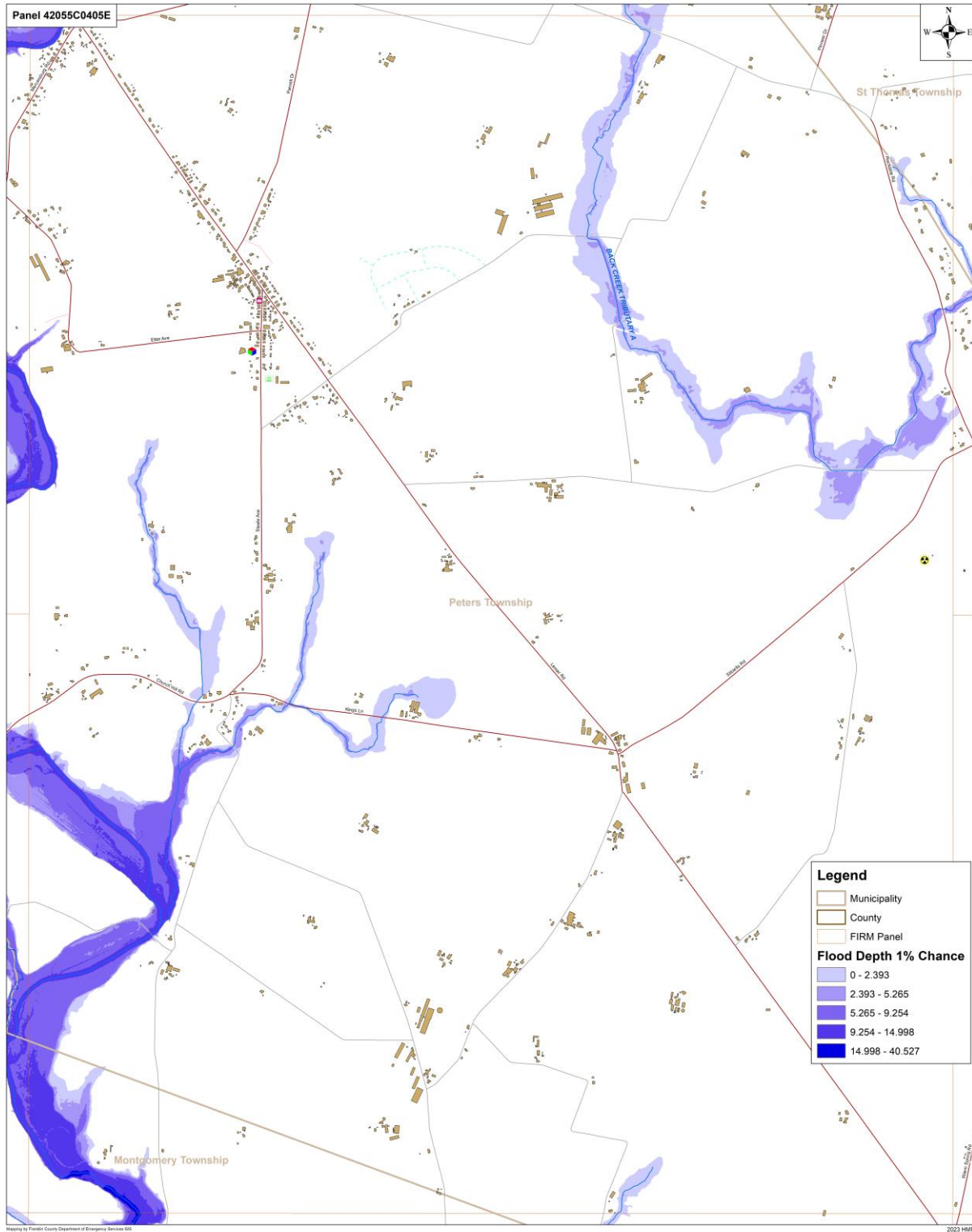


Figure G.51: Quadrant 3, Panel Number 42055C0405E

Appendix G: Franklin County DFIRM

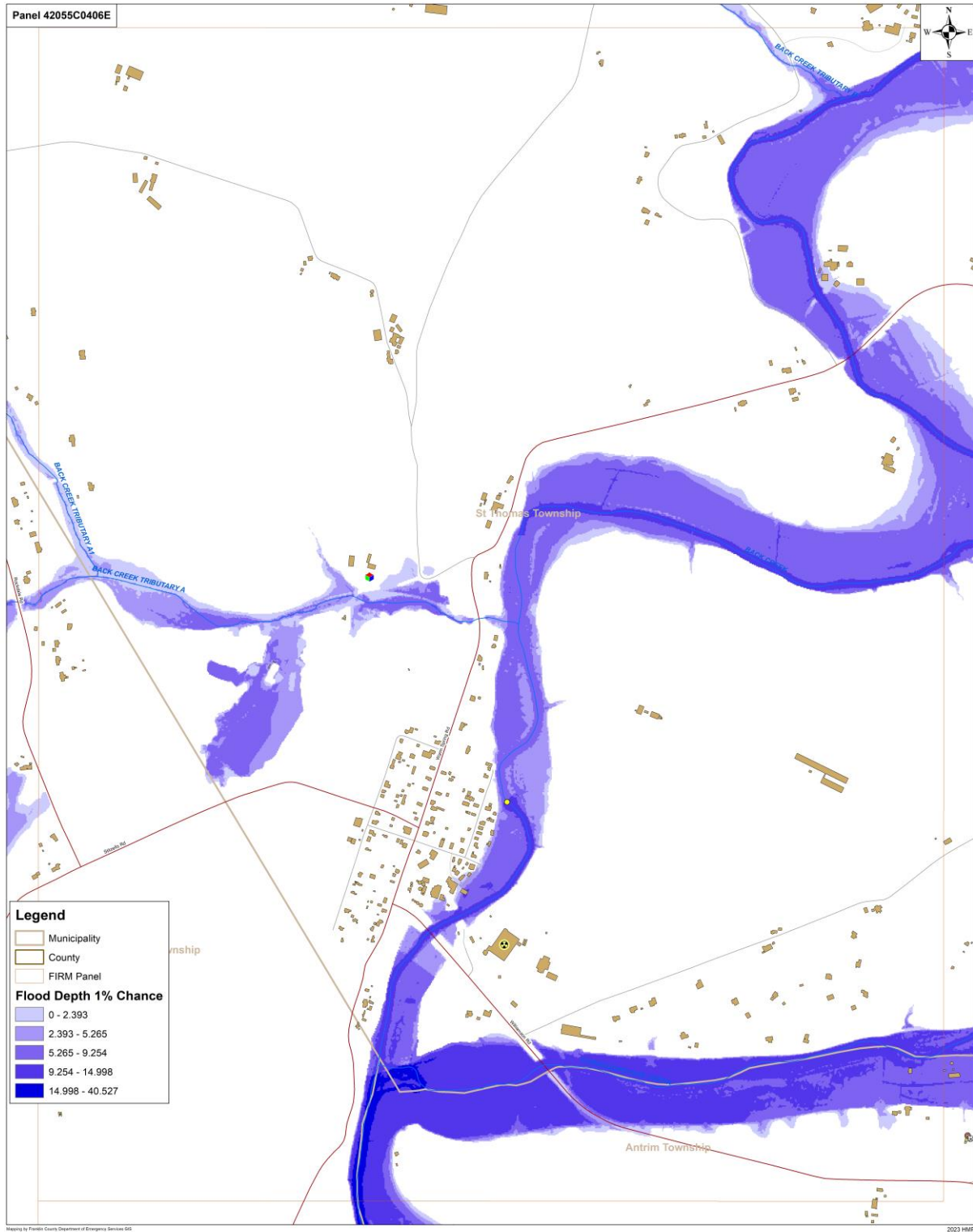


Figure G.52: Quadrant 3, Panel Number 42055C0406E

Panel 42055C0410E

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

St. Thomas Township

Harrison Township

Antish Township

Peters Township

Back Creek

Back Creek Tributary

North Arrow

Map of Flood Depth 1% Chance for the Kootenai River and its tributaries. The map shows the river flowing through St. Thomas Township, Harrison Township, and Antish Township. A legend indicates flood depths in five categories: 0 - 2.393, 2.393 - 5.265, 5.265 - 9.254, 9.254 - 14.998, and 14.998 - 40.527. The map also shows the Kootenai River, Back Creek, and Back Creek Tributary. A north arrow is in the top right corner.

liii

Appendix G: Franklin County DFIRM

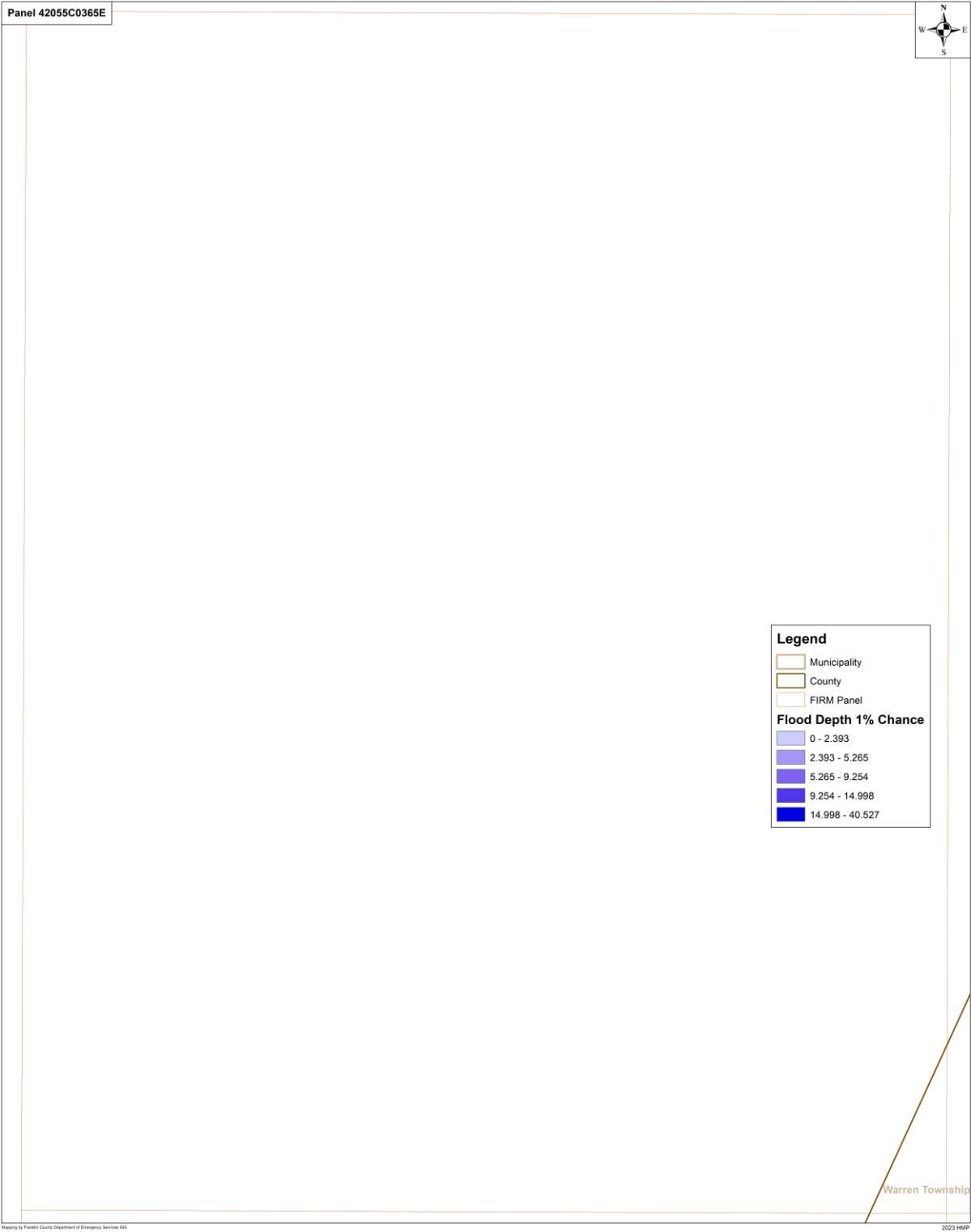


Figure G.54: Quadrant 3, Panel Number 42055C0365E

Appendix G: Franklin County DFIRM

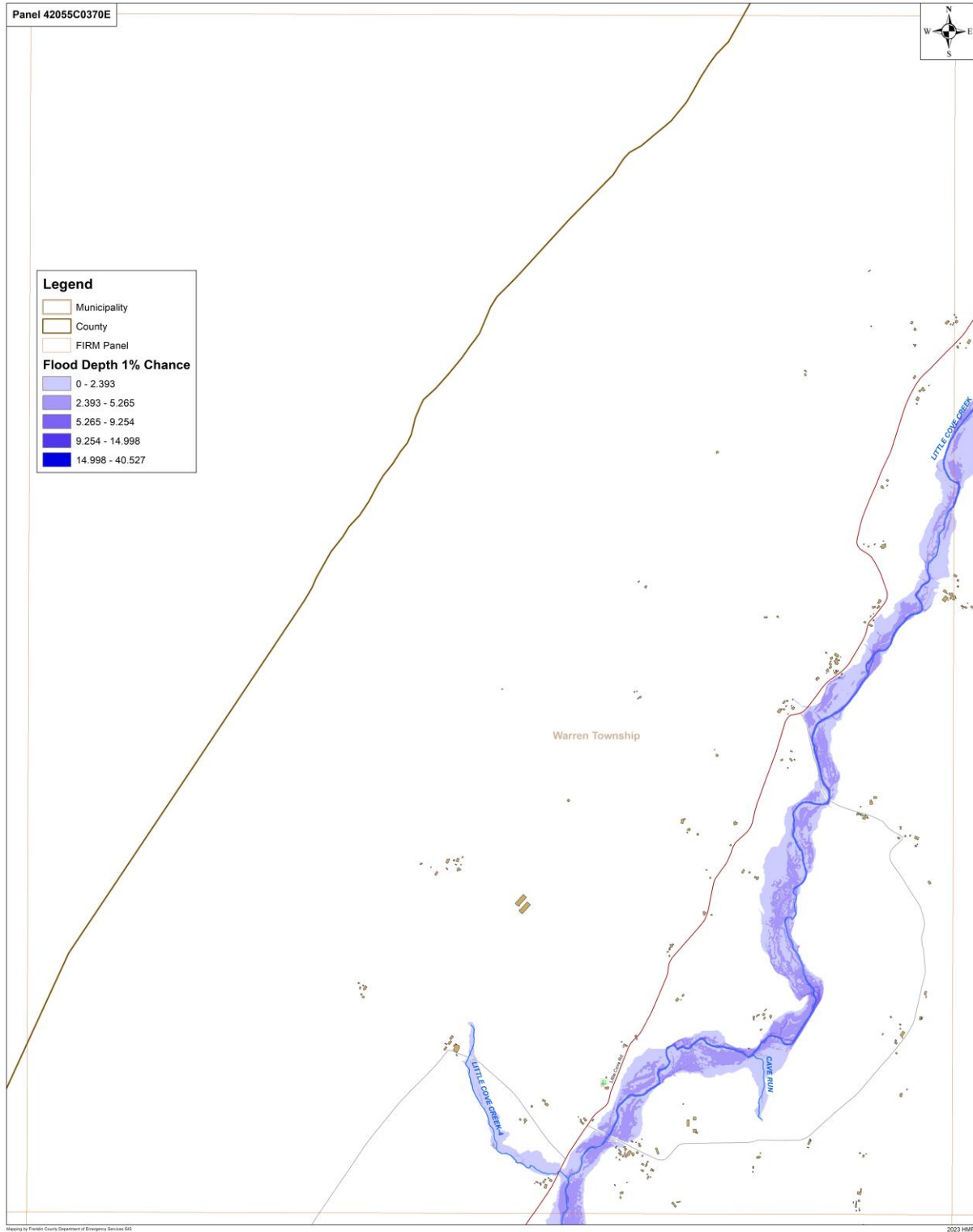


Figure G.55: Quadrant 3, Panel Number 42055C0370E

Panel 42055C0390E

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

Warren Township

Montgomery Township

Little Goose Creek

Blue Springs Creek

Leaning Creek Rd

2007

lvi

Appendix G: Franklin County DFIRM

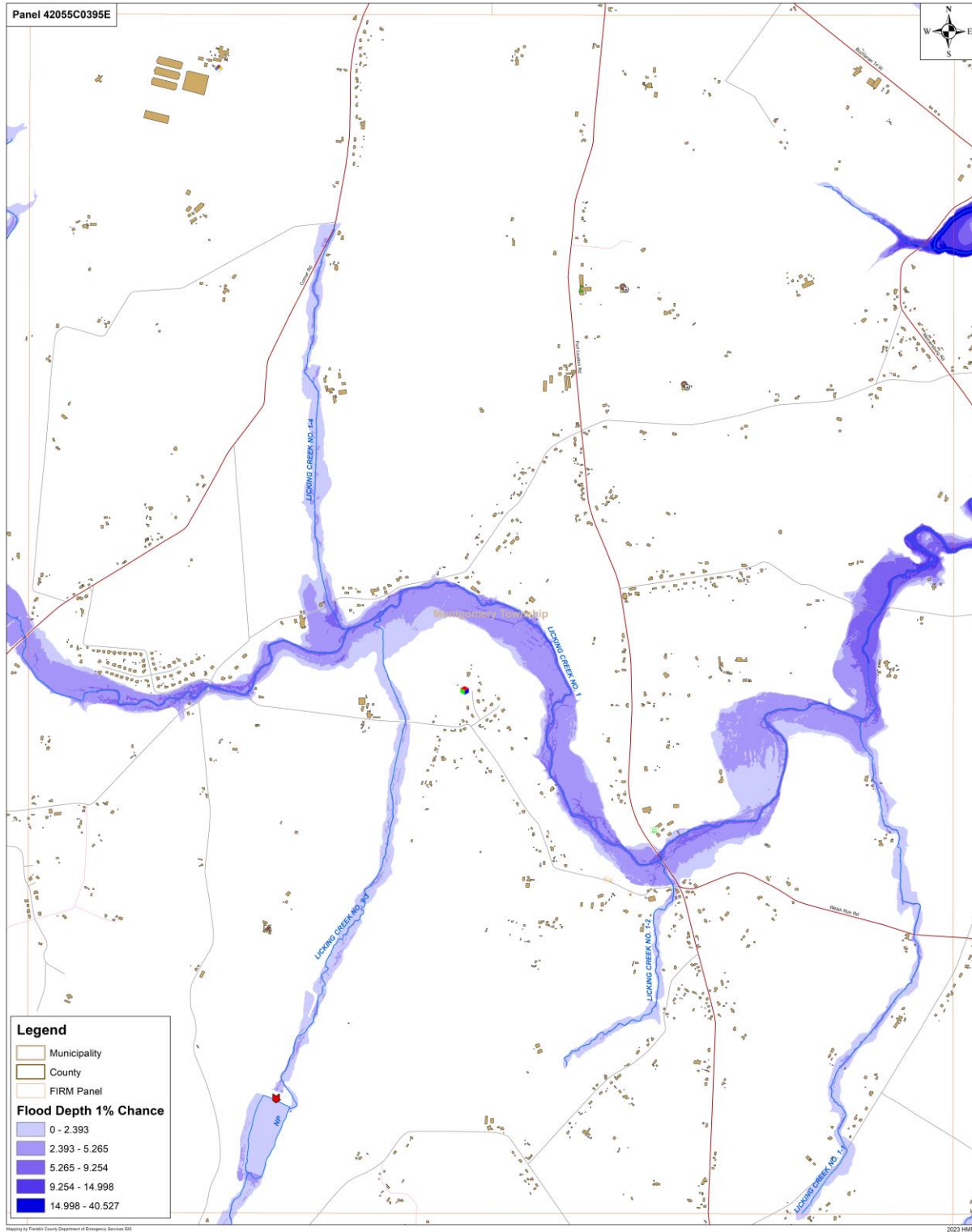


Figure G.57: Quadrant 3, Panel Number 42055C0395E

Appendix G: Franklin County DFIRM

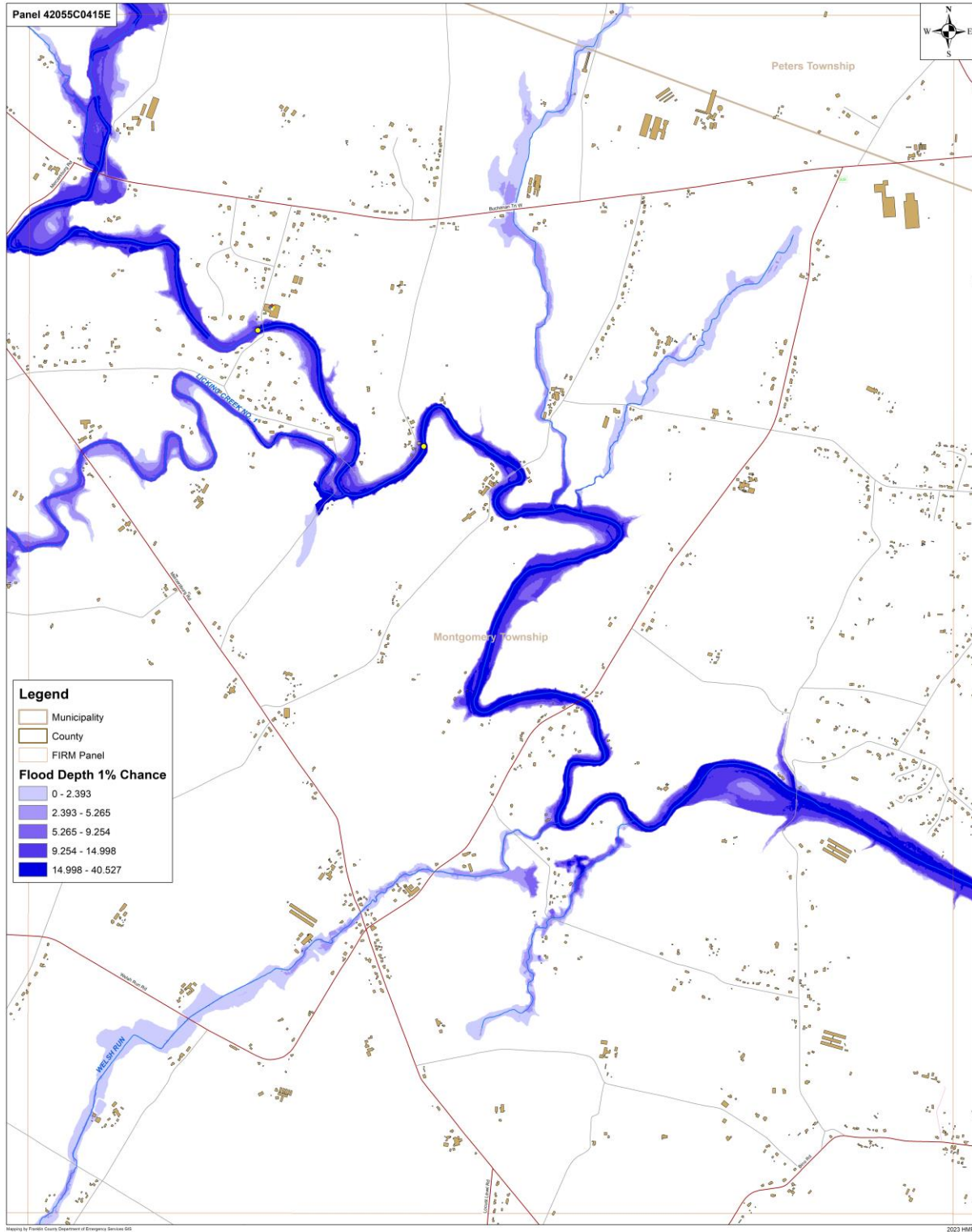


Figure G.58: Quadrant 3, Panel Number 42055C0415E

Appendix G: Franklin County DFIRM

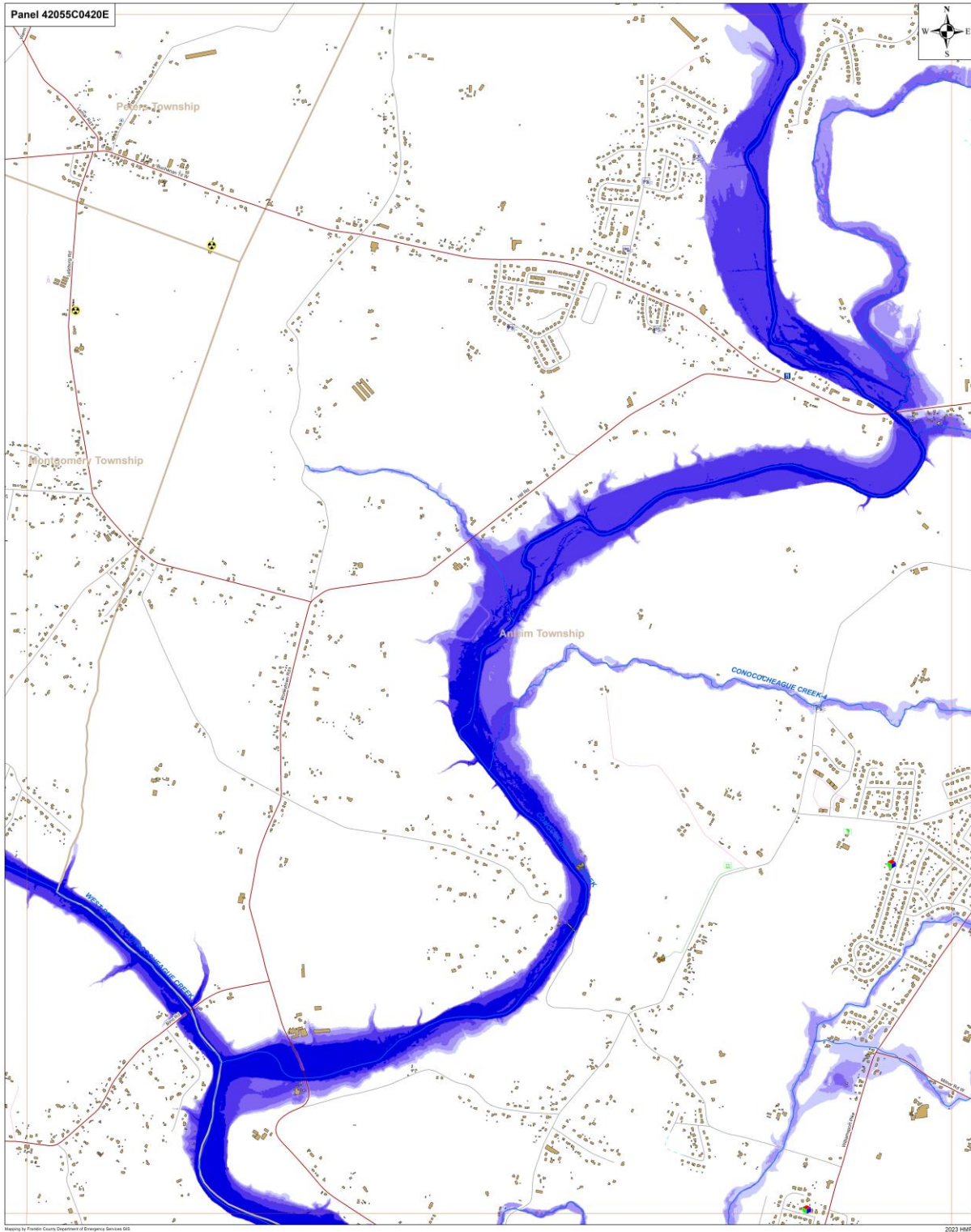


Figure G.59: Quadrant 3, Panel Number 42055C0420E

Appendix G: Franklin County DFIRM

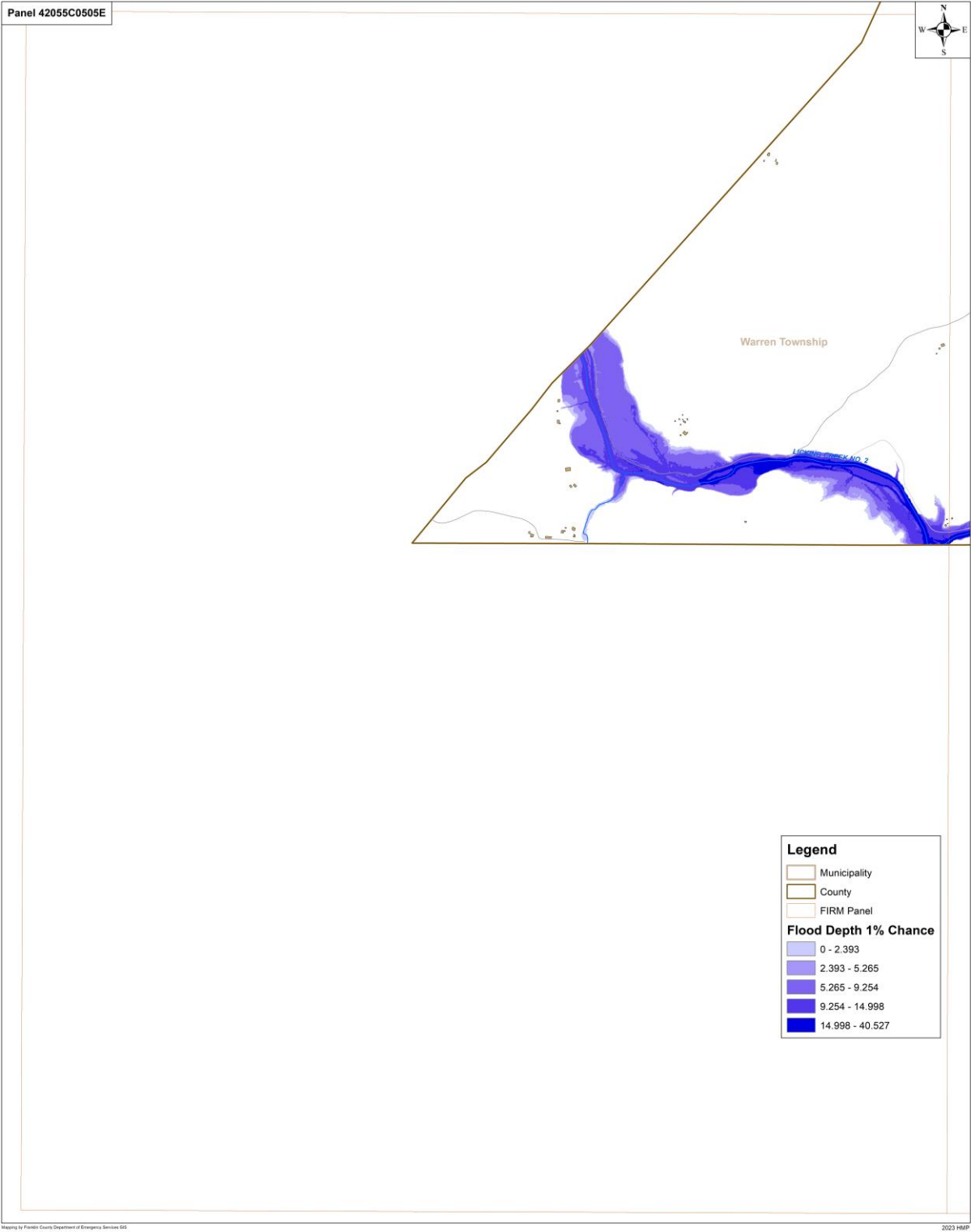


Figure G.60: Quadrant 3, Panel Number 42055C0505E

Panel 42055C0510E

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

Map of Little Sioux Creek Watershed showing flood depth 1% chance. The map displays the creek and its tributaries, with flood depths indicated by color shading. A legend in the bottom right corner defines the color scale for flood depth ranges. A north arrow is located in the top right corner.

lxi

Appendix G: Franklin County DFIRM

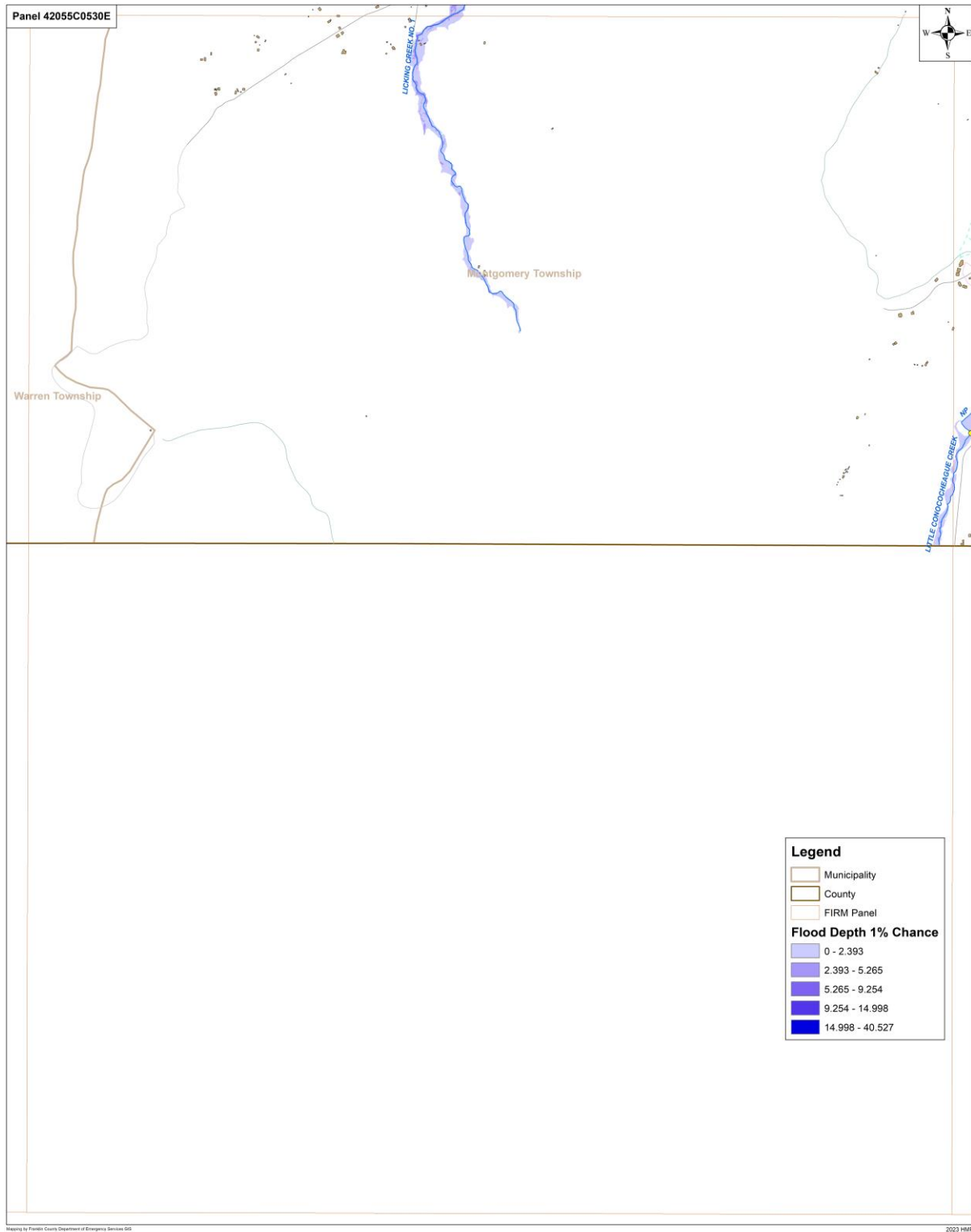


Figure G.62: Quadrant 3, Panel Number 42055C0530E

Appendix G: Franklin County DFIRM

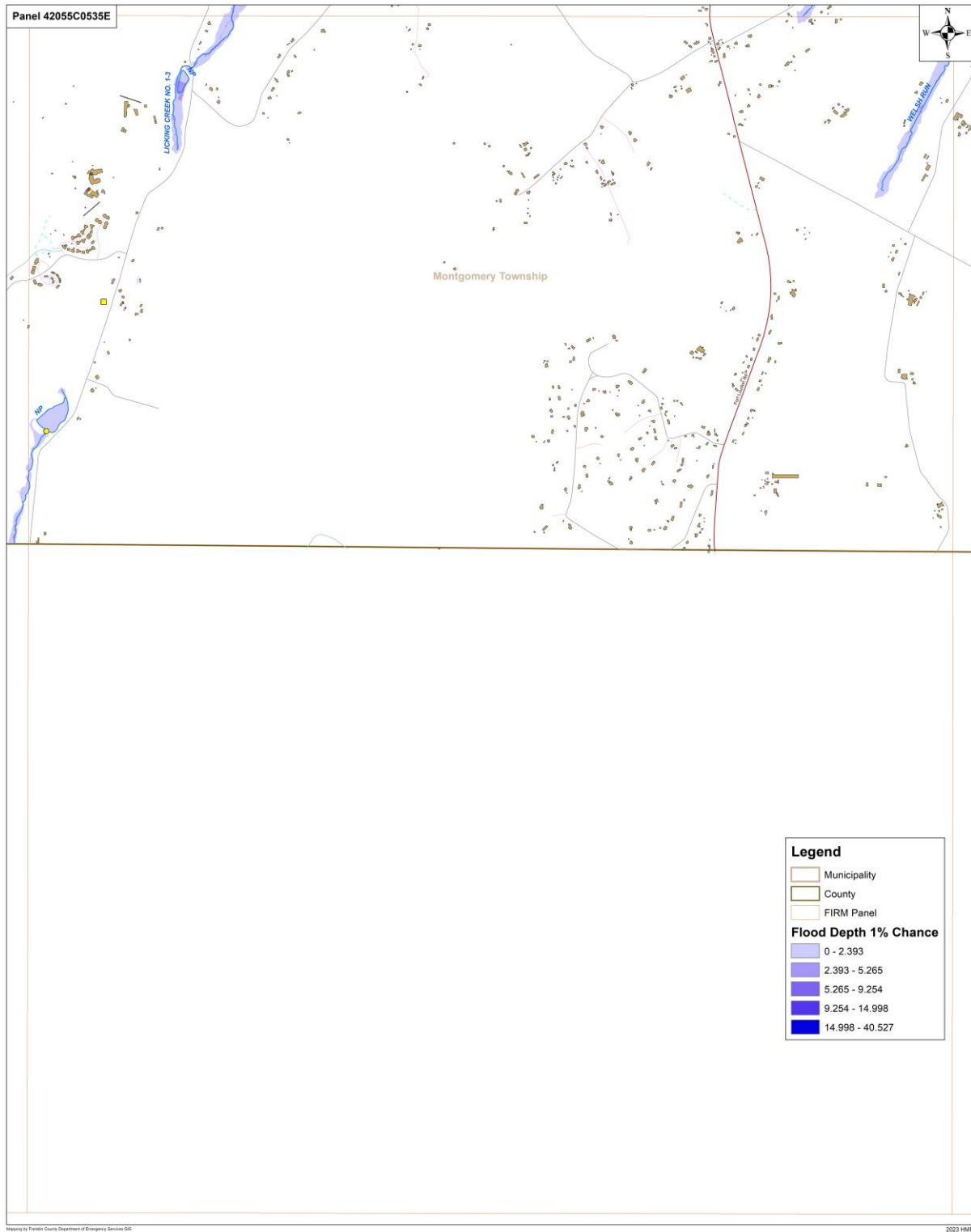


Figure G.63: Quadrant 3, Panel Number 42055C0535E

Panel 42055C0555E

Montgomery Township

Antrim Township

ROCKDALE RUN-1

CONOCOCHIEGUE CREEK-1

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

Map data by Franklin County Department of Emergency Services GIS

2020.1.18

lxiv

Appendix G: Franklin County DFIRM

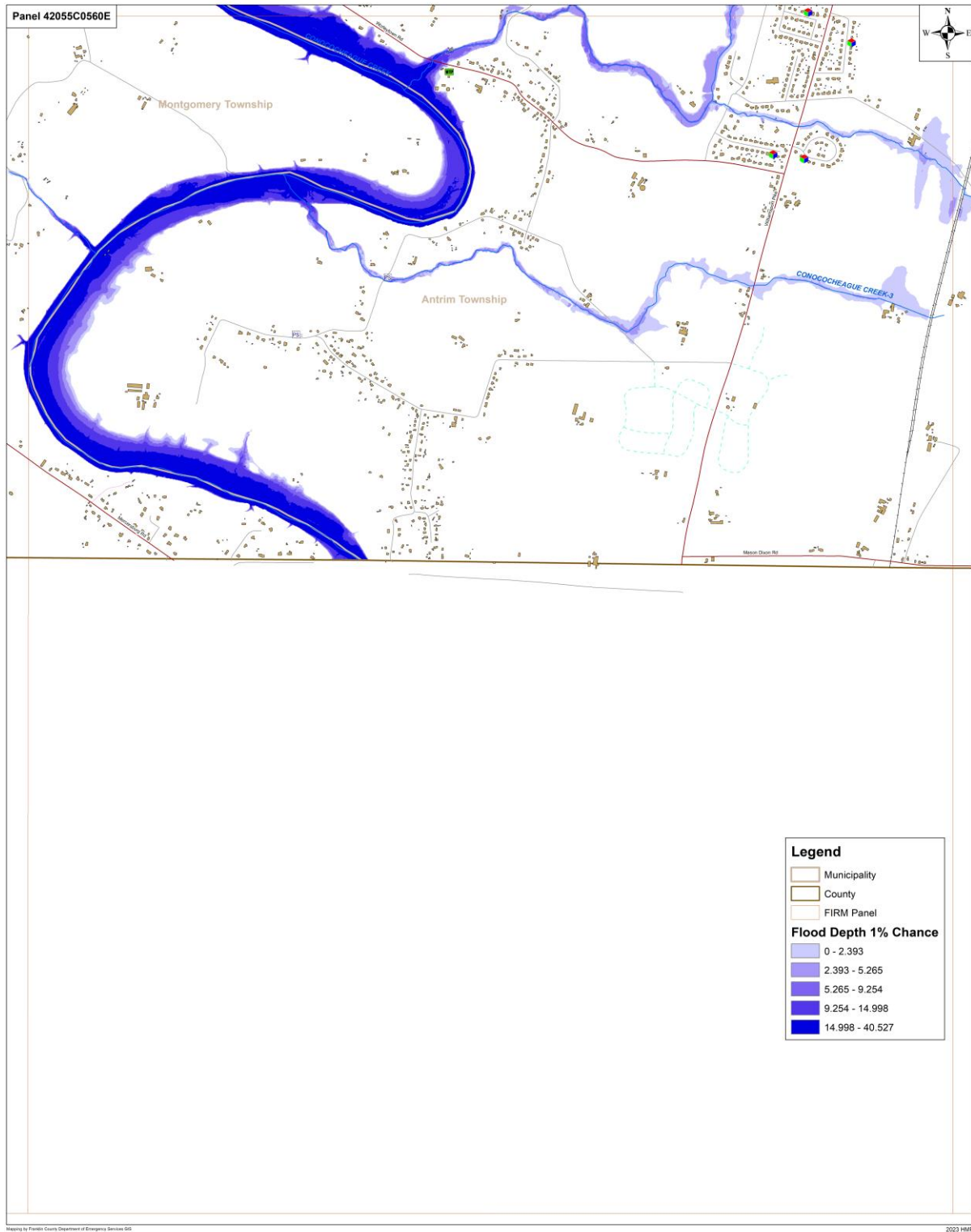


Figure G.65: Quadrant 3, Panel Number 42055C0560E

Appendix G: Franklin County DFIRM

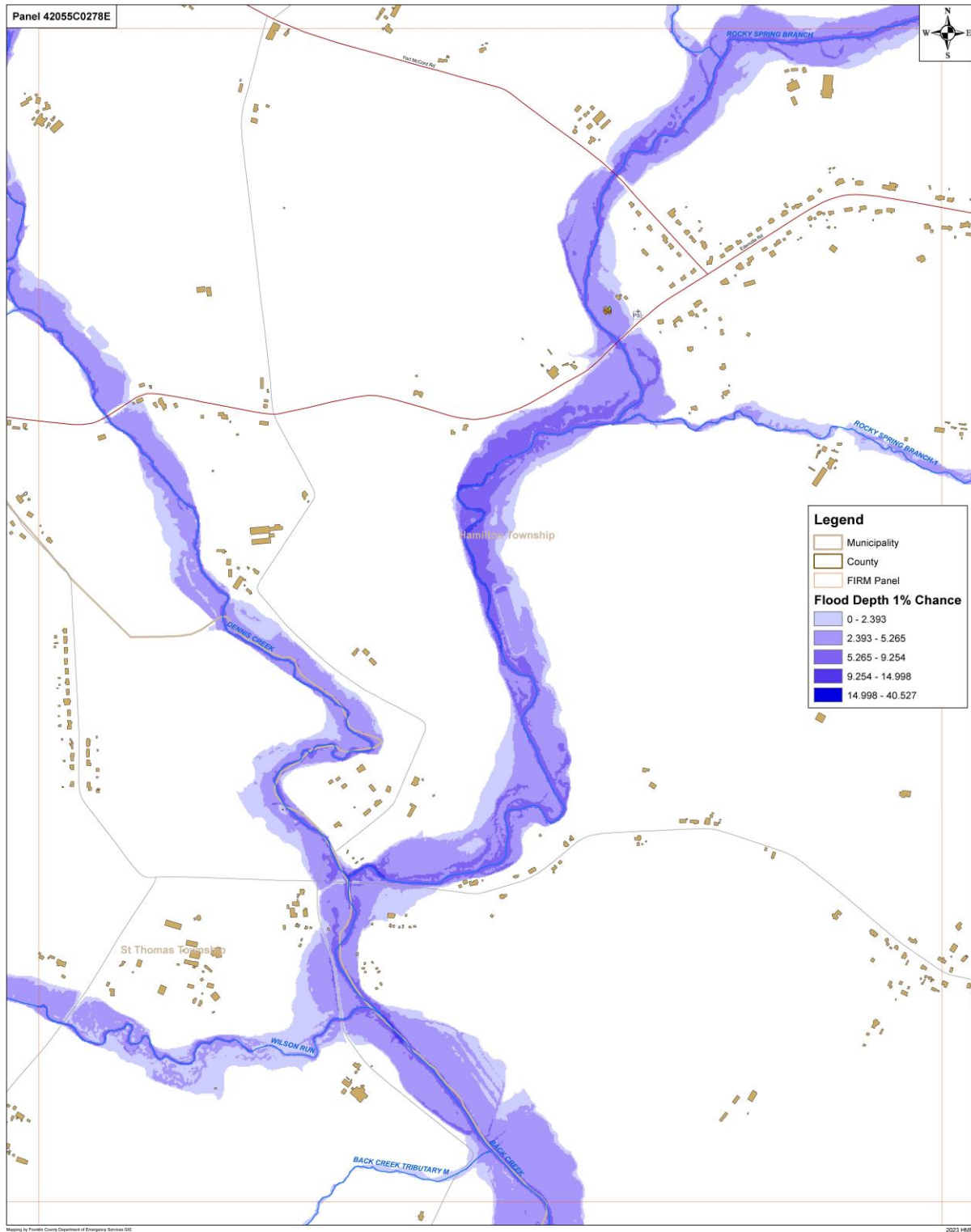


Figure G.66: Quadrant 4, Panel Number 42055C0278E

Appendix G: Franklin County DFIRM

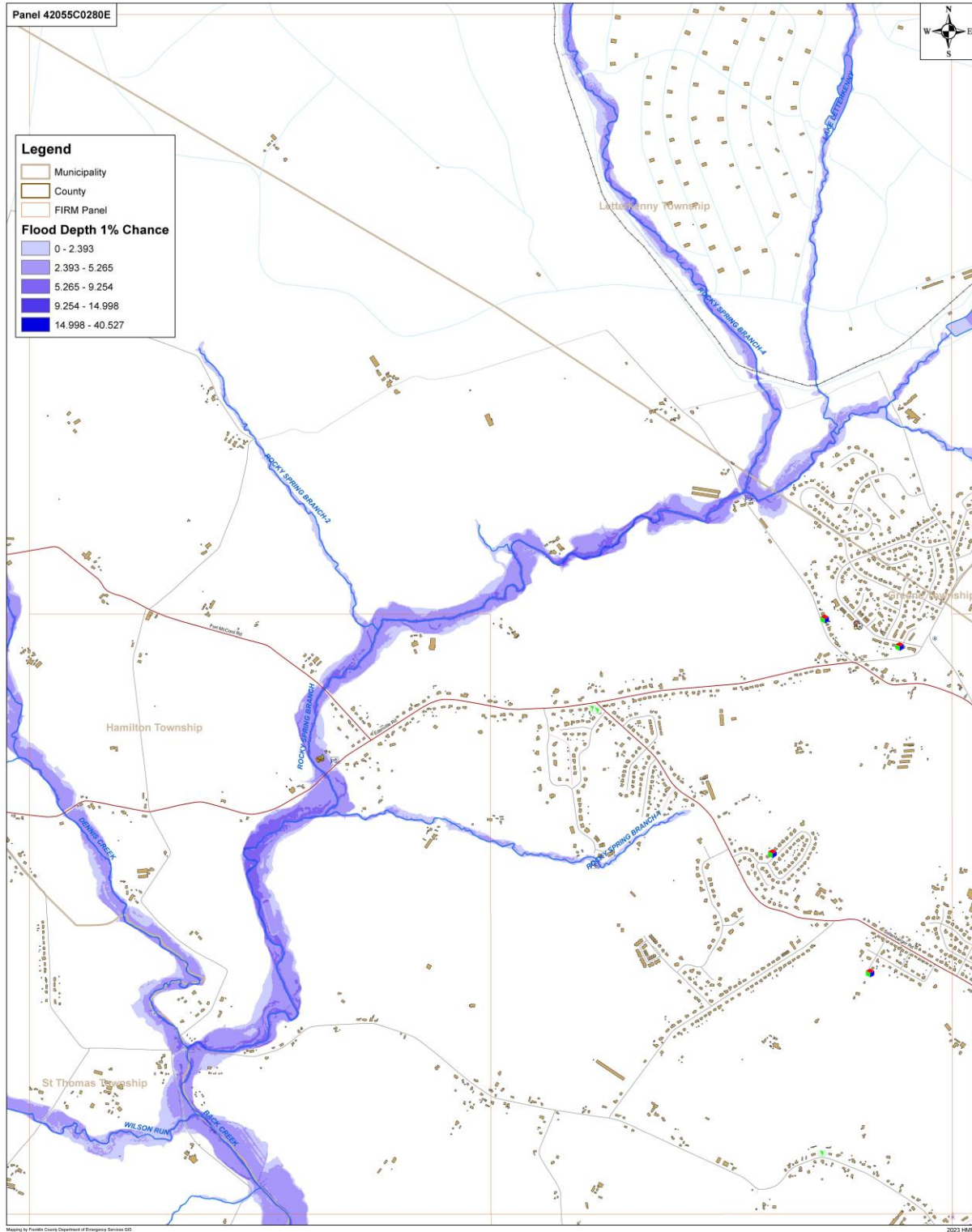


Figure G.67: Quadrant 4, Panel Number 42055C0280E

Appendix G: Franklin County DFIRM

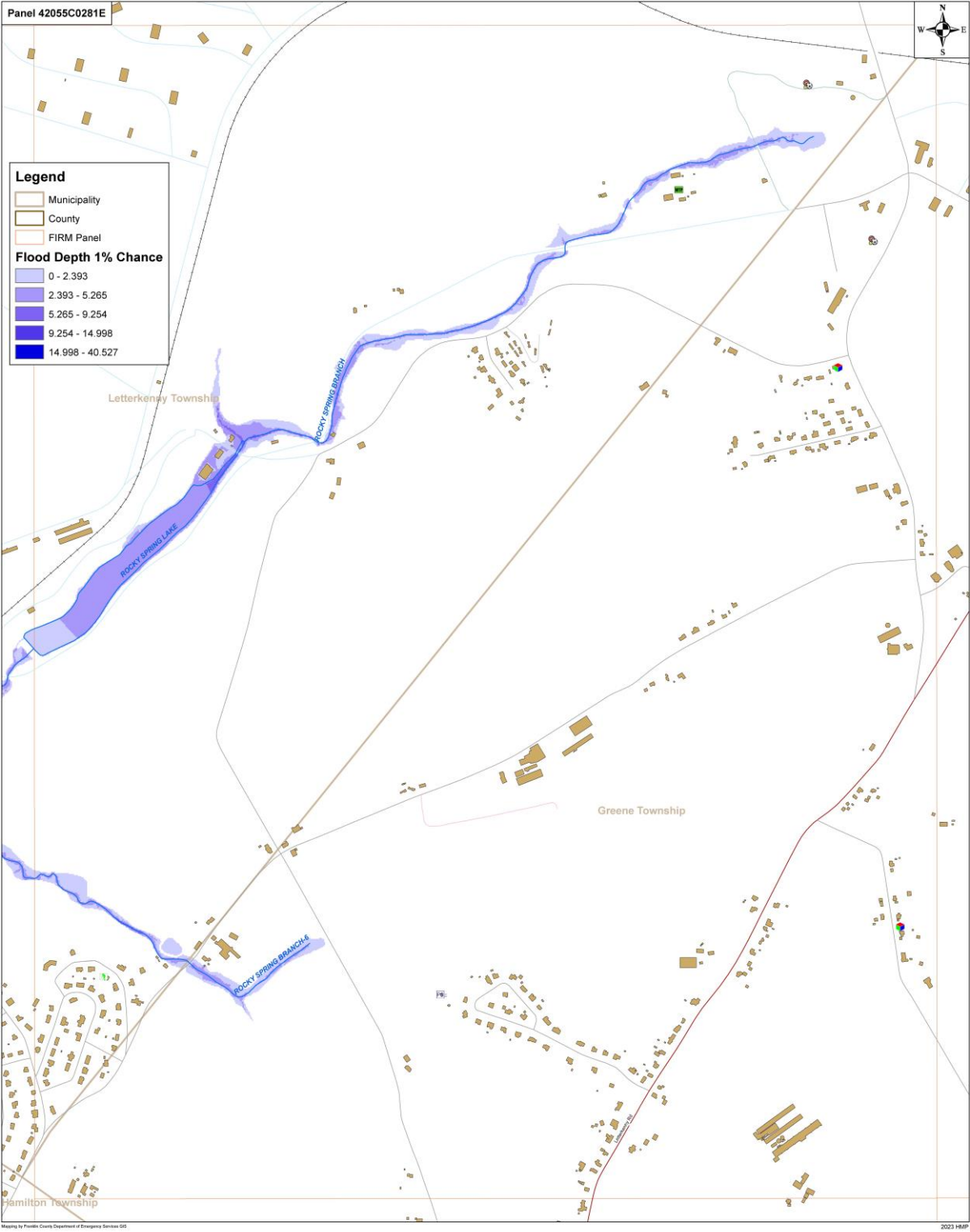


Figure G.68: Quadrant 4, Panel Number 42055C0281E

Appendix G: Franklin County DFIRM

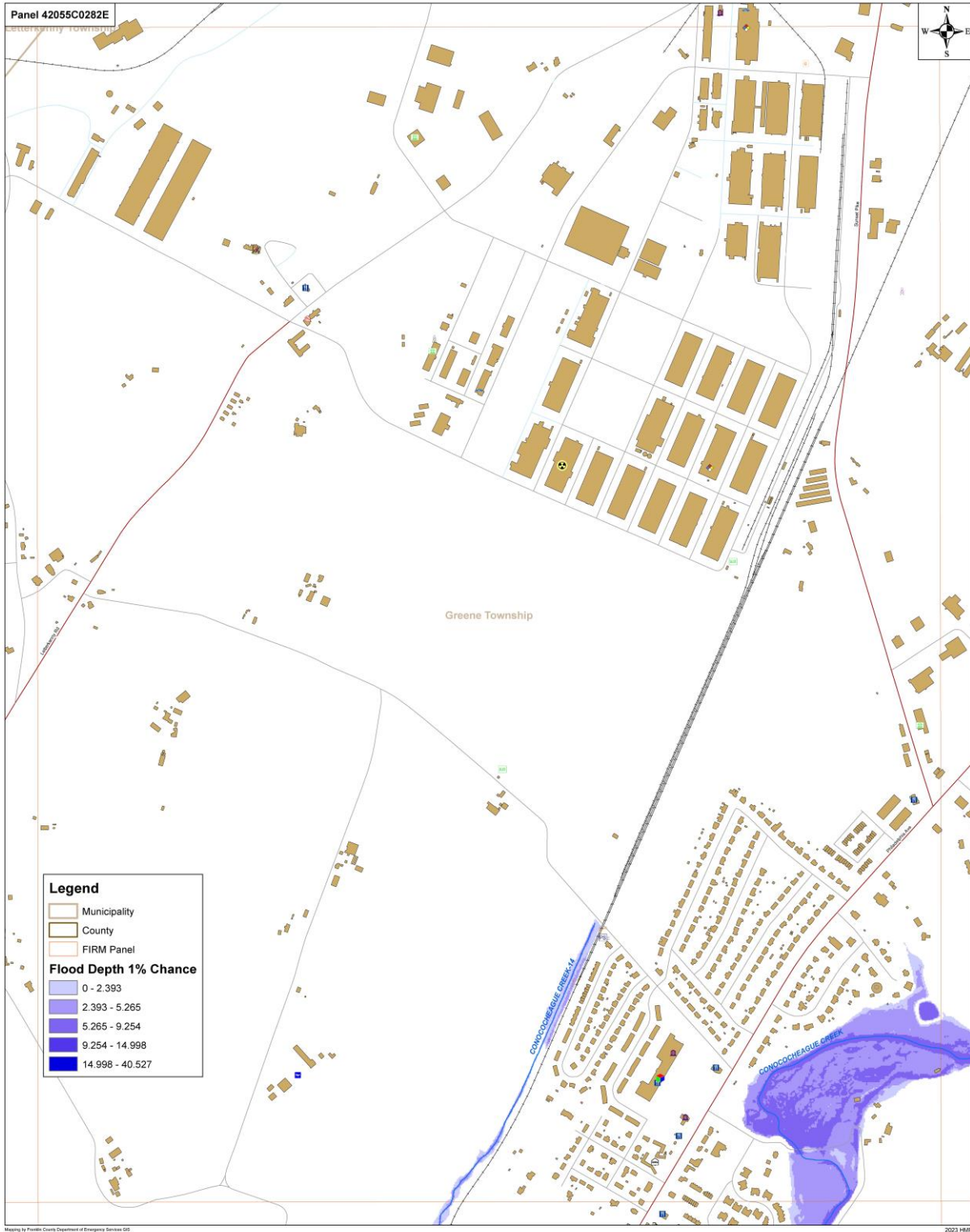


Figure G.69: Quadrant 4, Panel Number 42055C0282E

Appendix G: Franklin County DFIRM

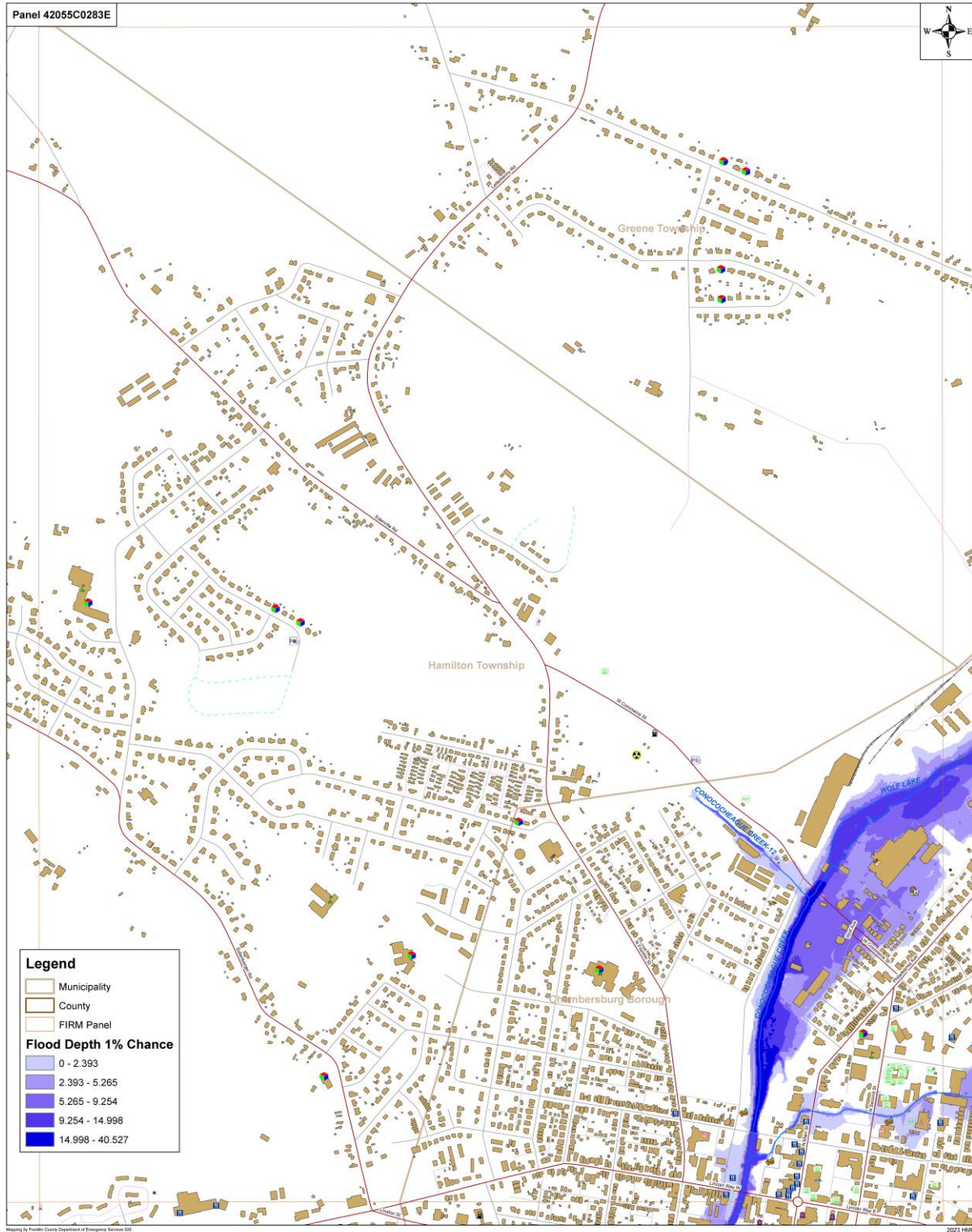


Figure G.70: Quadrant 4, Panel Number 42055C0283E

Appendix G: Franklin County DFIRM

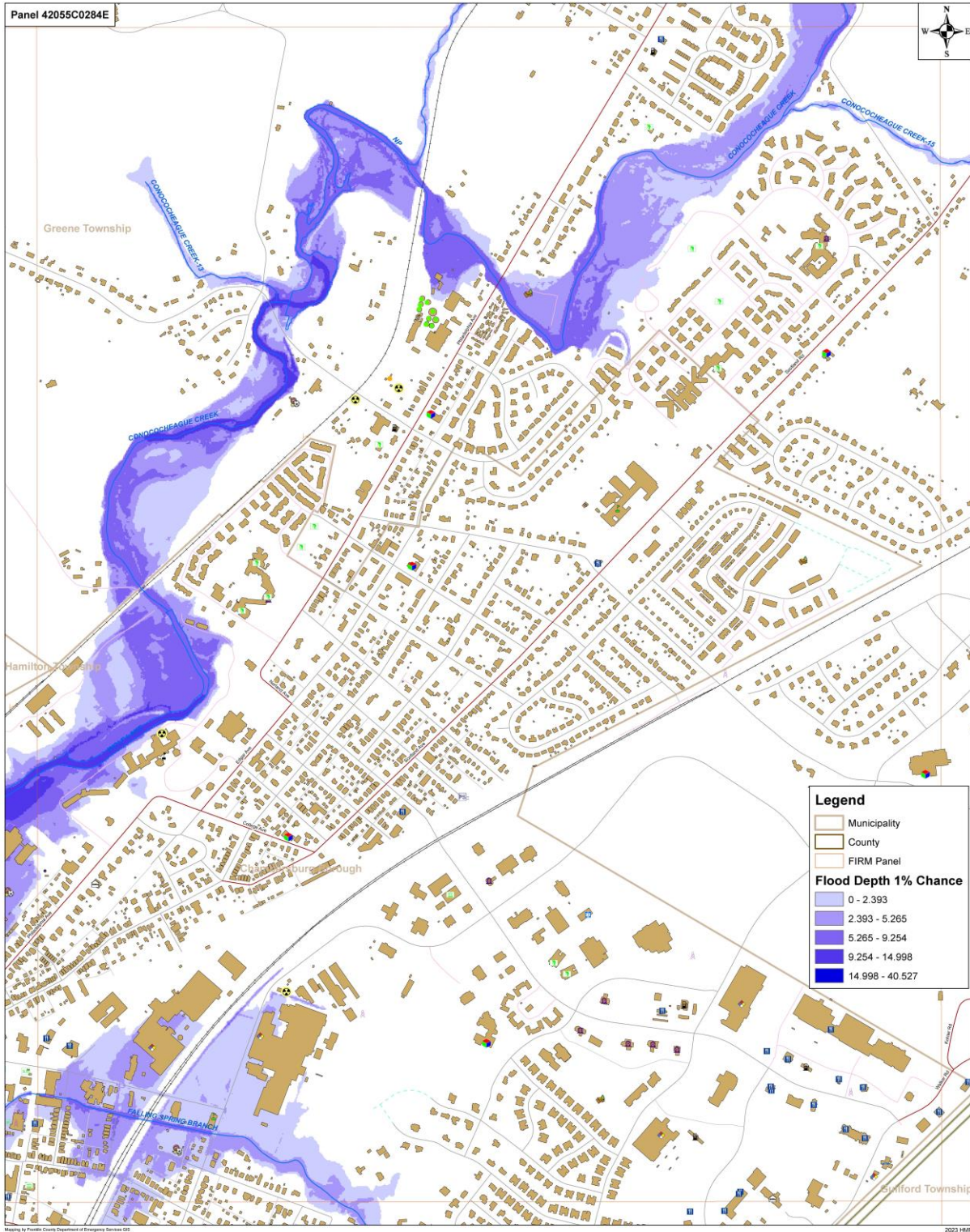


Figure G.71: Quadrant 4, Panel Number 42055C0284E

Panel 42055C0301E

Legend

- Municipality
- County
- FIRM Panel

Flood Depth 1% Chance

- 0 - 2.393
- 2.393 - 5.265
- 5.265 - 9.254
- 9.254 - 14.998
- 14.998 - 40.527

Greene Township

CORROCHOAGUE CREEK

Black Oak Rd

Power Line

lxxii

Appendix G: Franklin County DFIRM

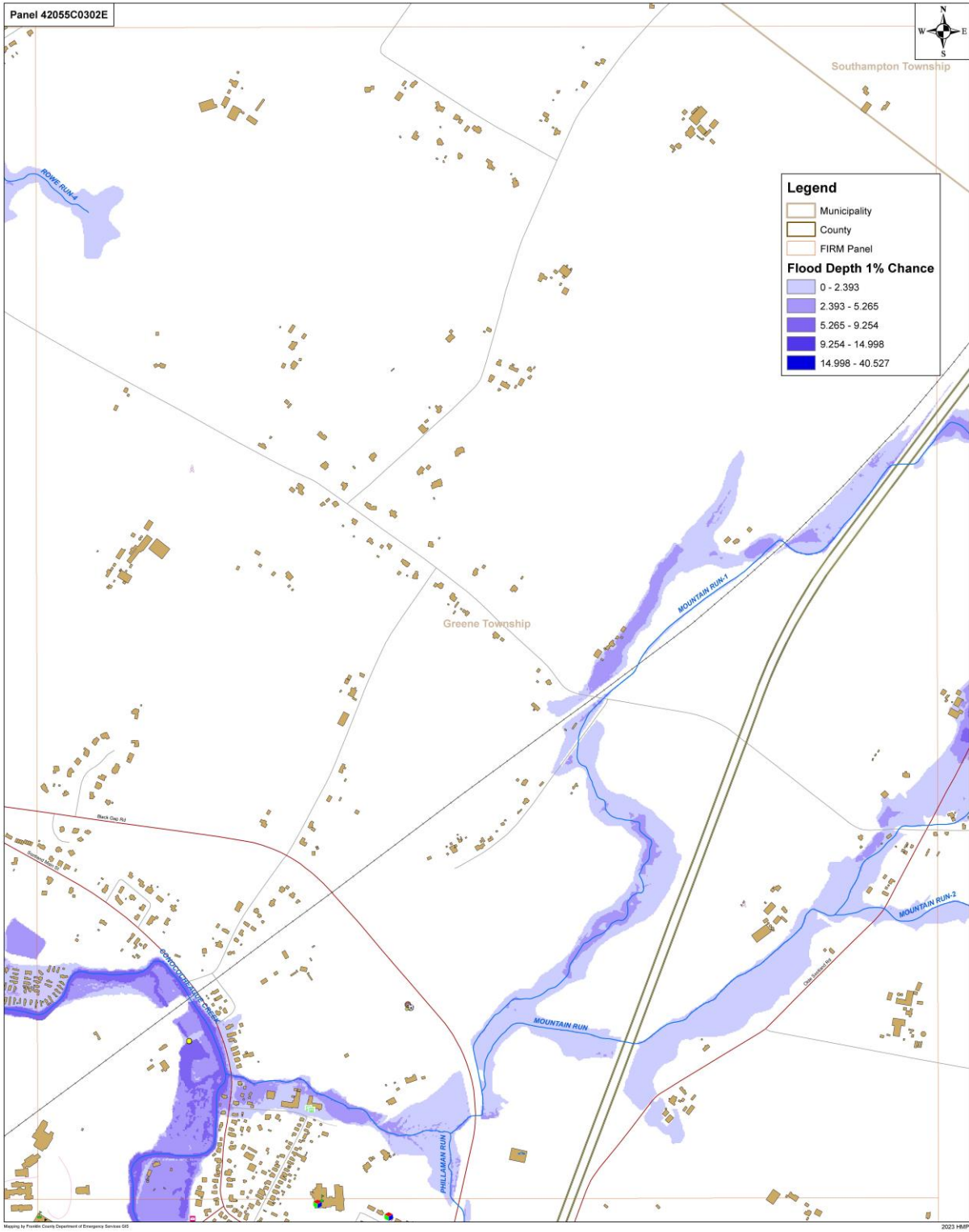


Figure G.73: Quadrant 4, Panel Number 42055C0302E

Appendix G: Franklin County DFIRM

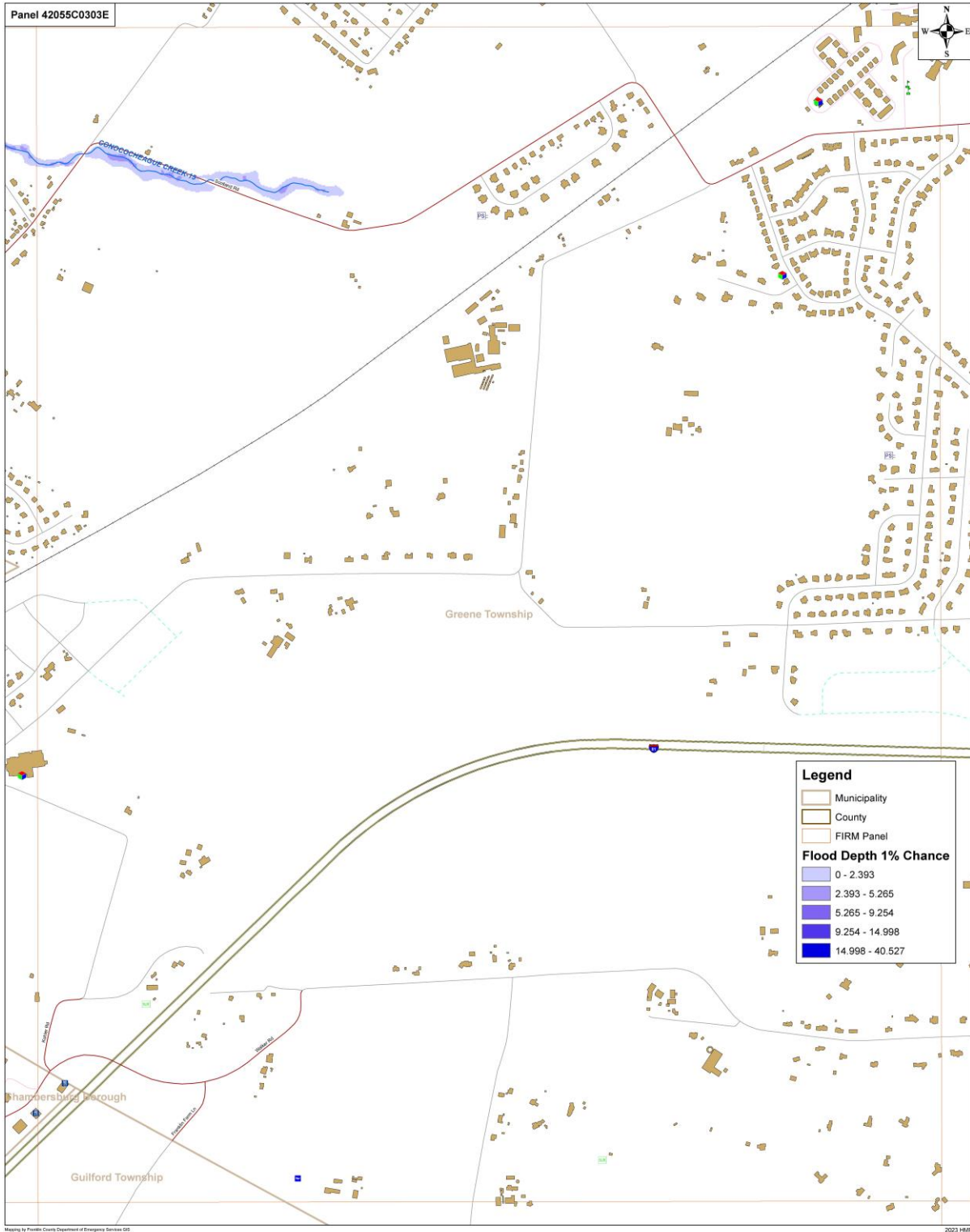


Figure G.74: Quadrant 4, Panel Number 42055C0303E

Appendix G: Franklin County DFIRM

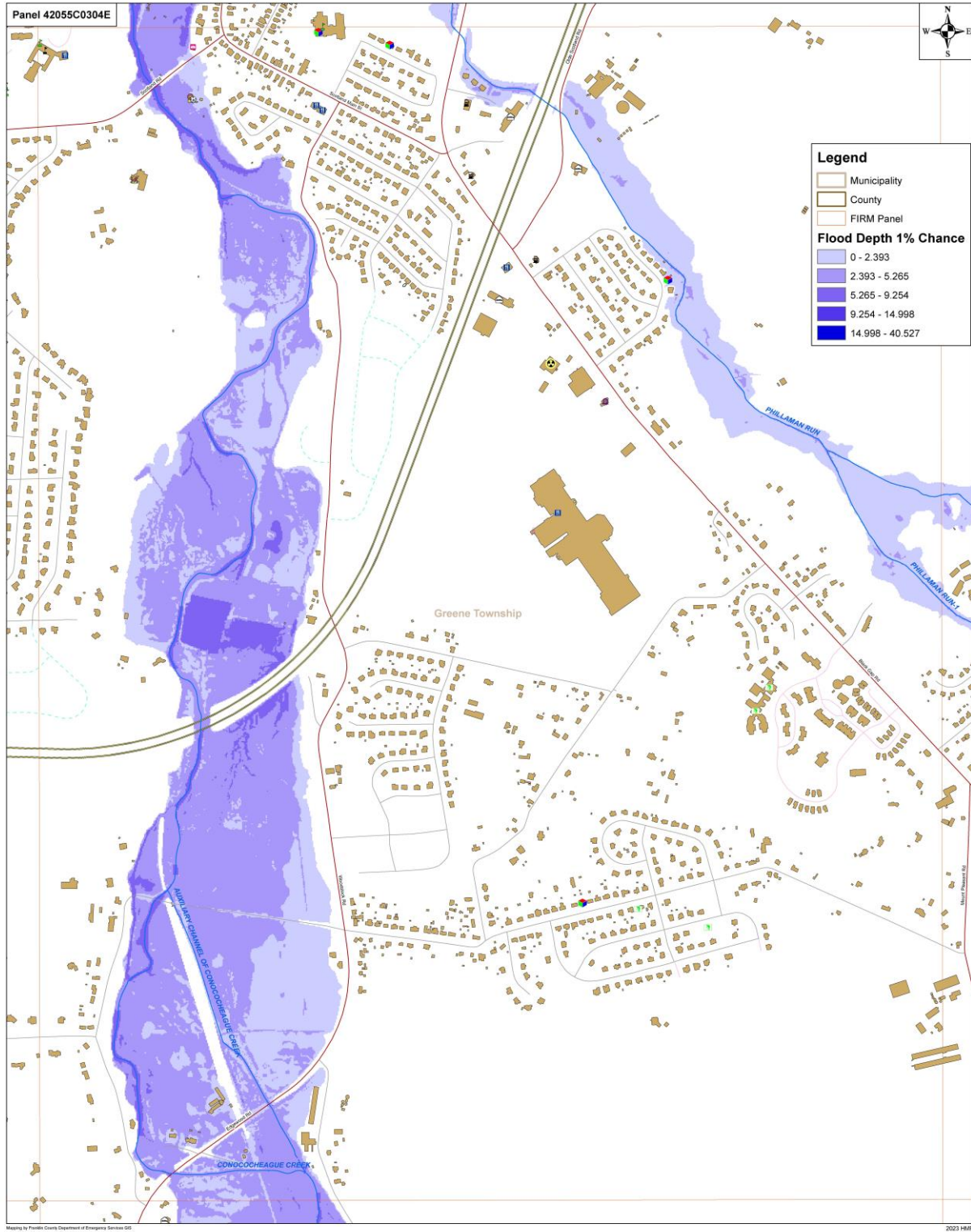


Figure G.75: Quadrant 4, Panel Number 42055C0304E

Appendix G: Franklin County DFIRM

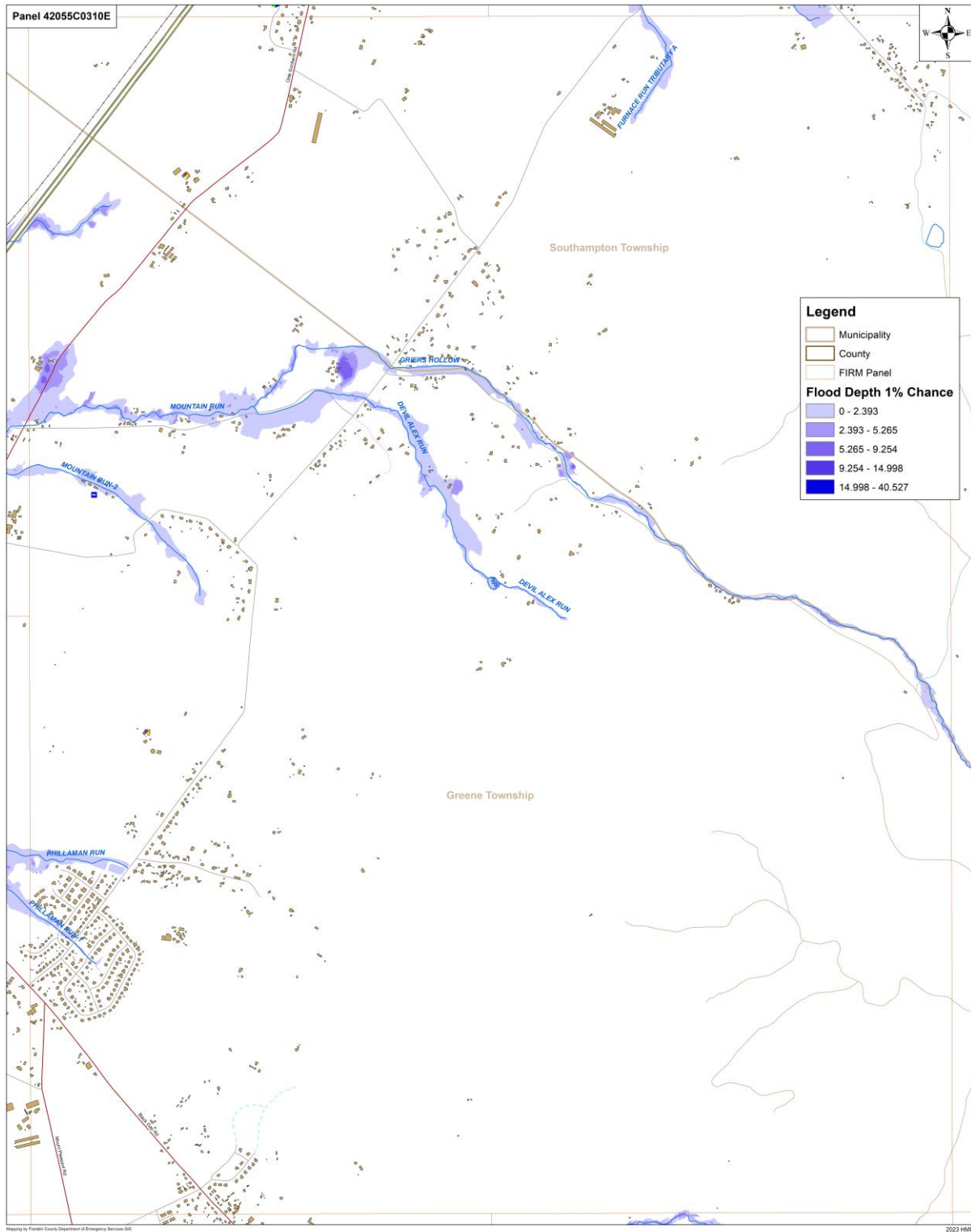


Figure G.76: Quadrant 4, Panel Number 42055C0310E

Appendix G: Franklin County DFIRM

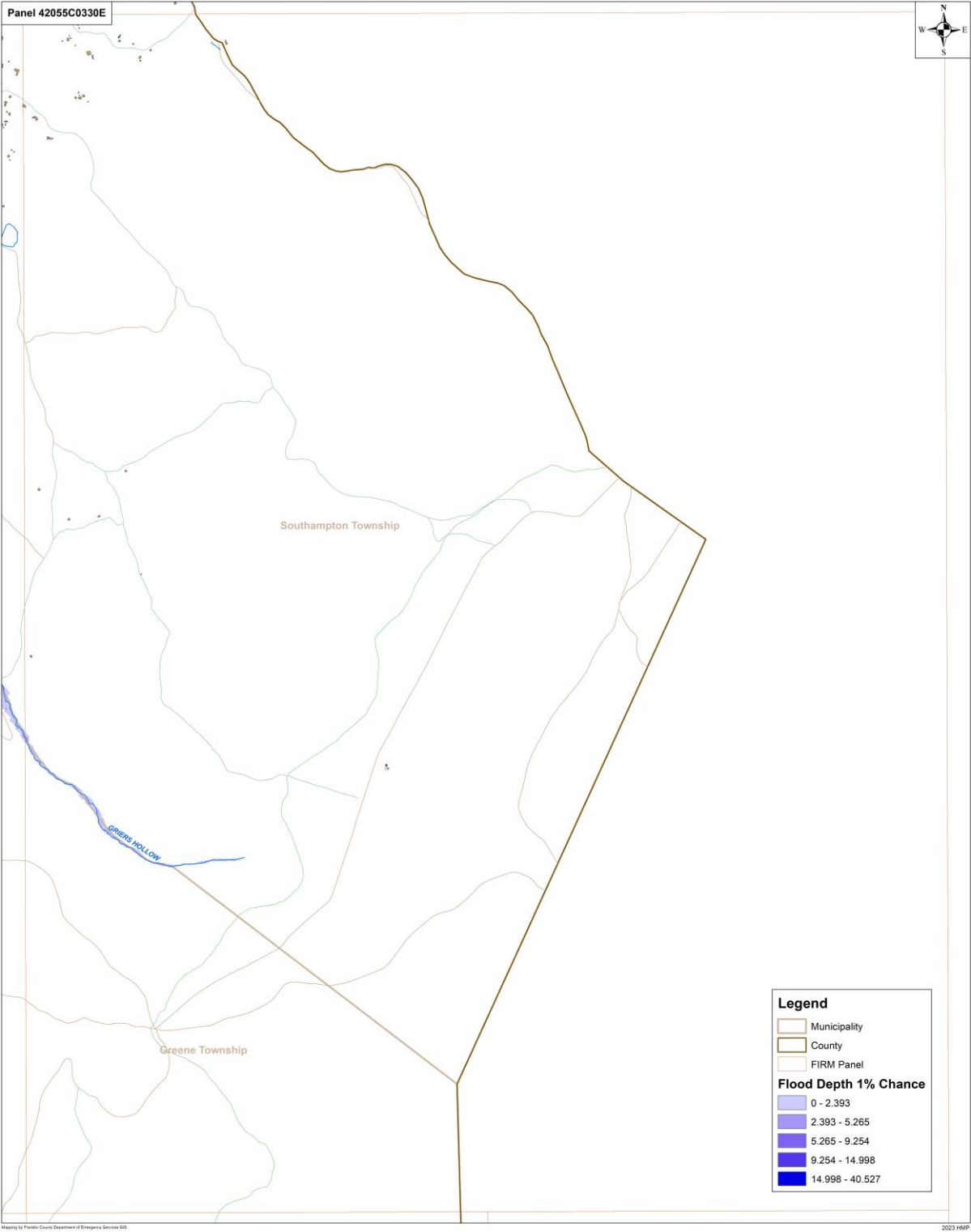


Figure G.77: Quadrant 4, Panel Number 42055C0330E

Appendix G: Franklin County DFIRM

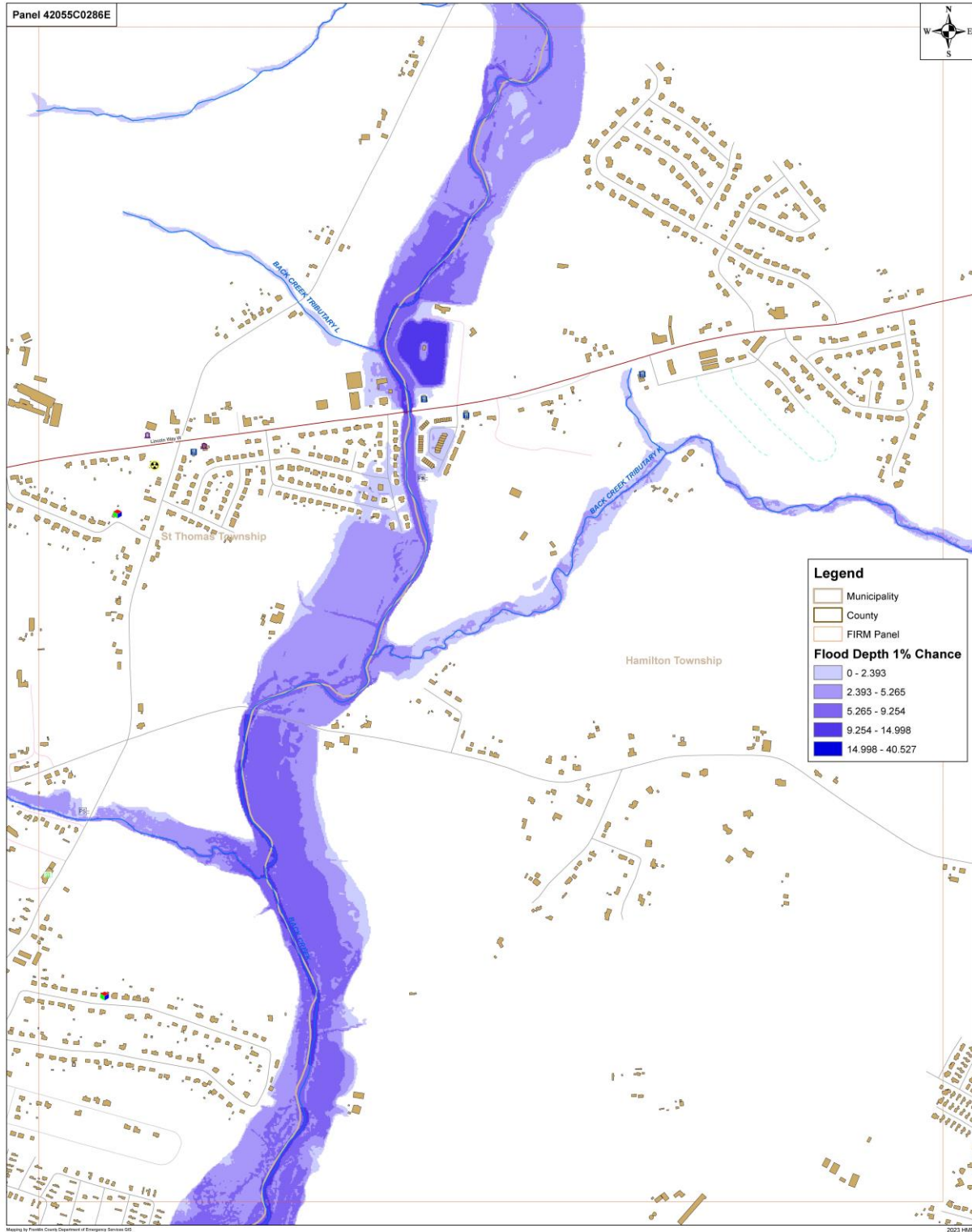


Figure G.78: Quadrant 4, Panel Number 42055C0286E

Appendix G: Franklin County DFIRM

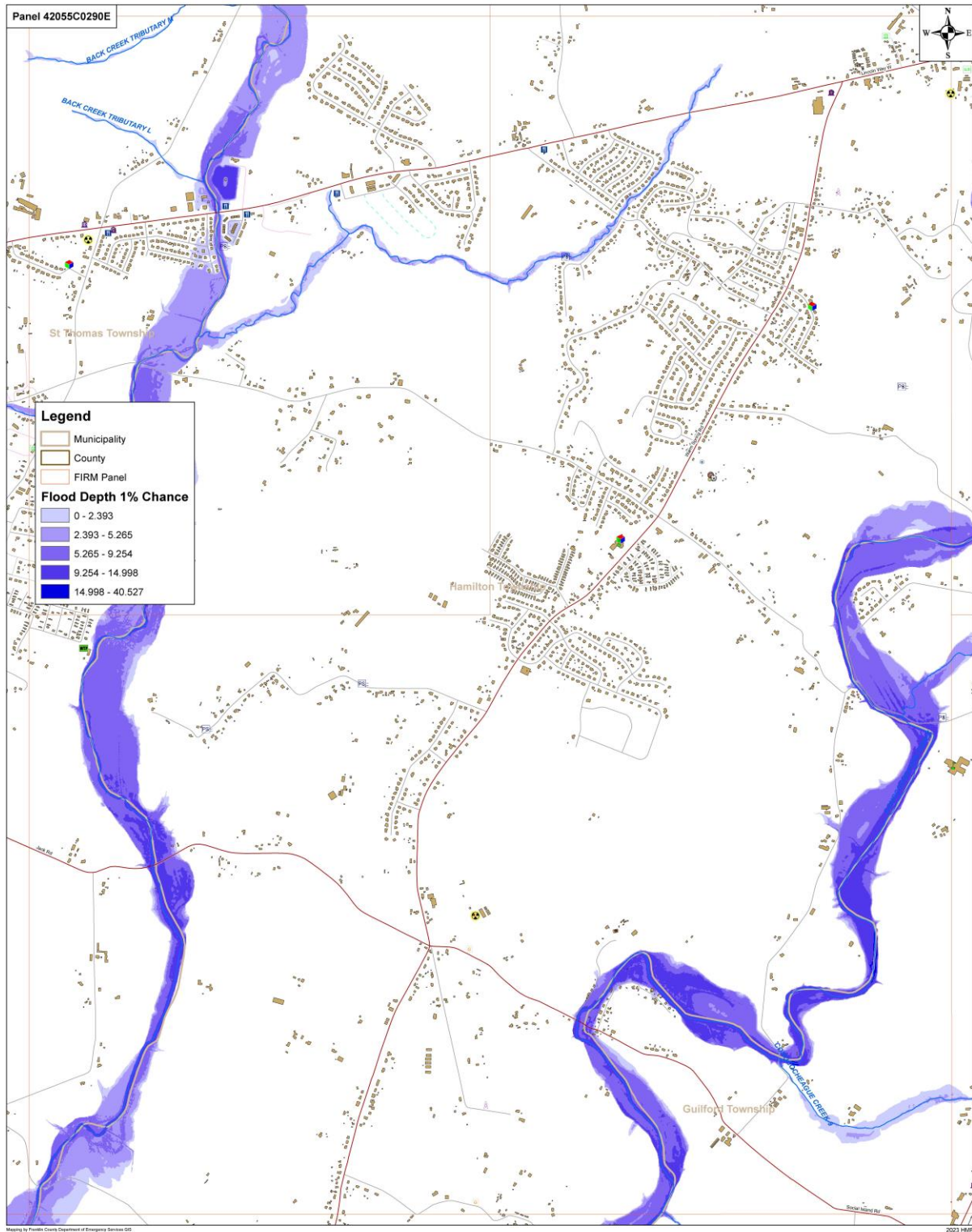


Figure G.79: Quadrant 4, Panel Number 42055C0290E

Appendix G: Franklin County DFIRM



Figure G.80: Quadrant 4, Panel Number 42055C0291E

Appendix G: Franklin County DFIRM



Figure G.81: Quadrant 4, Panel Number 42055C0292E

Appendix G: Franklin County DFIRM

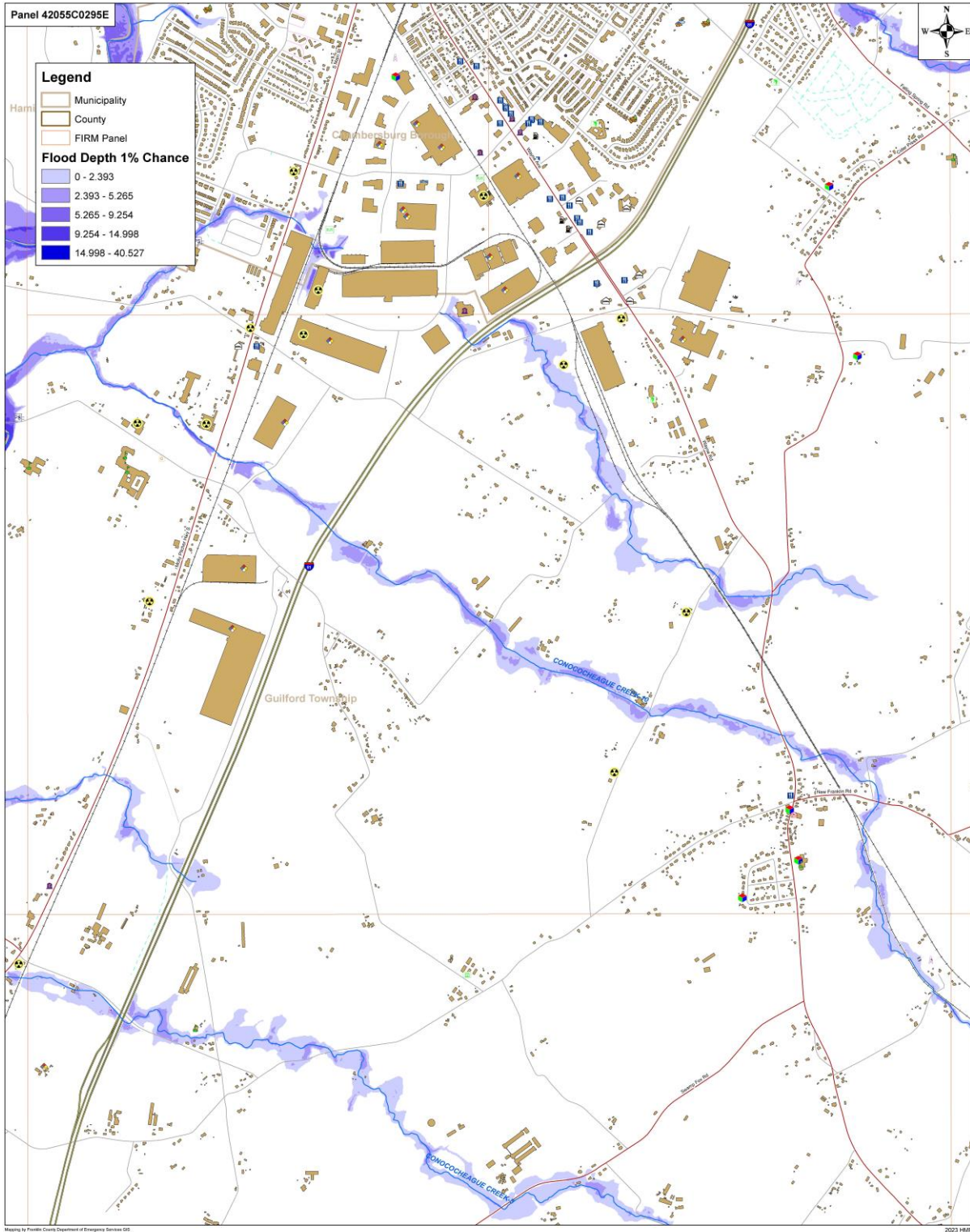


Figure G.82: Quadrant 4, Panel Number 42055C0295E

Appendix G: Franklin County DFIRM



Figure G.83: Quadrant 4, Panel Number 42055C0311E

Appendix G: Franklin County DFIRM

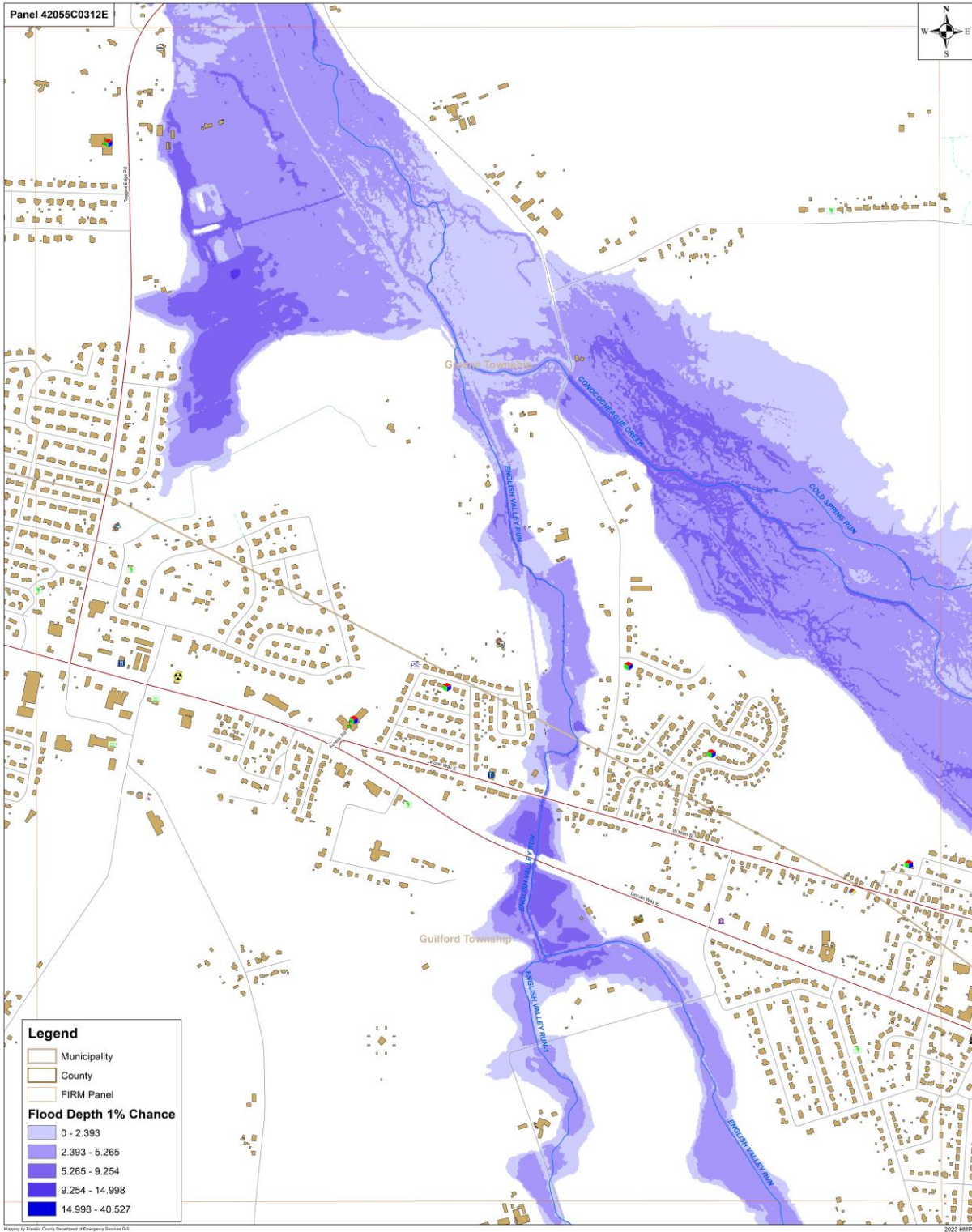


Figure G.84: Quadrant 4, Panel Number 42055C0312E

Appendix G: Franklin County DFIRM

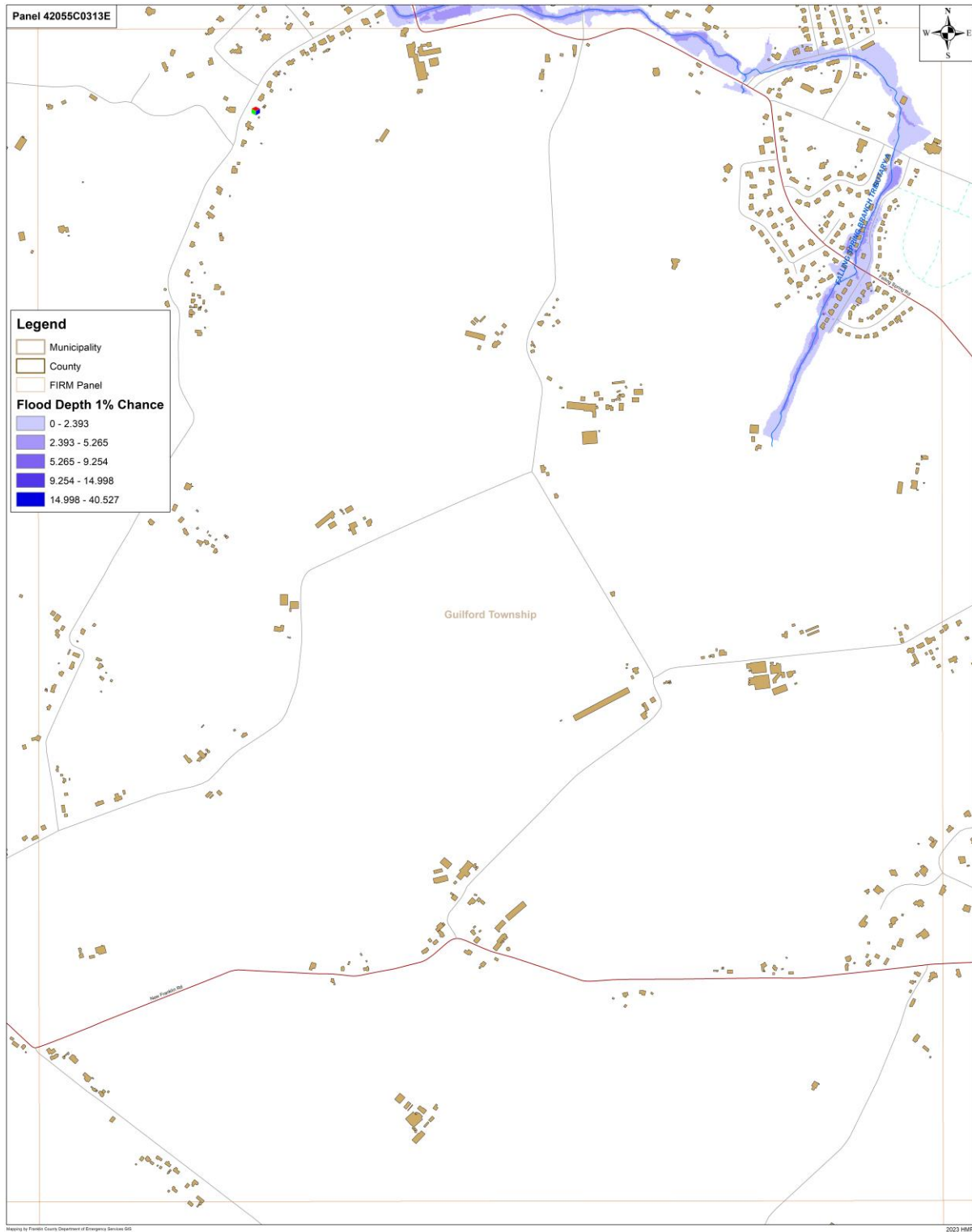


Figure G.85: Quadrant 4, Panel Number 42055C0313E

Appendix G: Franklin County DFIRM

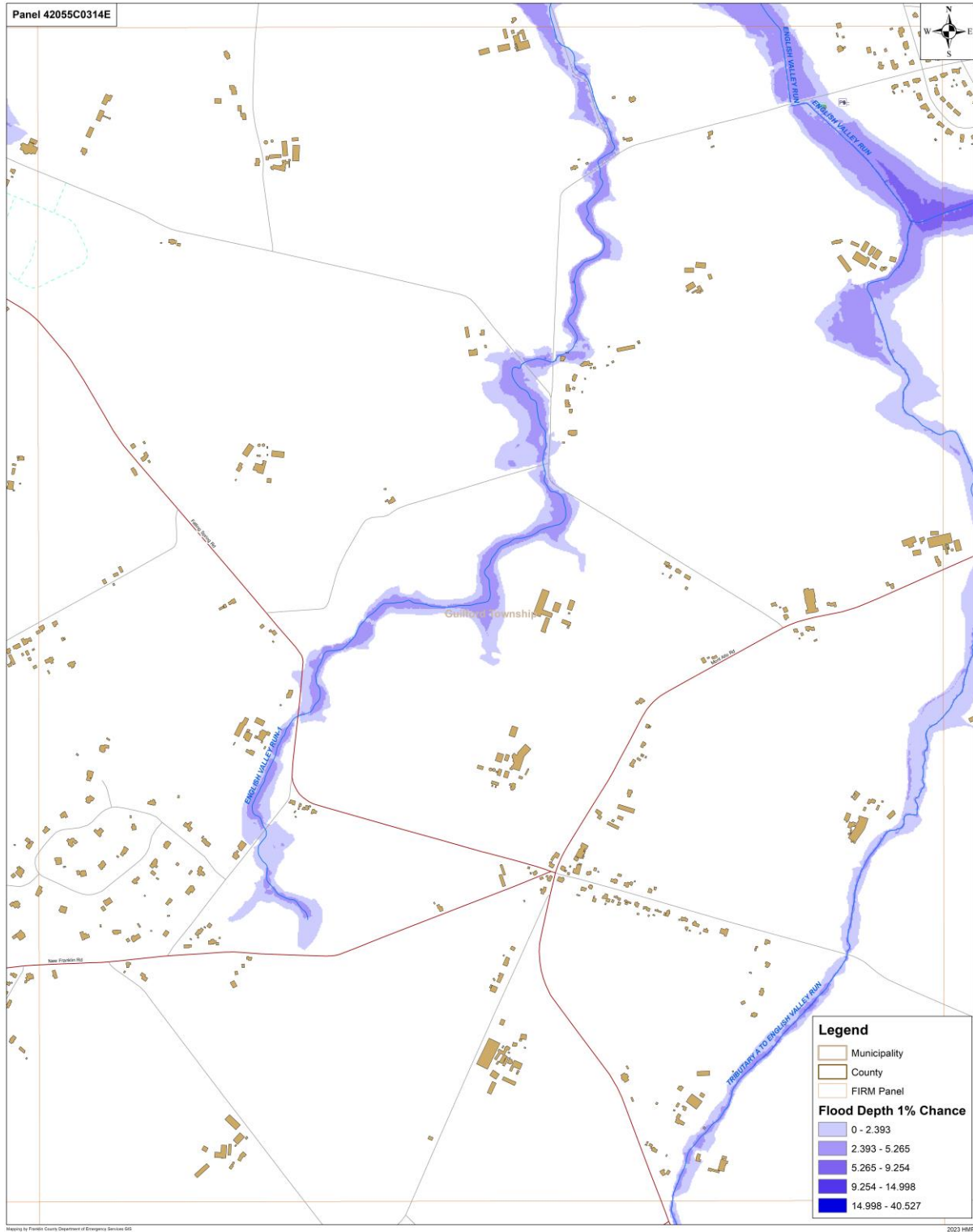


Figure G.86: Quadrant 4, Panel Number 42055C0314E

Appendix G: Franklin County DFIRM

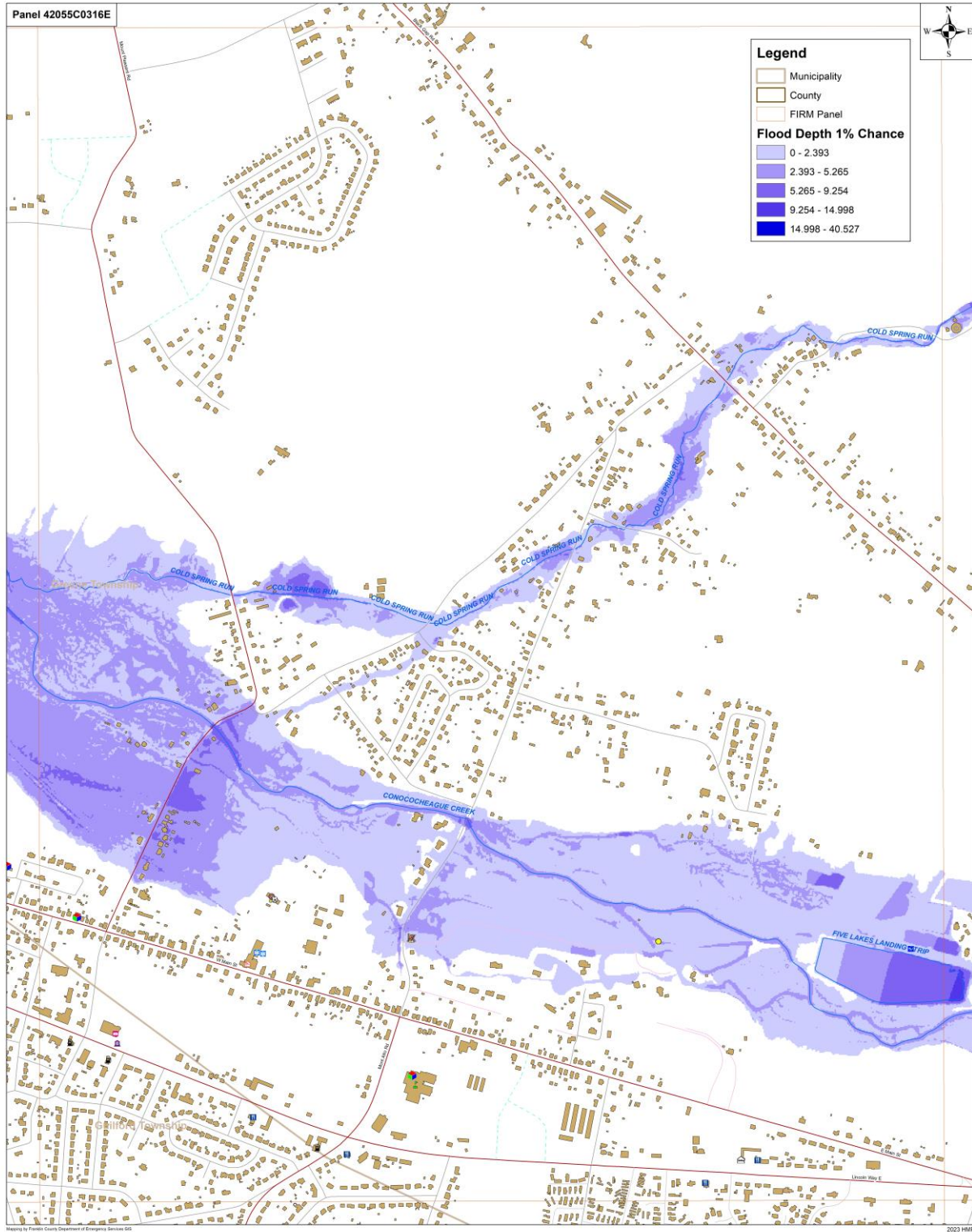


Figure G.87: Quadrant 4, Panel Number 42055C0316E

Appendix G: Franklin County DFIRM

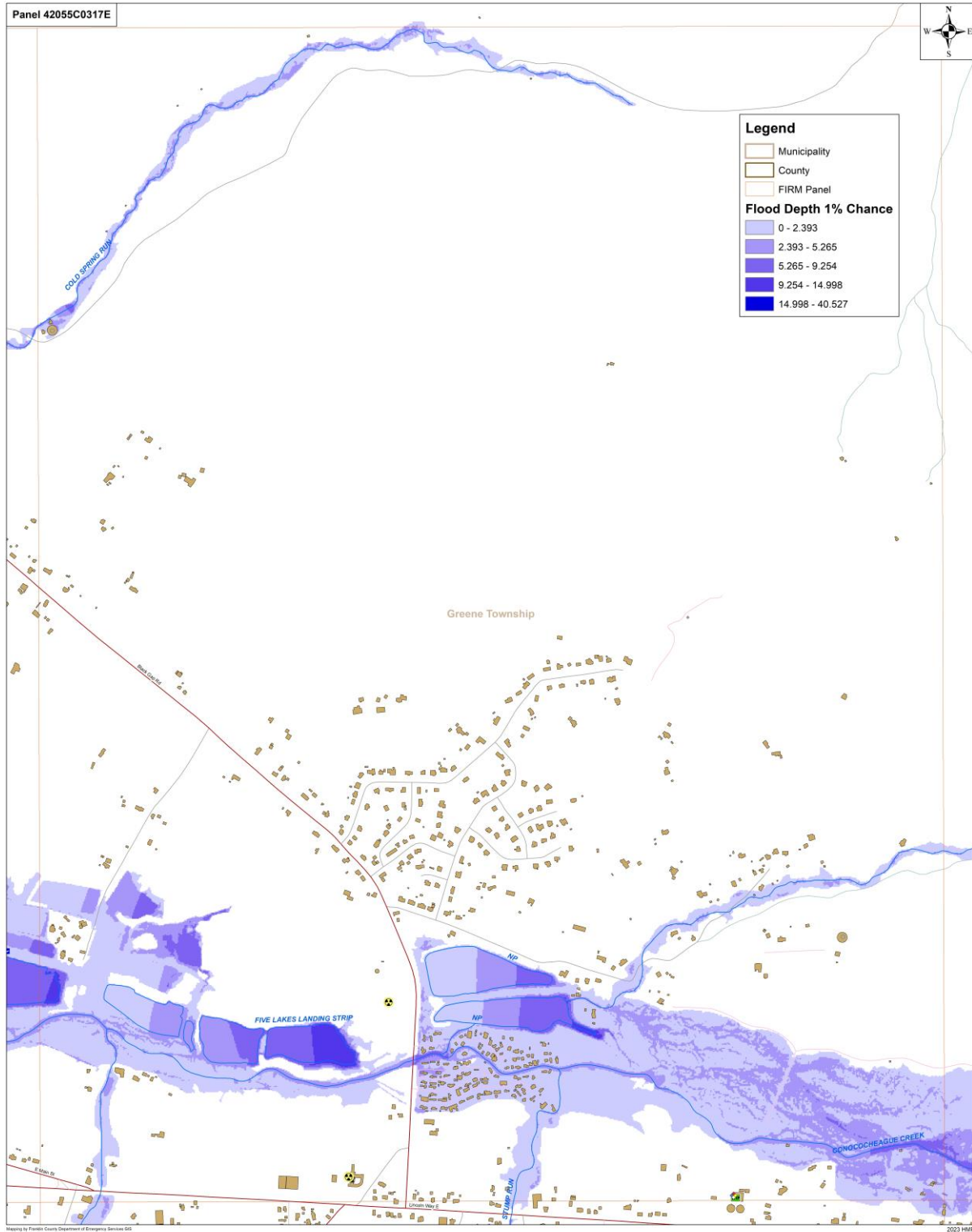


Figure G.88: Quadrant 4, Panel Number 42055C0317E

Appendix G: Franklin County DFIRM

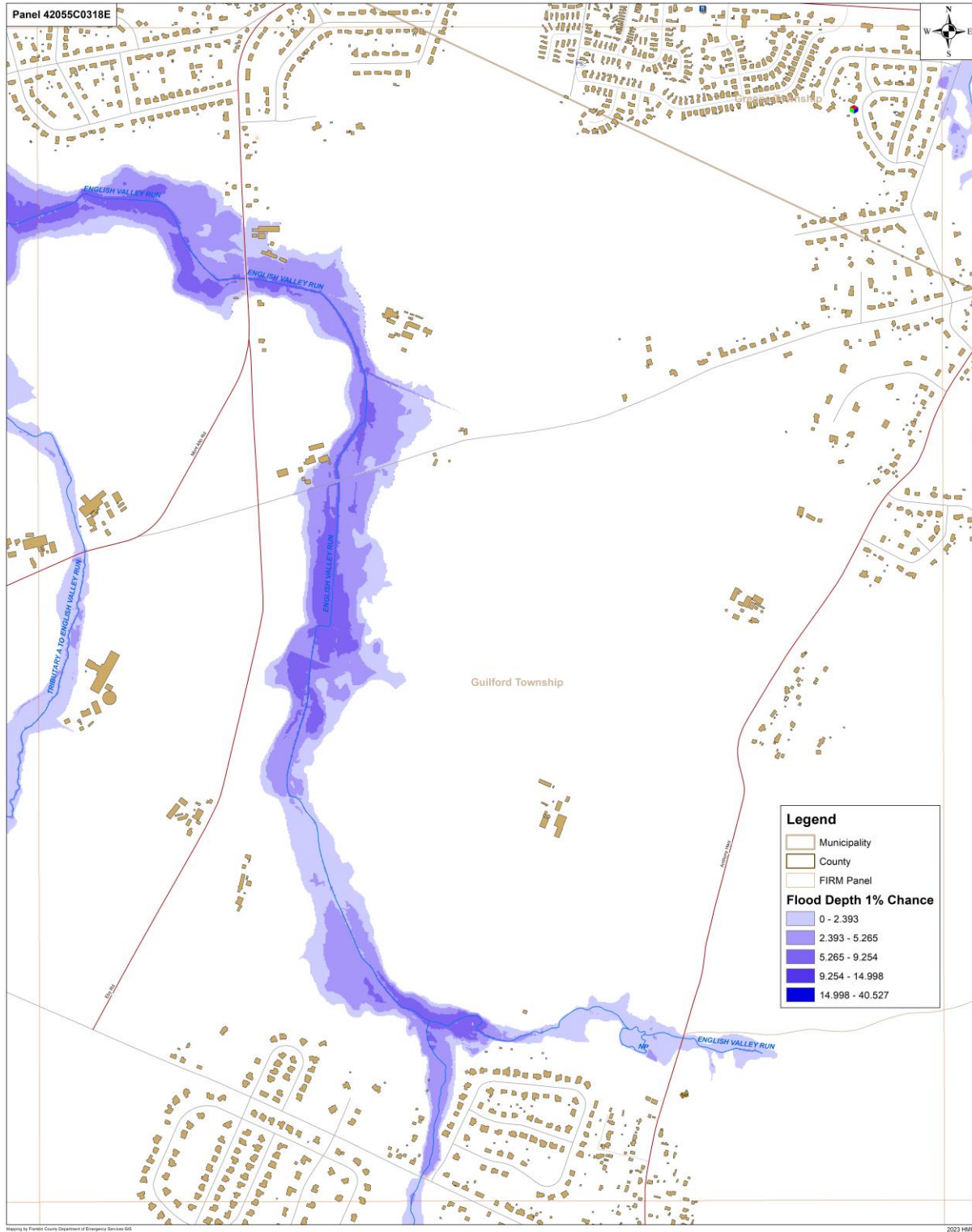


Figure G.89: Quadrant 4, Panel Number 42055C0318E

Appendix G: Franklin County DFIRM

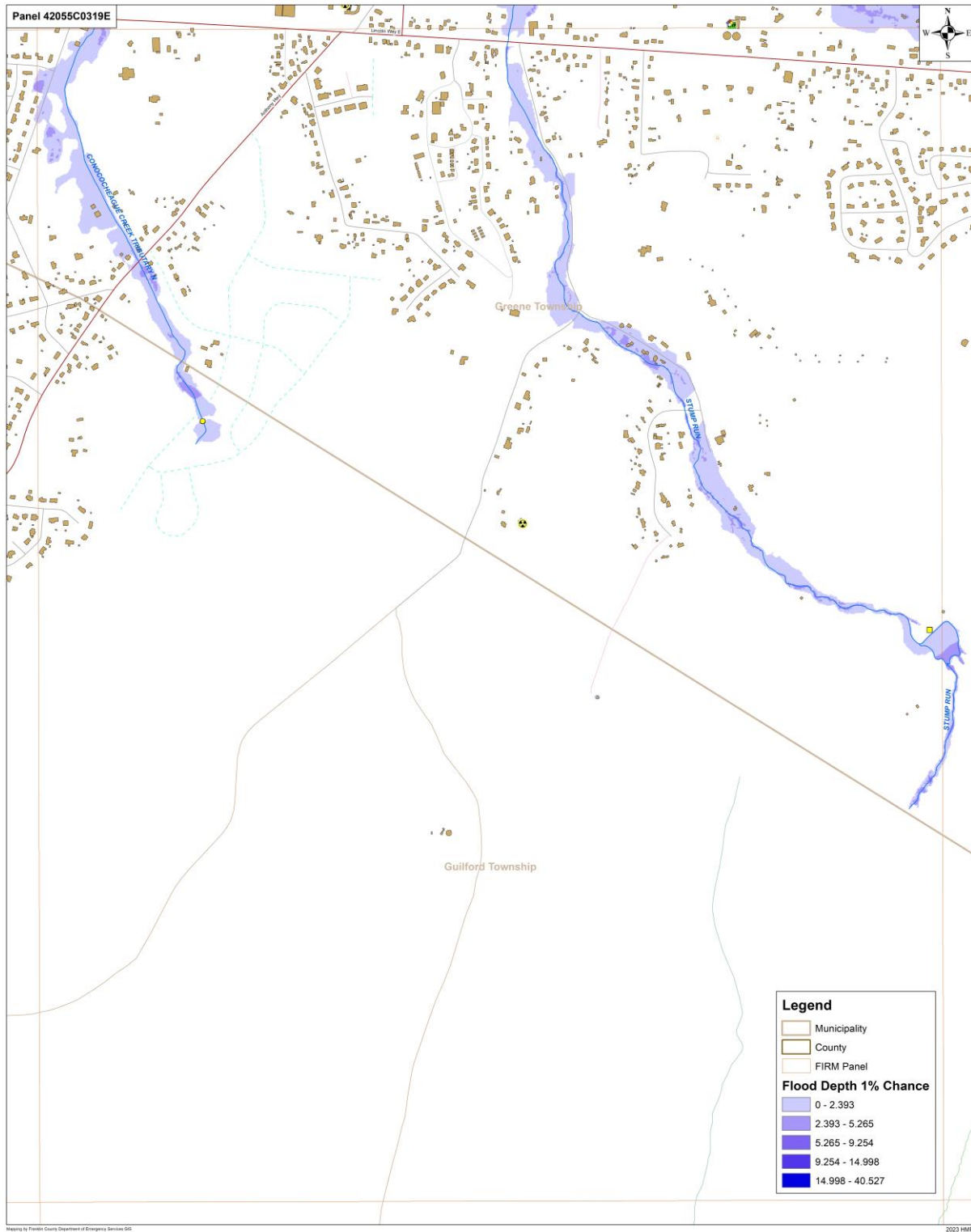


Figure G.90: Quadrant 4, Panel Number 42055C0319E

Appendix G: Franklin County DFIRM

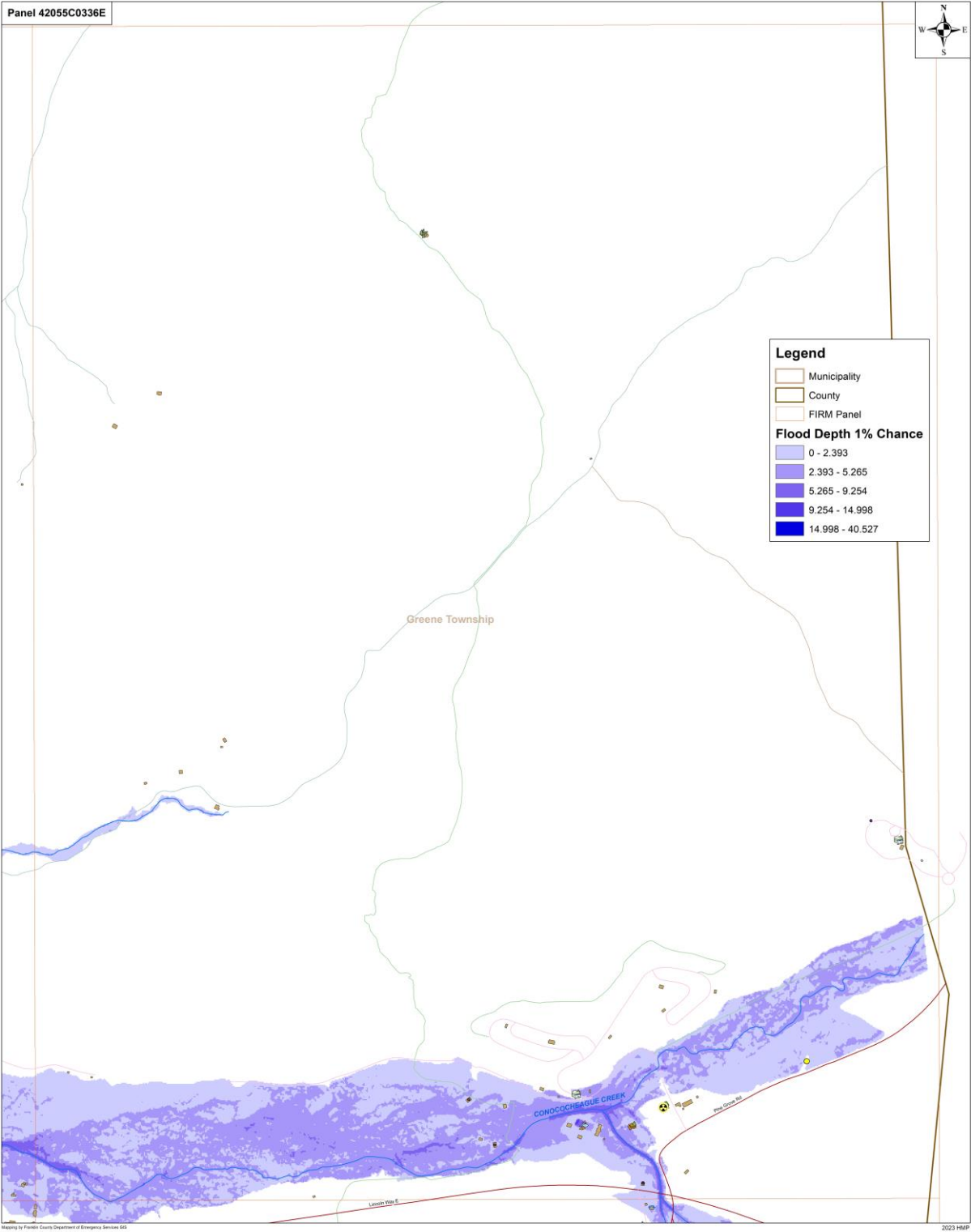


Figure G.91: Quadrant 4, Panel Number 42055C0336E

Appendix G: Franklin County DFIRM

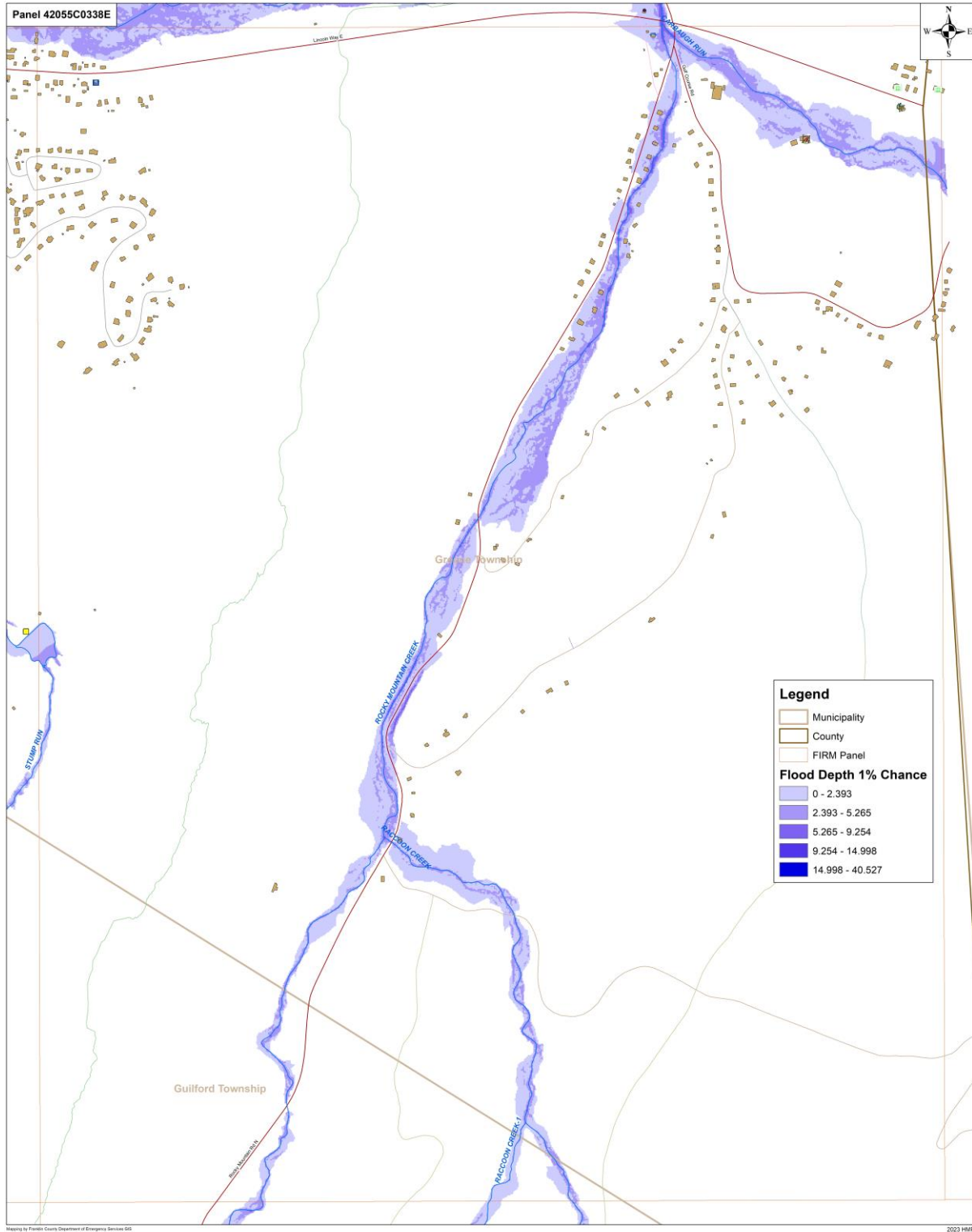


Figure G.92: Quadrant 4, Panel Number 42055C0338E

Appendix G: Franklin County DFIRM

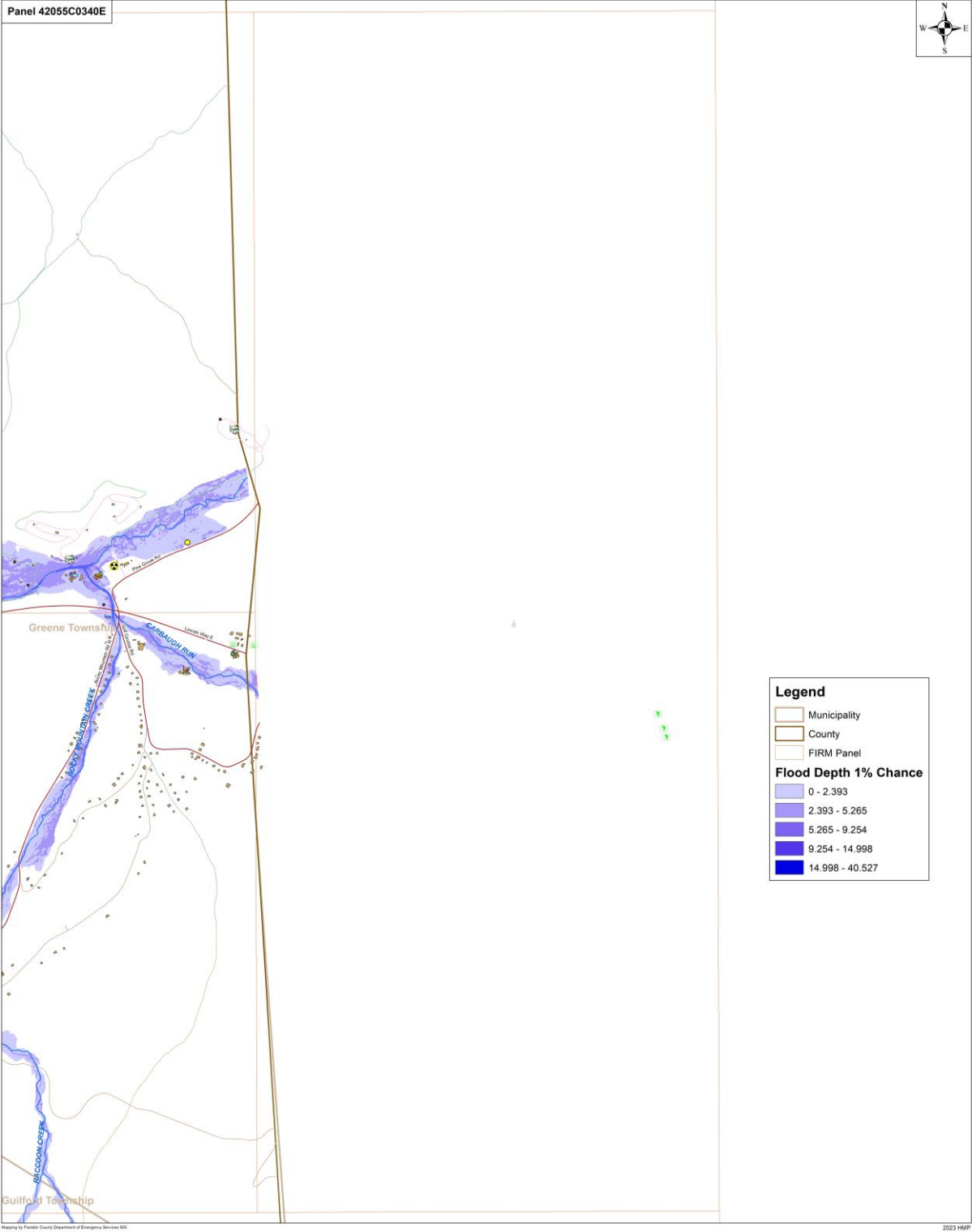


Figure G.93: Quadrant 4, Panel Number 42055C0340E

Appendix G: Franklin County DFIRM

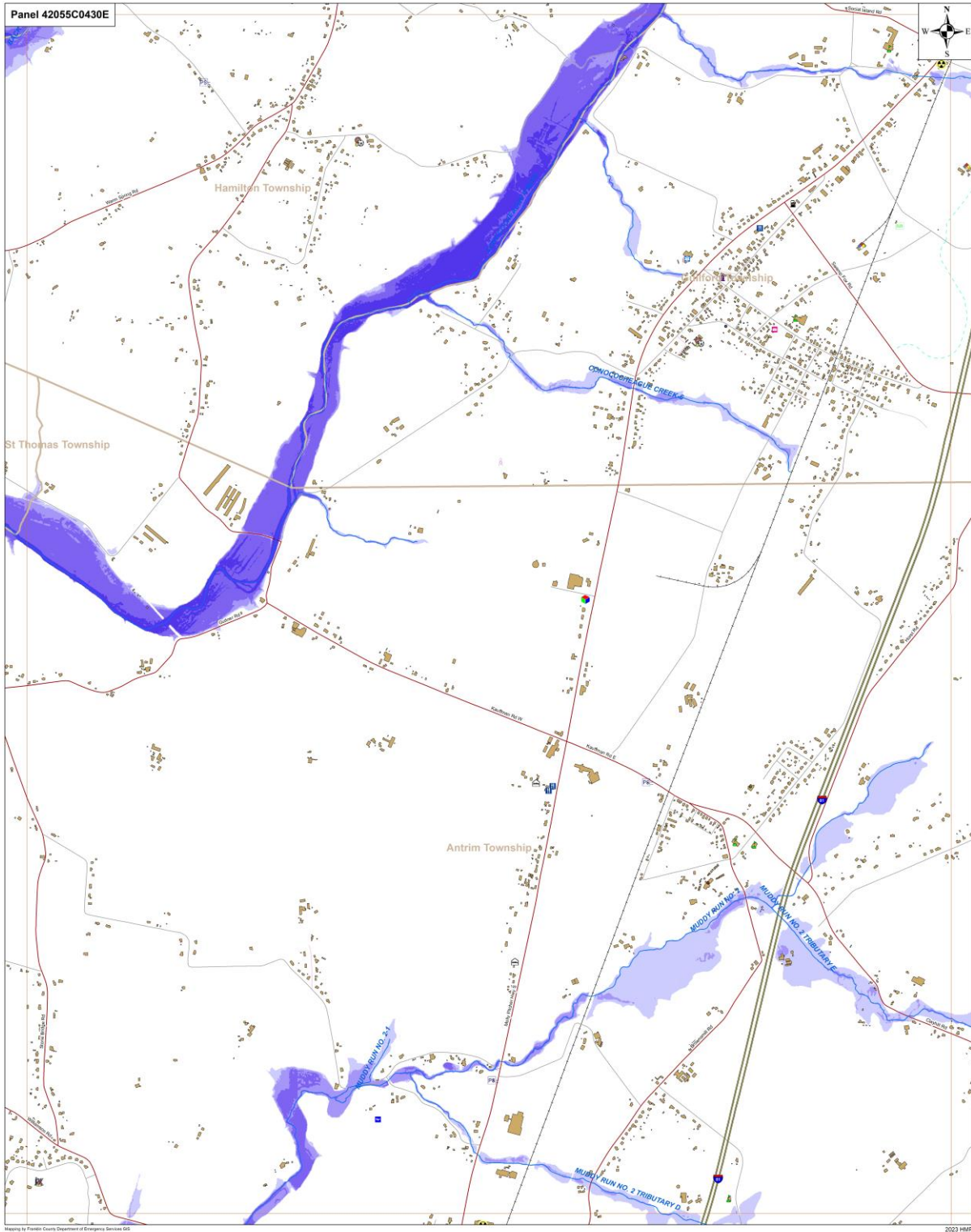


Figure G.94: Quadrant 4, Panel Number 42055C0430E

Appendix G: Franklin County DFIRM

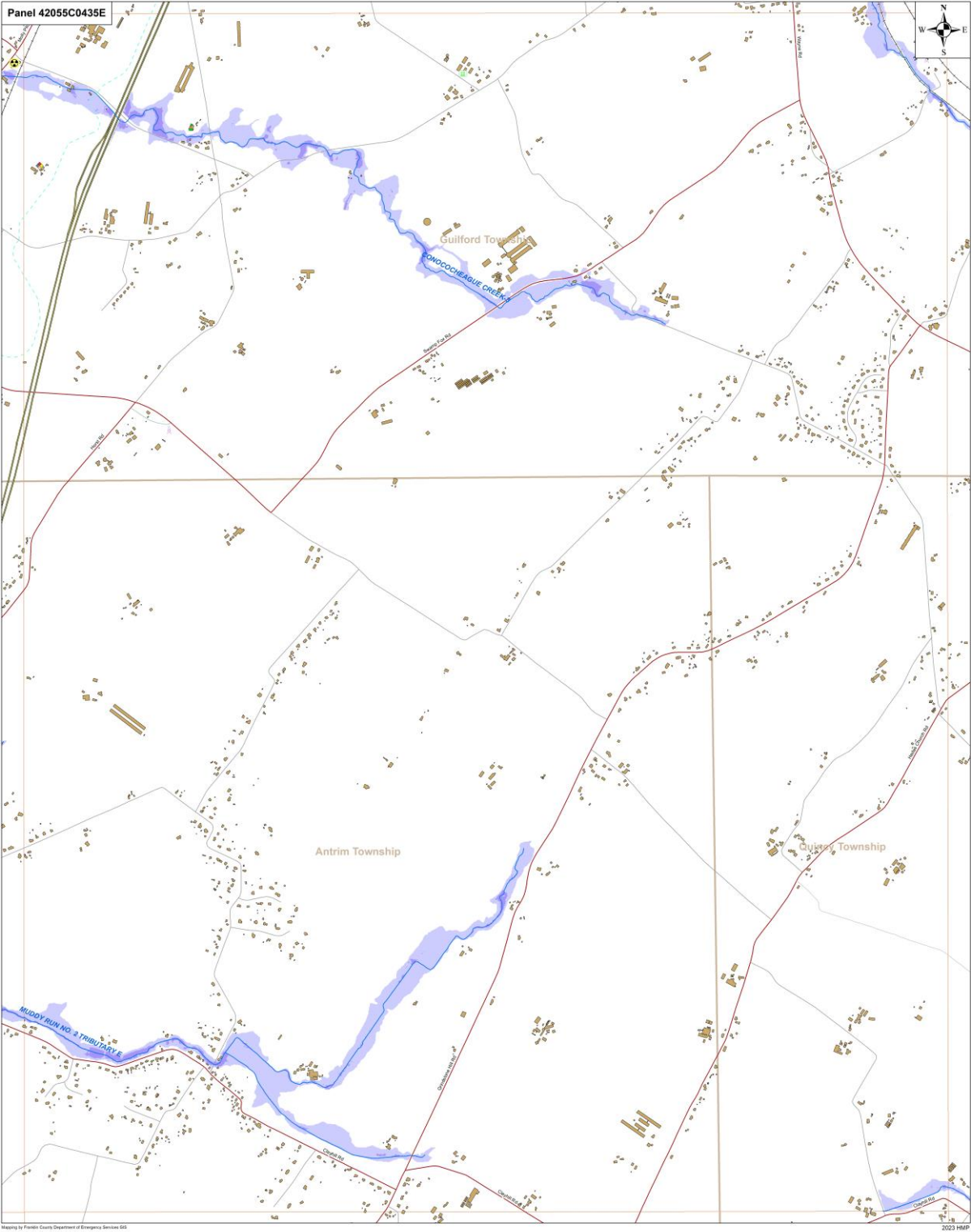


Figure G.95: Quadrant 4, Panel Number 42055C0435E

Appendix G: Franklin County DFIRM

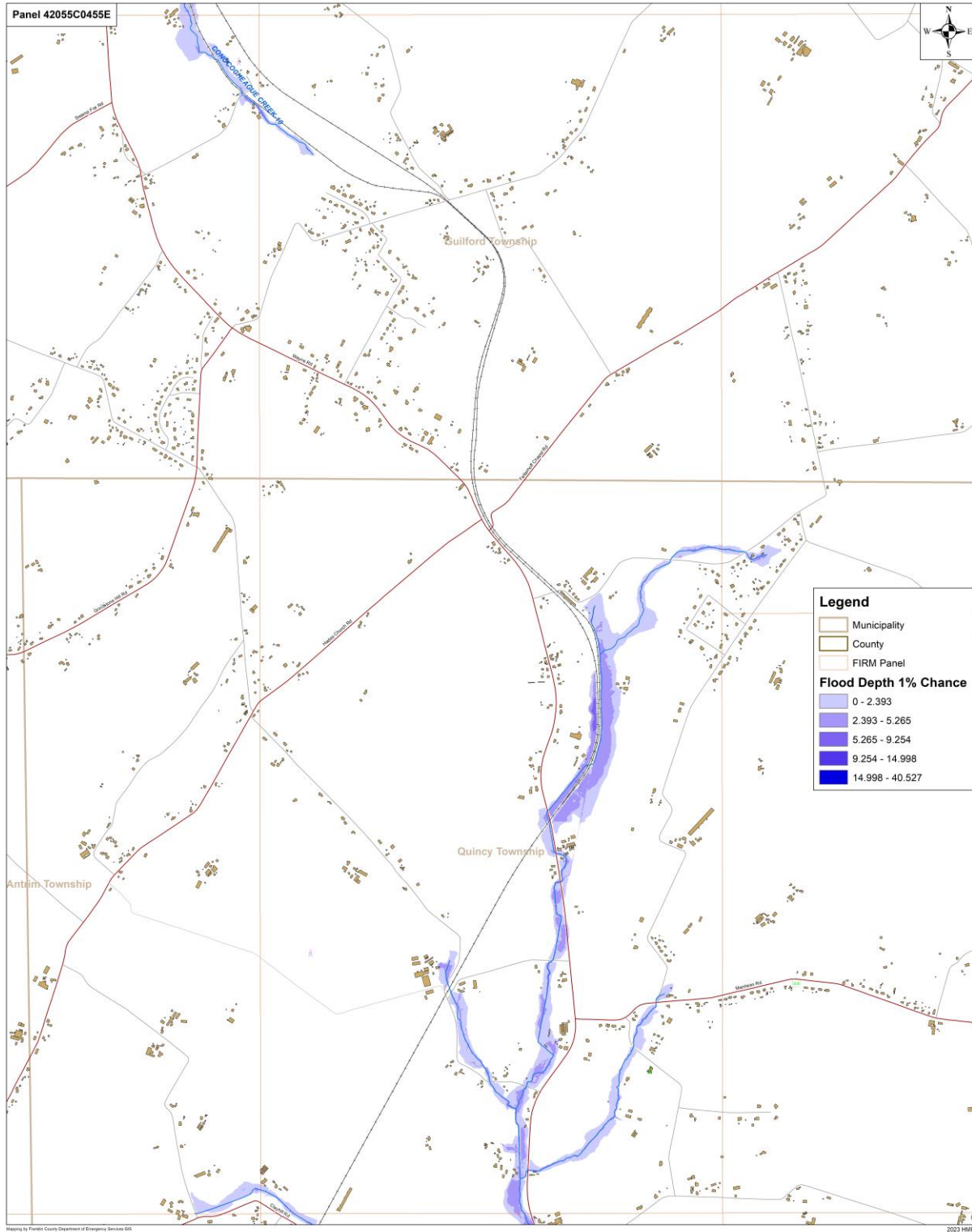


Figure G.96: Quadrant 4, Panel Number 42055C0455E

Appendix G: Franklin County DFIRM

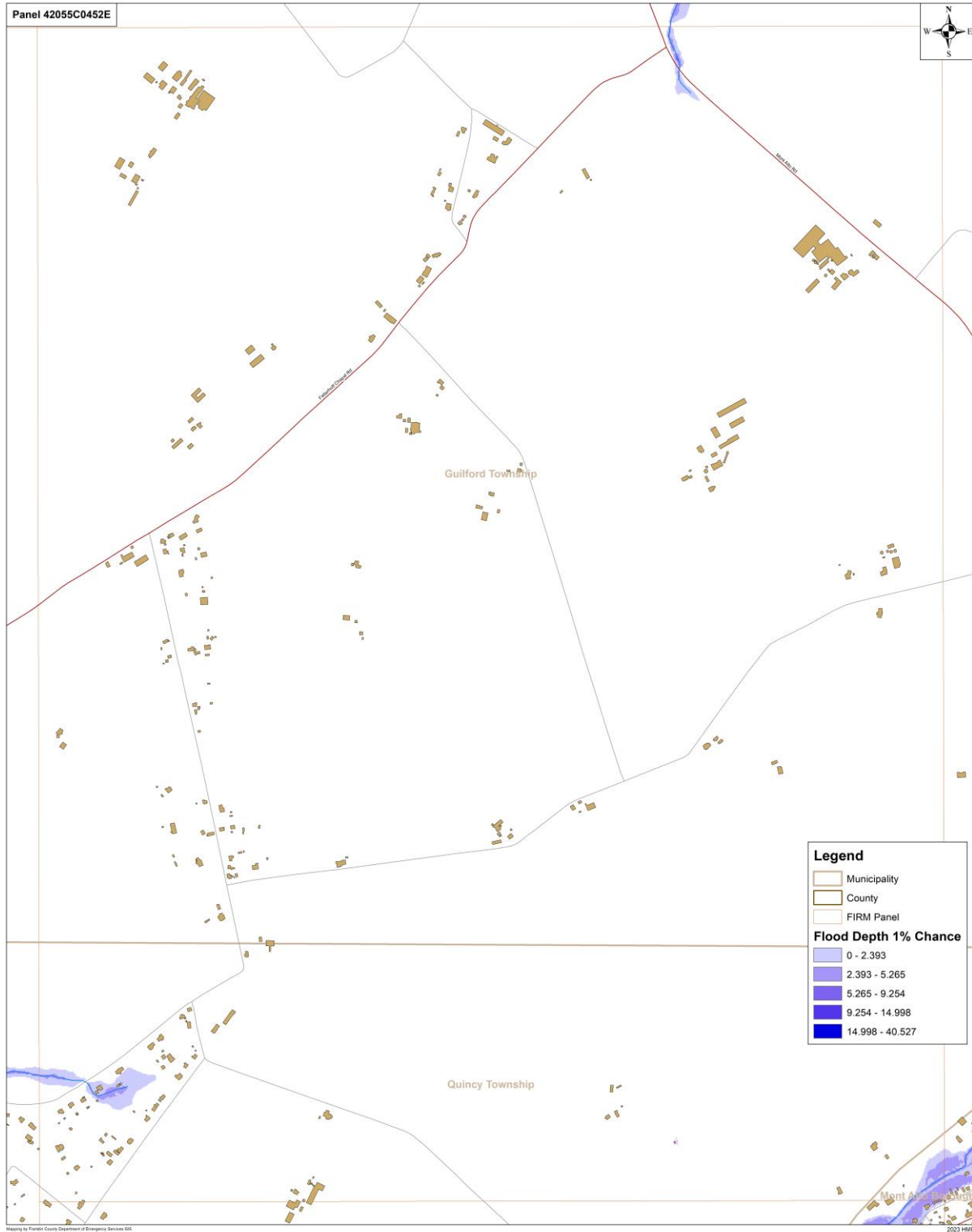


Figure G.97: Quadrant 4, Panel Number 42055C0452E

Appendix G: Franklin County DFIRM

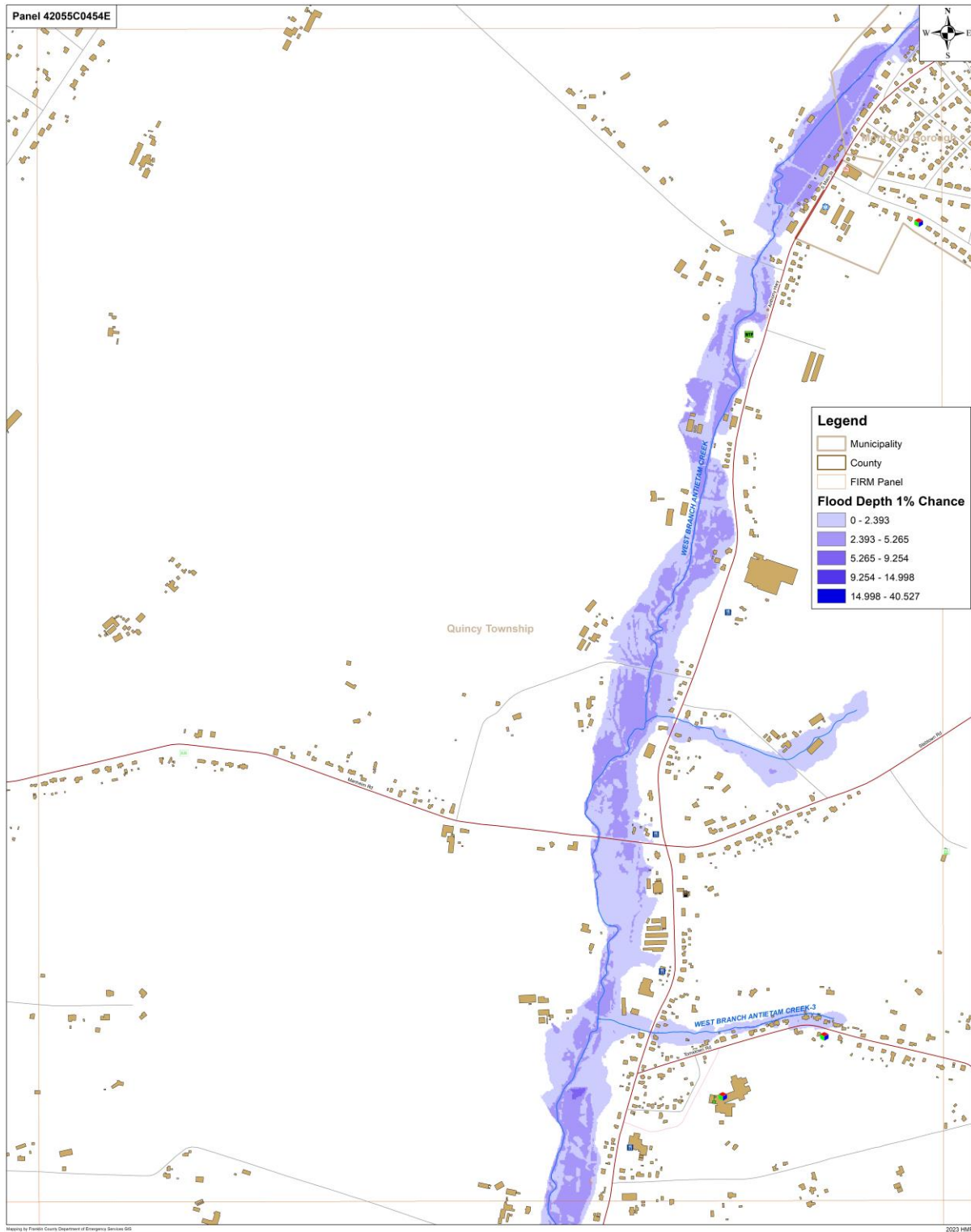


Figure G.98: Quadrant 4, Panel Number 42055C0454E

Appendix G: Franklin County DFIRM

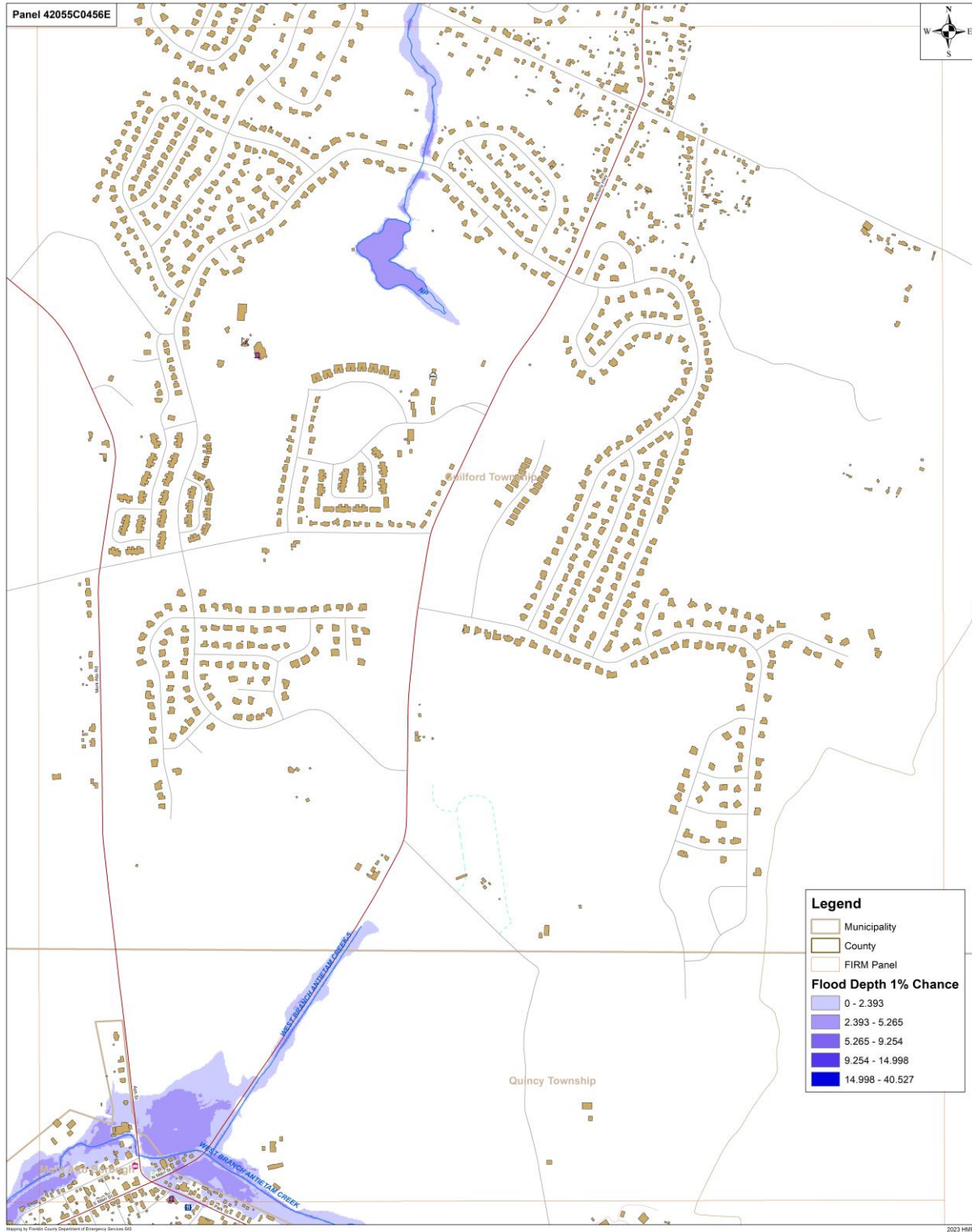


Figure G.99: Quadrant 4, Panel Number 42055C0456E

Appendix G: Franklin County DFIRM

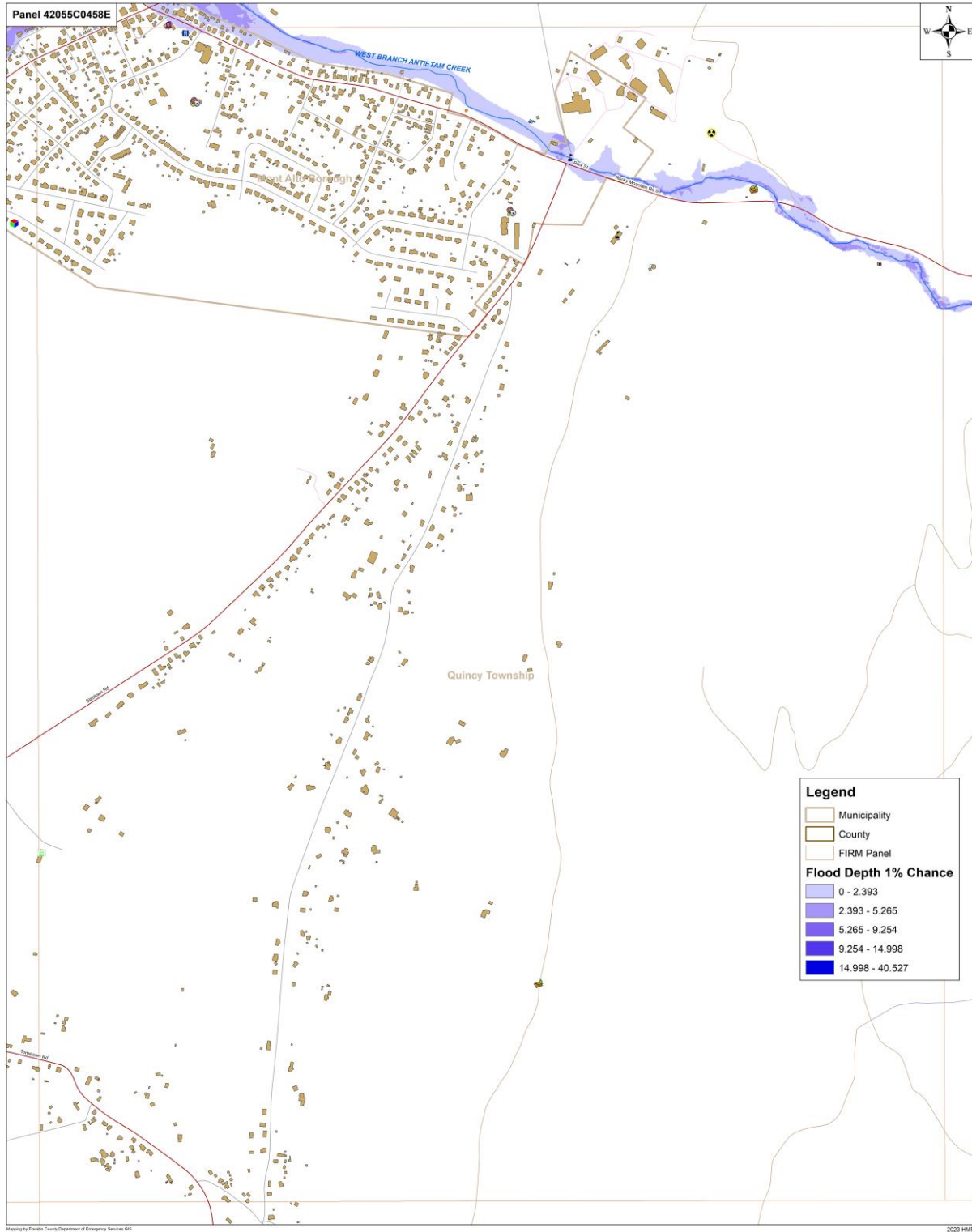


Figure G.100: Quadrant 4, Panel Number 42055C0458E

Appendix G: Franklin County DFIRM

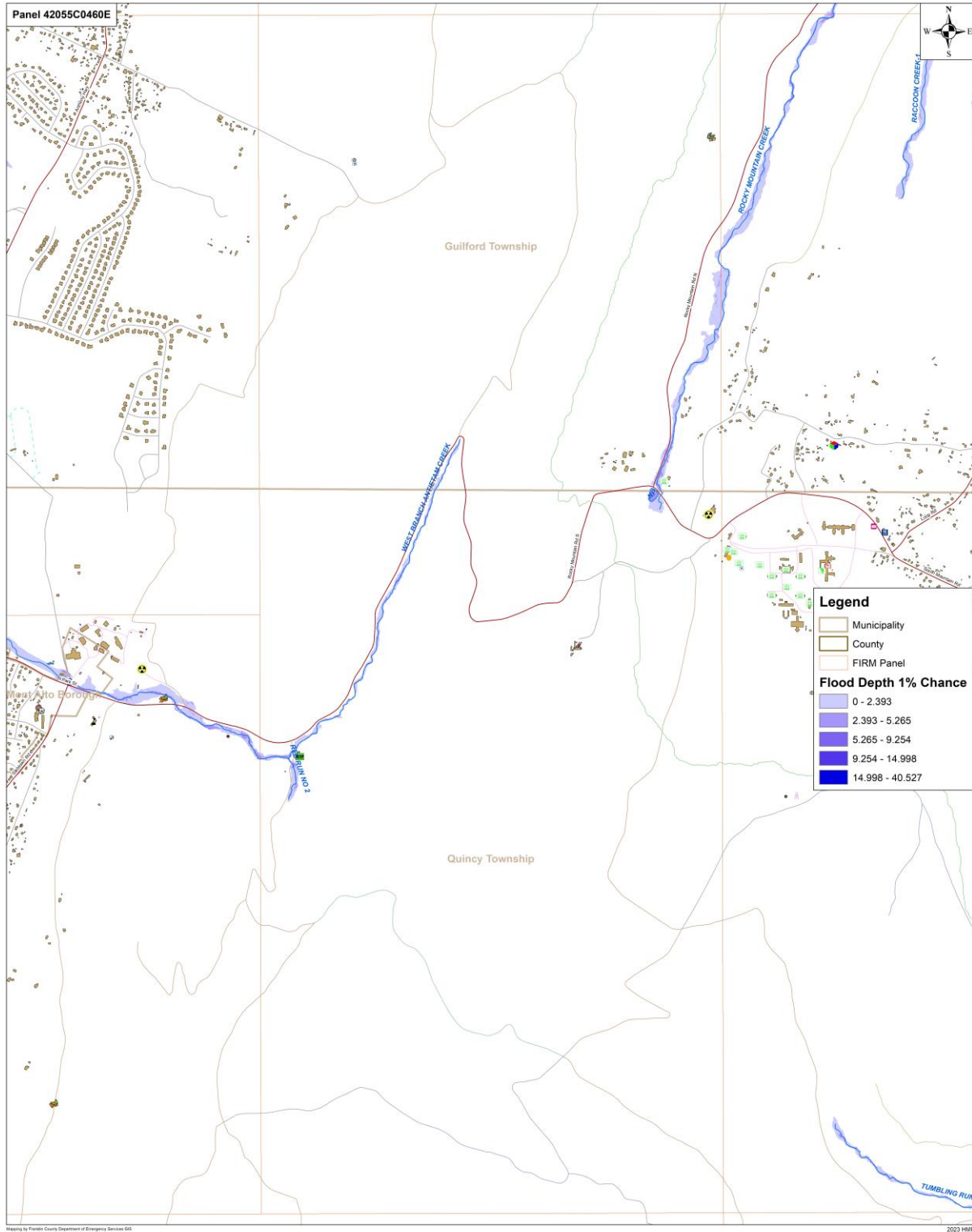


Figure G.101: Quadrant 4, Panel Number 42055C0460E

Appendix G: Franklin County DFIRM

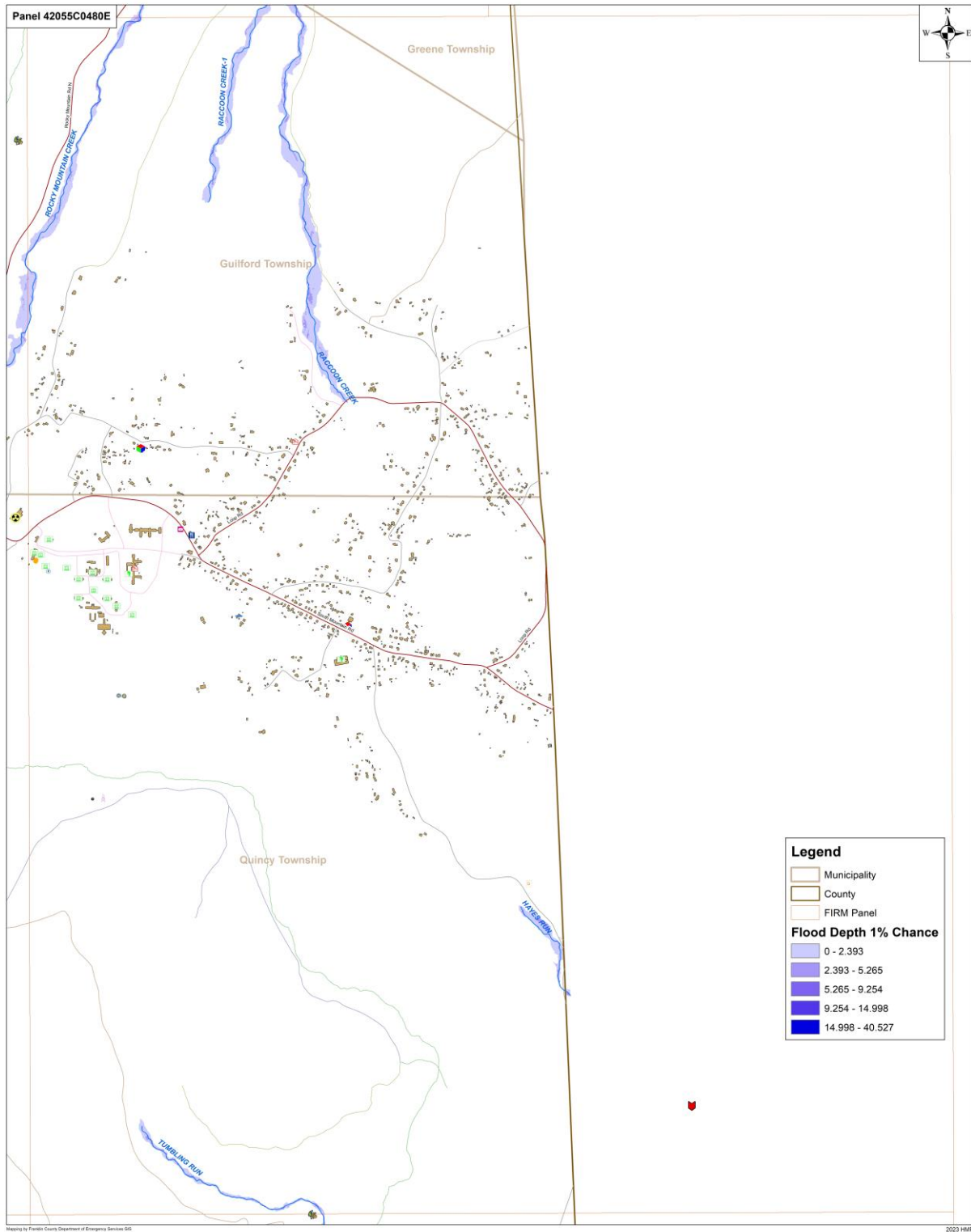


Figure G.102: Quadrant 4, Panel Number 42055C0480E

Appendix G: Franklin County DFIRM

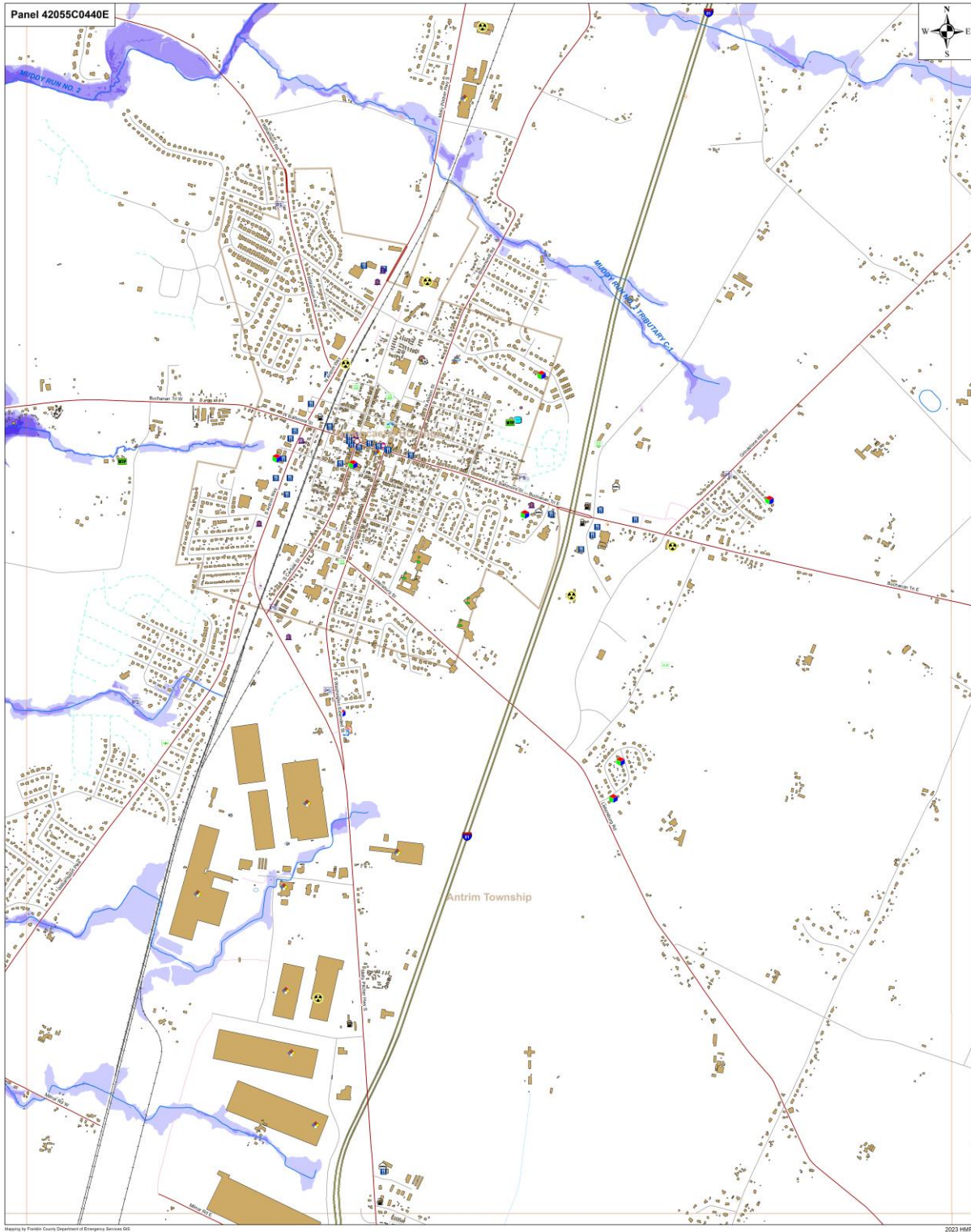


Figure G.103: Quadrant 4, Panel Number 42055C0440E

Appendix G: Franklin County DFIRM

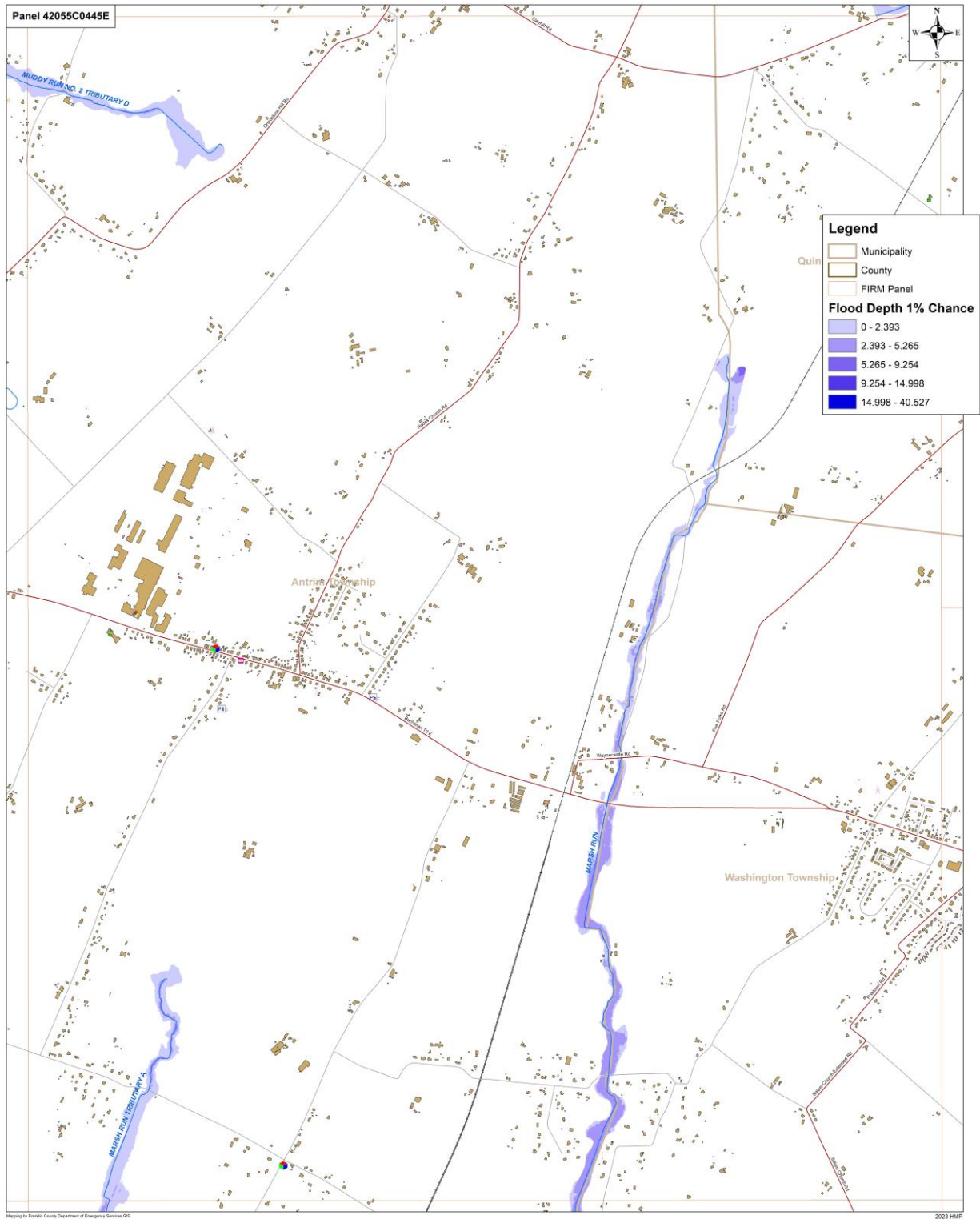


Figure G.104: Quadrant 4, Panel Number 42055C0445E

Appendix G: Franklin County DFIRM

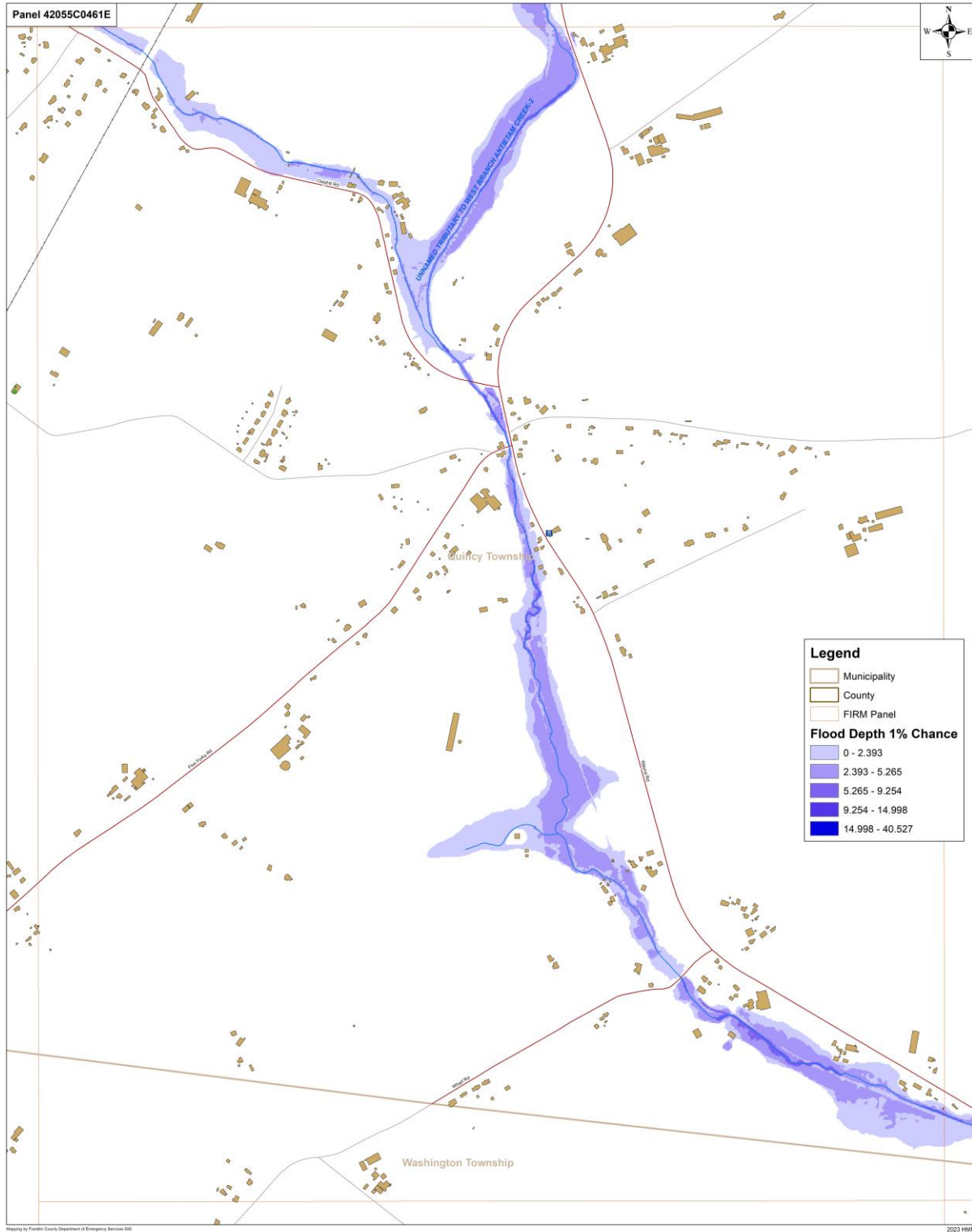


Figure G.105: Quadrant 4, Panel Number 42055C0461E

Appendix G: Franklin County DFIRM

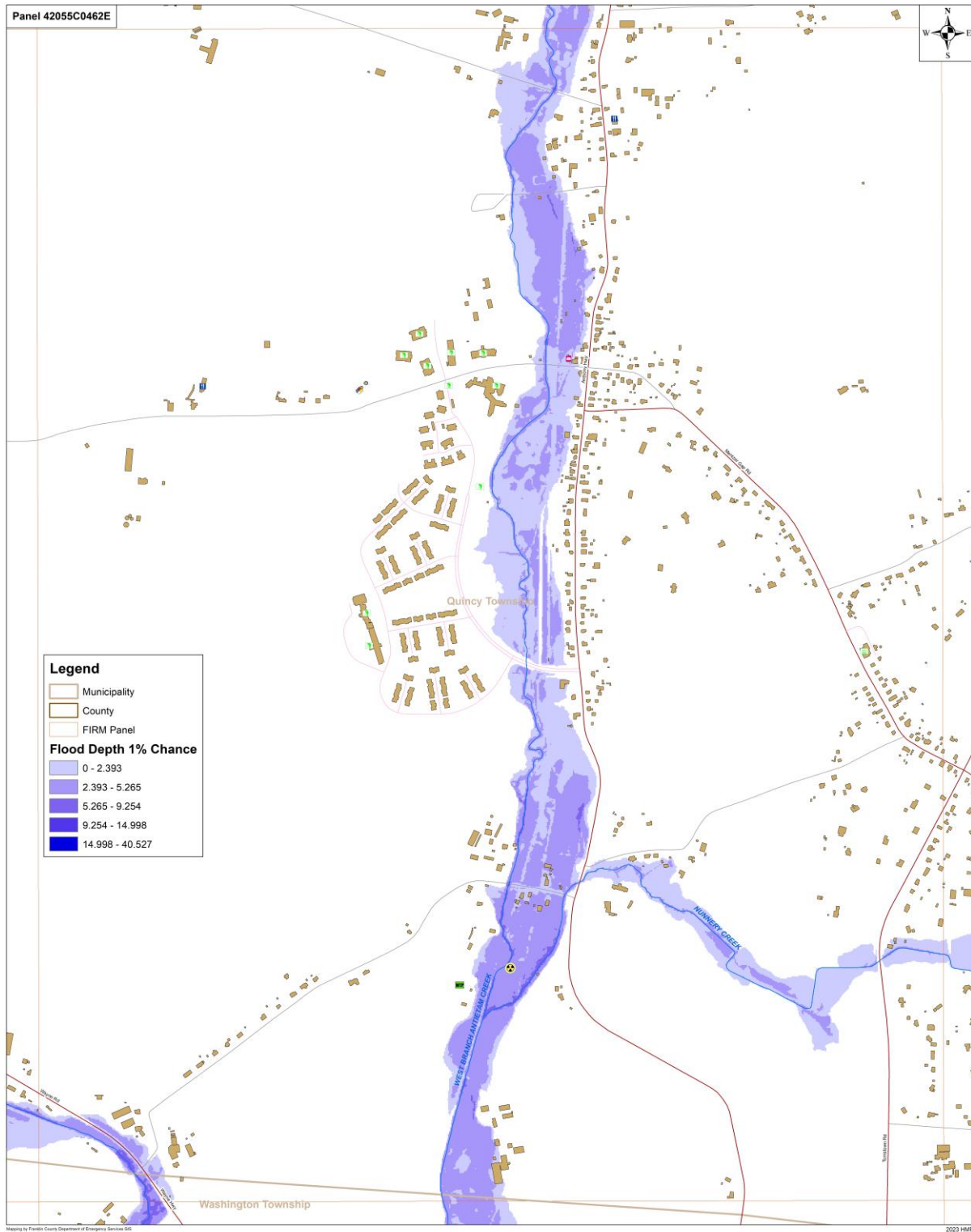


Figure G.106: Quadrant 4, Panel Number 42055C0462E

Appendix G: Franklin County DFIRM

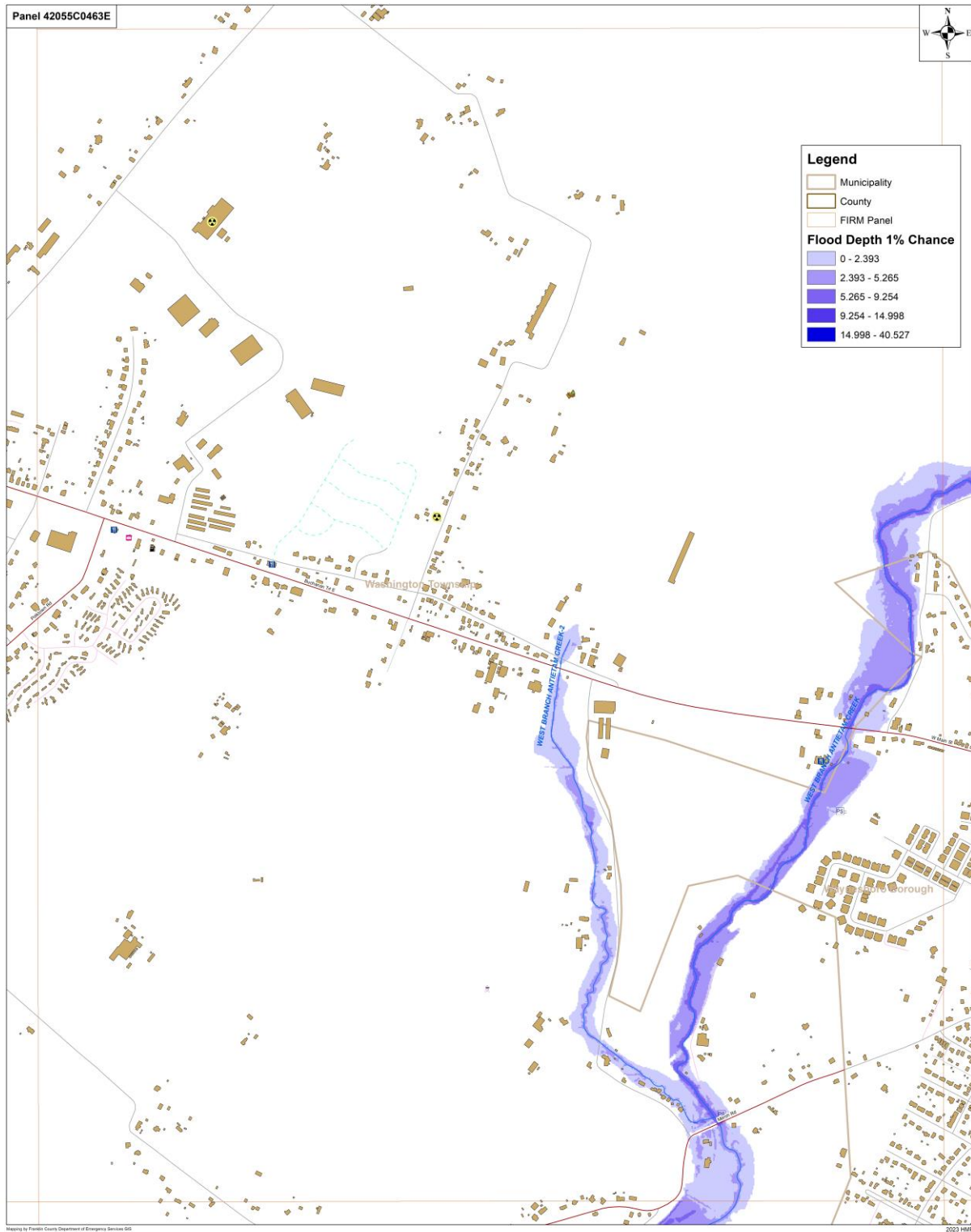


Figure G.107: Quadrant 4, Panel Number 42055C0463E

Appendix G: Franklin County DFIRM

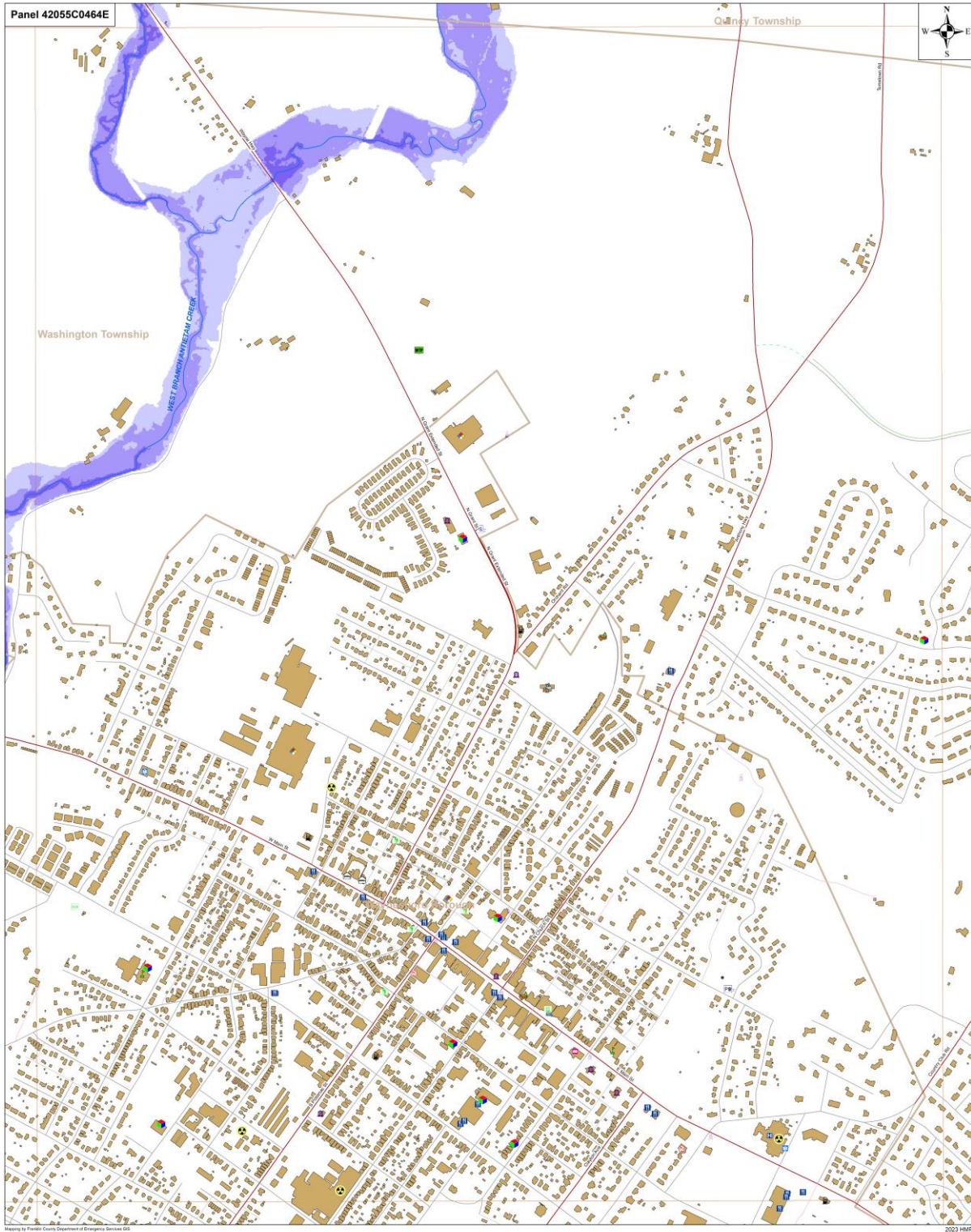


Figure G.108: Quadrant 4, Panel Number 42055C0464E

Appendix G: Franklin County DFIRM

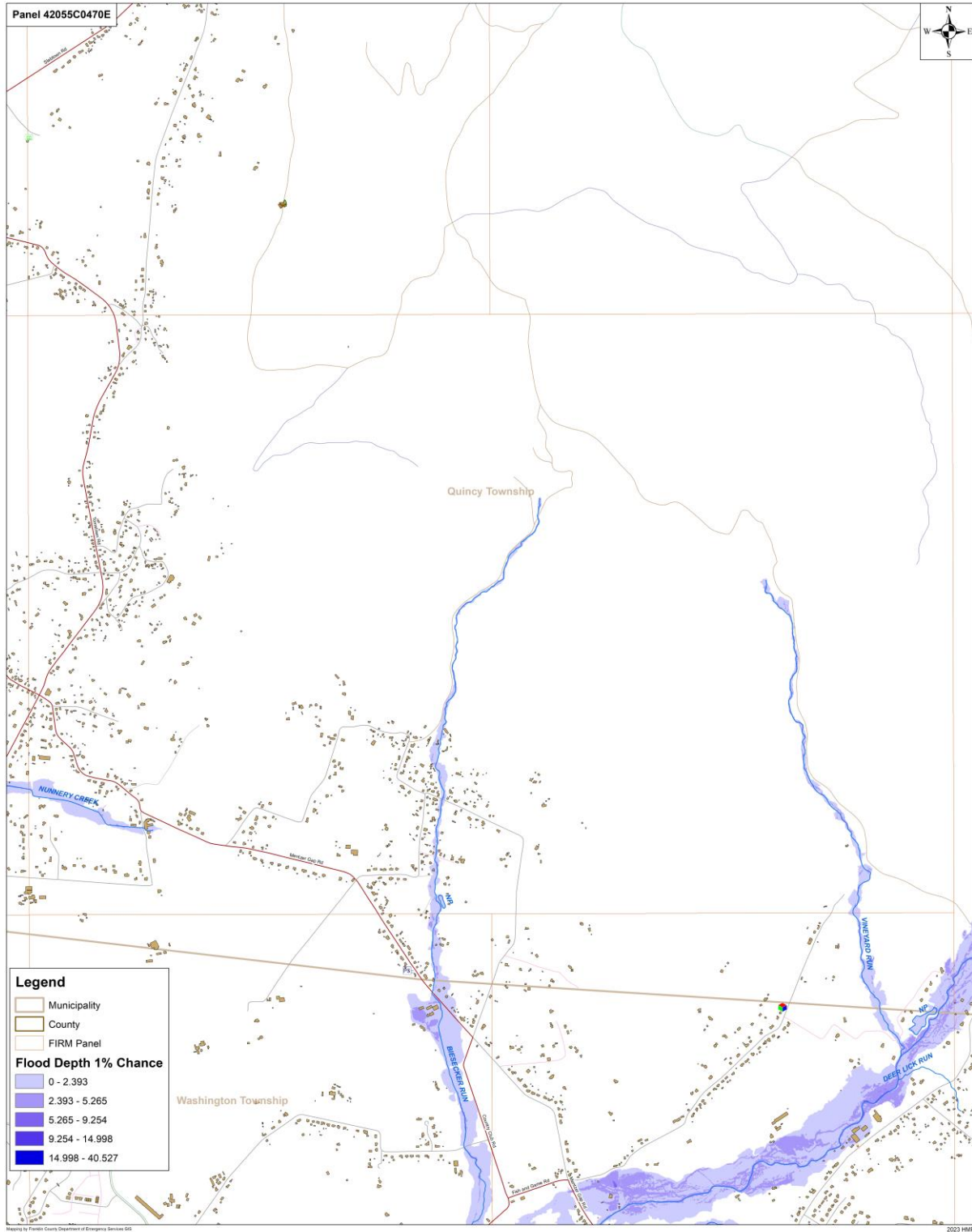


Figure G.109: Quadrant 4, Panel Number 42055C0470E

Appendix G: Franklin County DFIRM

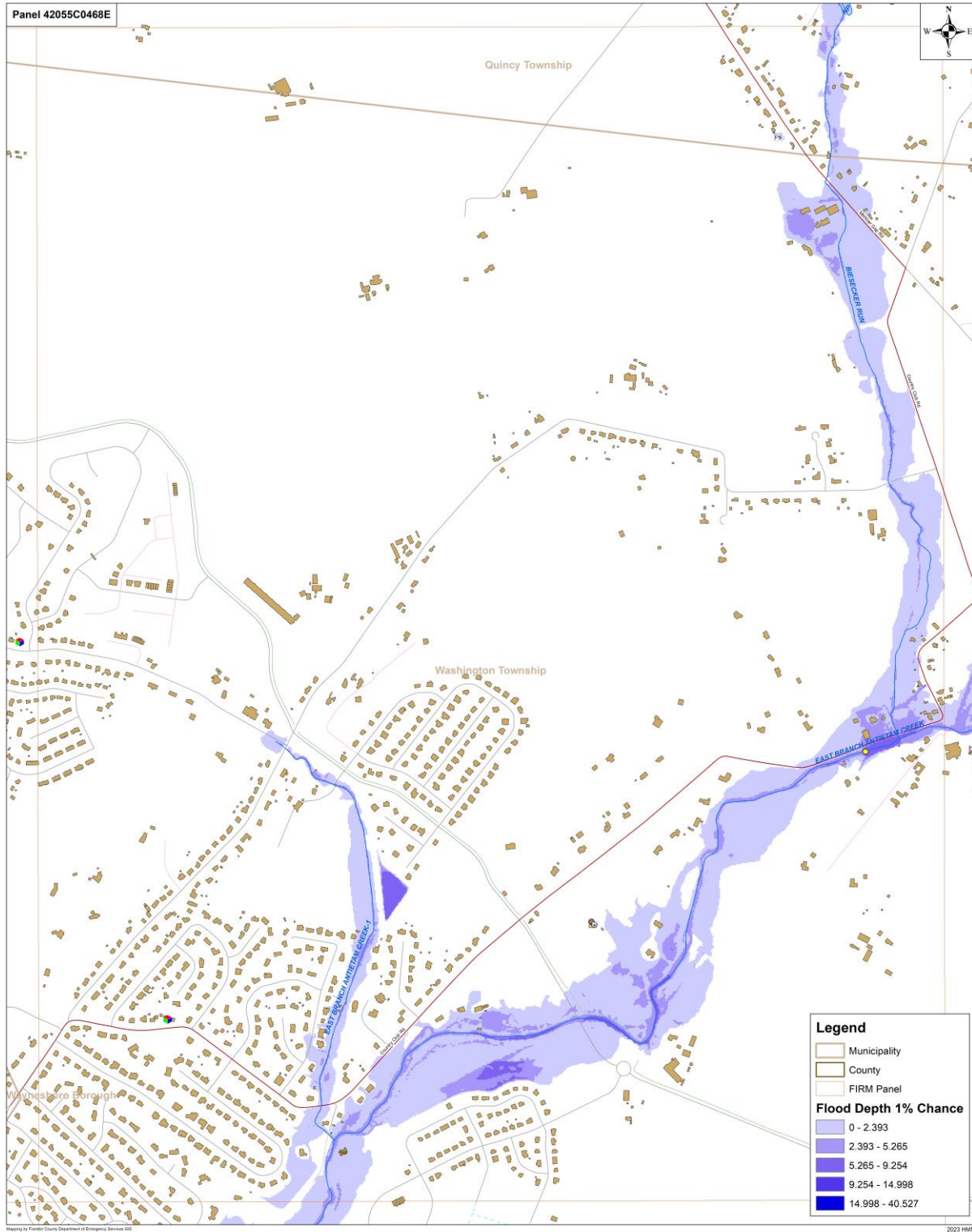


Figure G.110: Quadrant 4, Panel Number 42055C0468E

Appendix G: Franklin County DFIRM

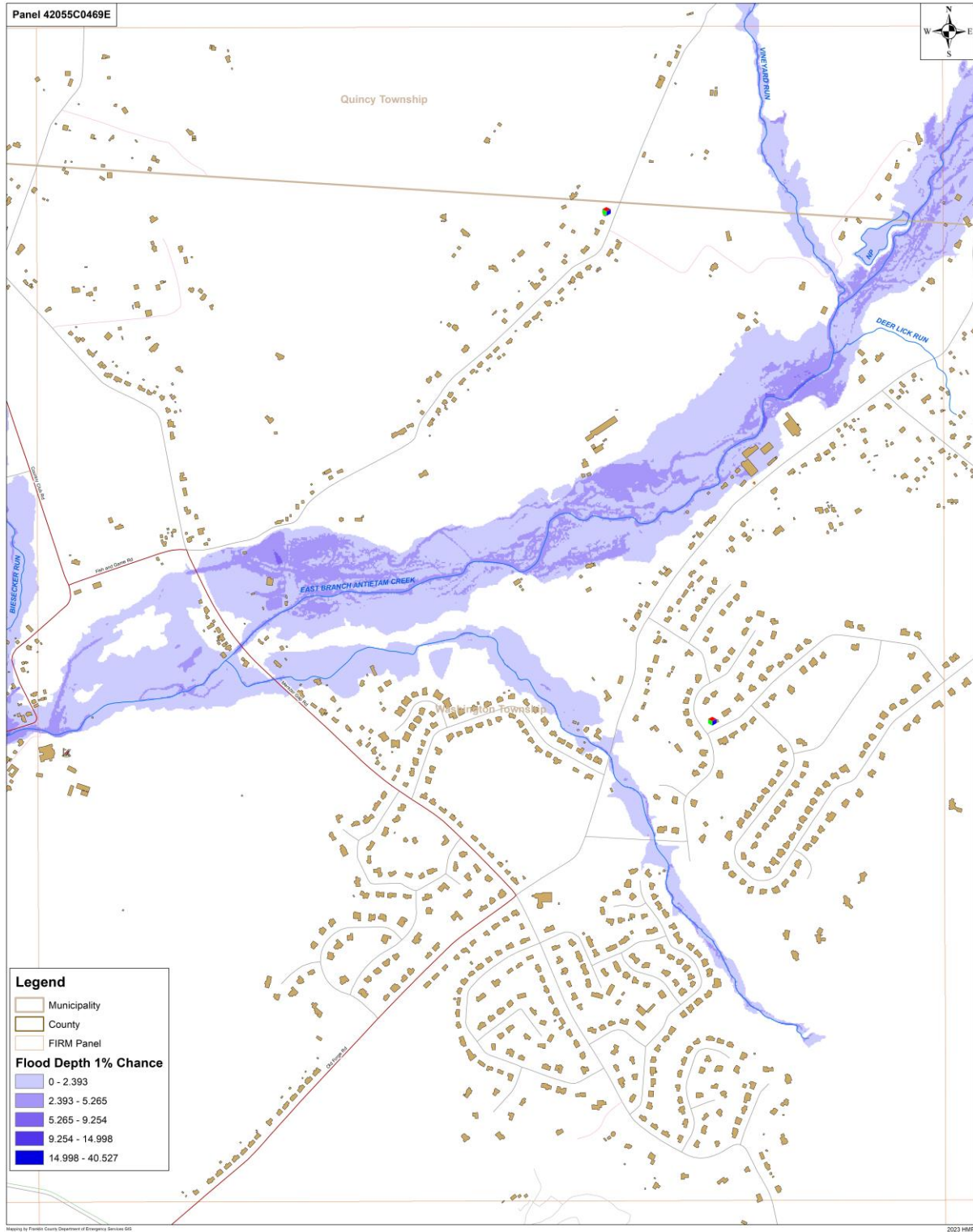


Figure G.111: Quadrant 4, Panel Number 42055C0469E

Appendix G: Franklin County DFIRM

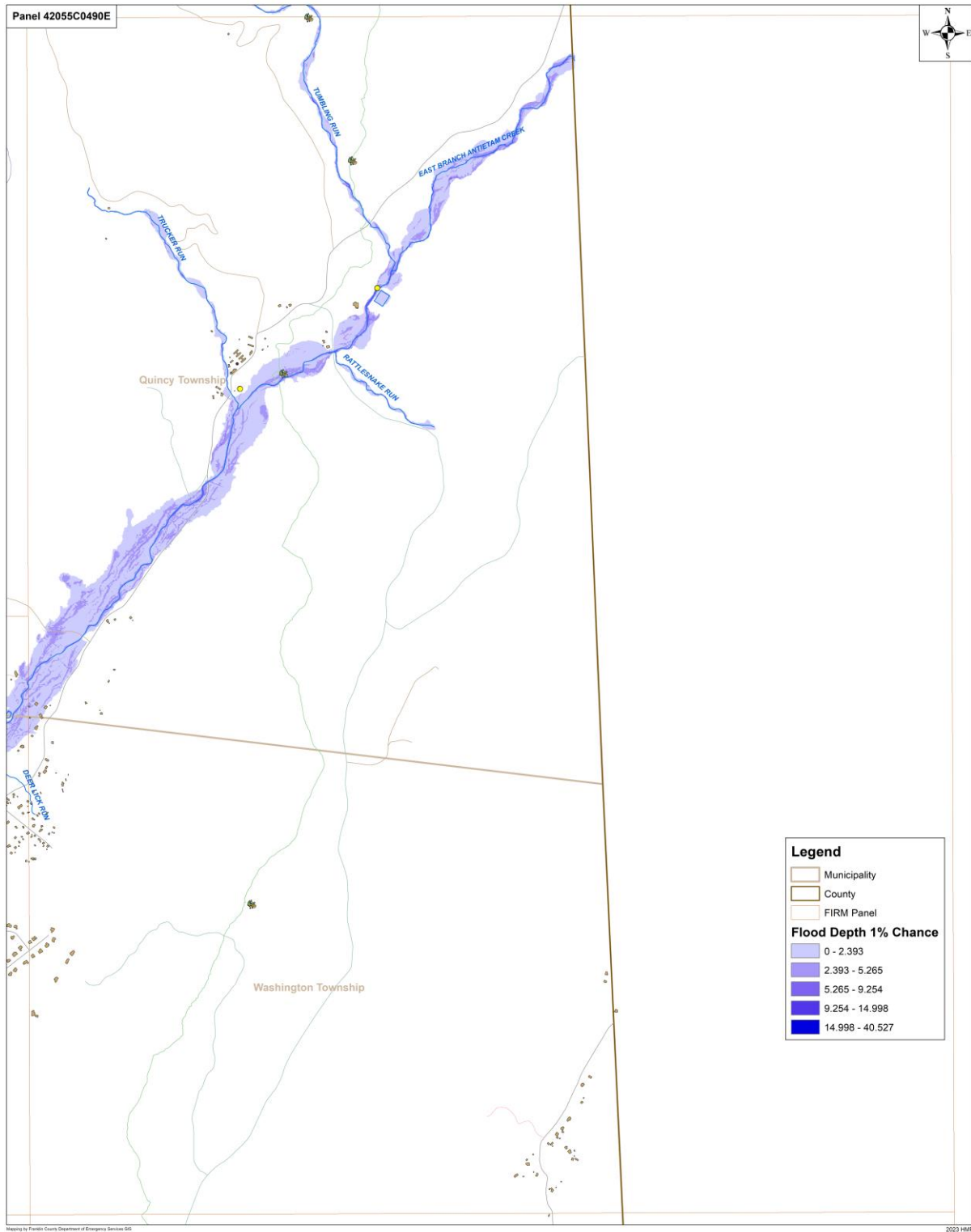


Figure G.112: Quadrant 4, Panel Number 42055C0490E

Appendix G: Franklin County DFIRM

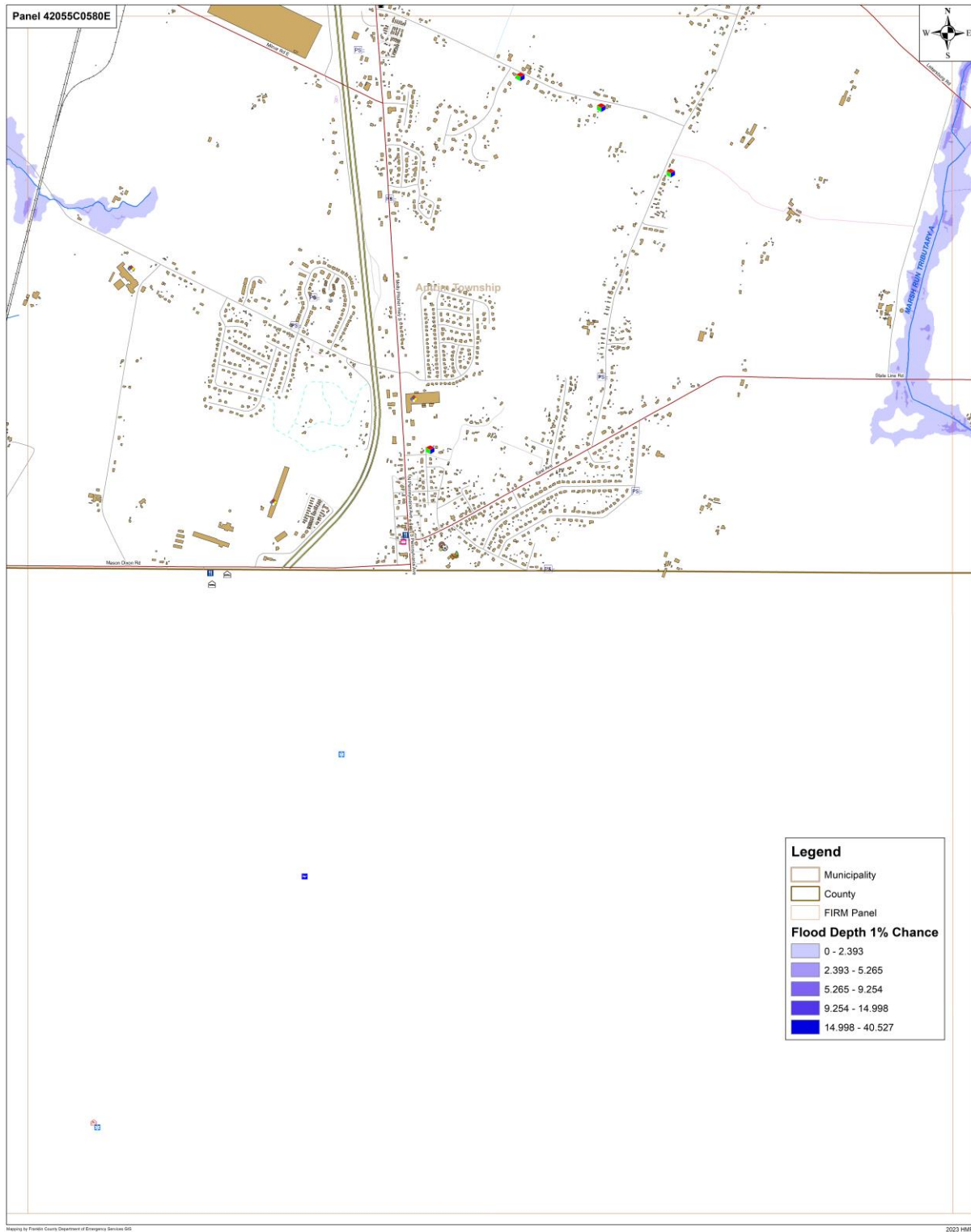


Figure G.113: Quadrant 4, Panel Number 42055C0580E

Appendix G: Franklin County DFIRM

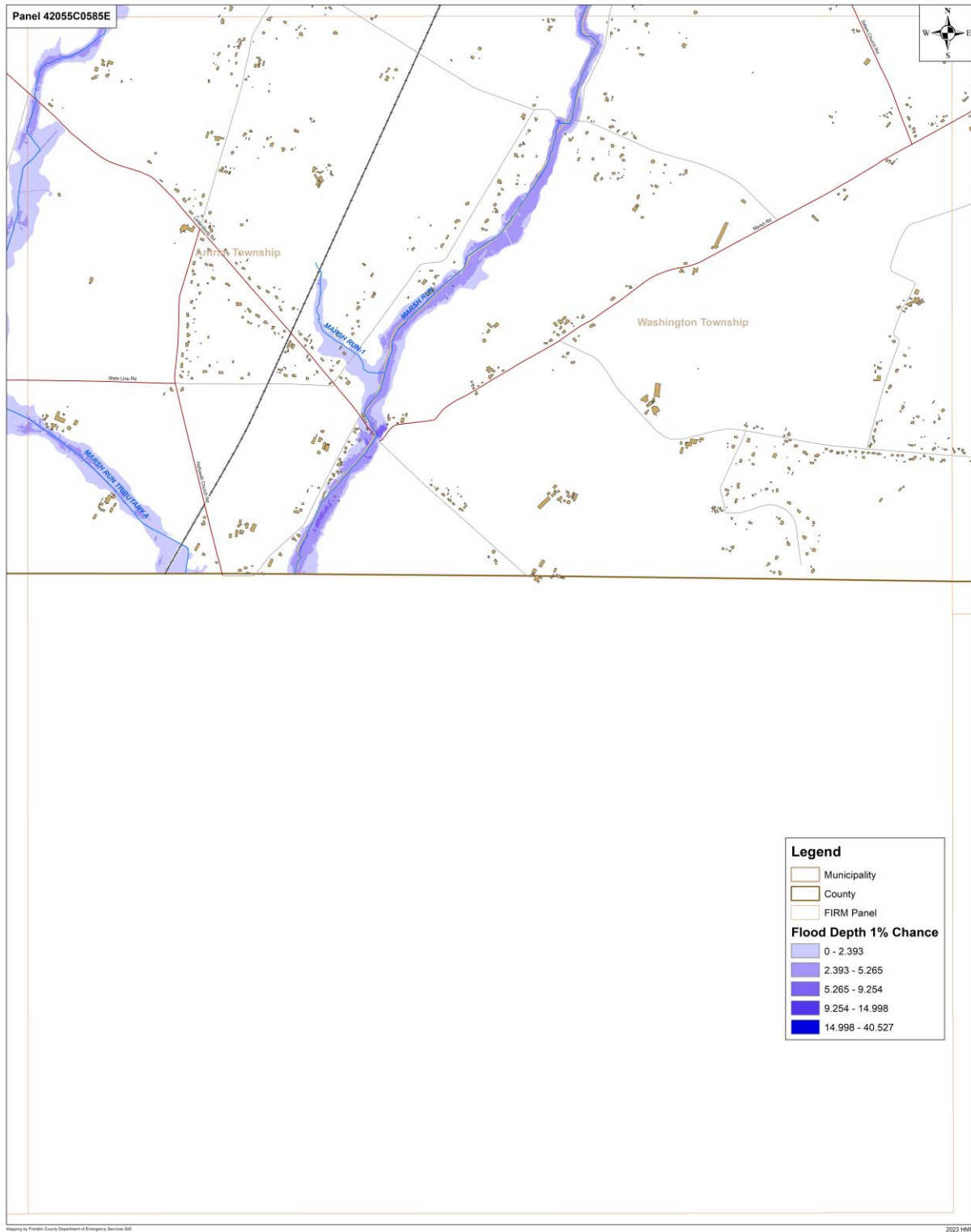


Figure G.114: Quadrant 4, Panel Number 42055C0585E

Appendix G: Franklin County DFIRM

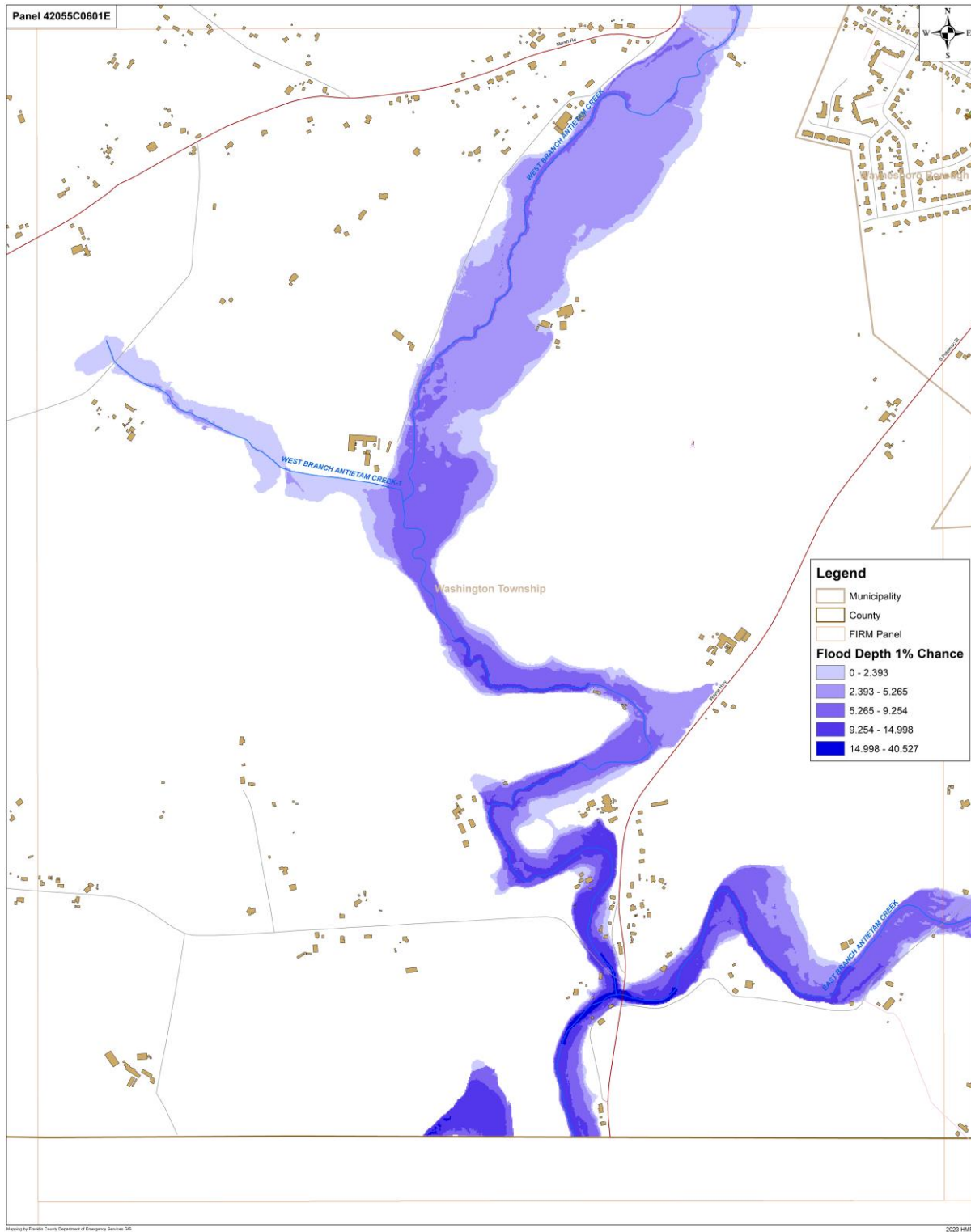


Figure G.115: Quadrant 4, Panel Number 42055C0601E

Appendix G: Franklin County DFIRM

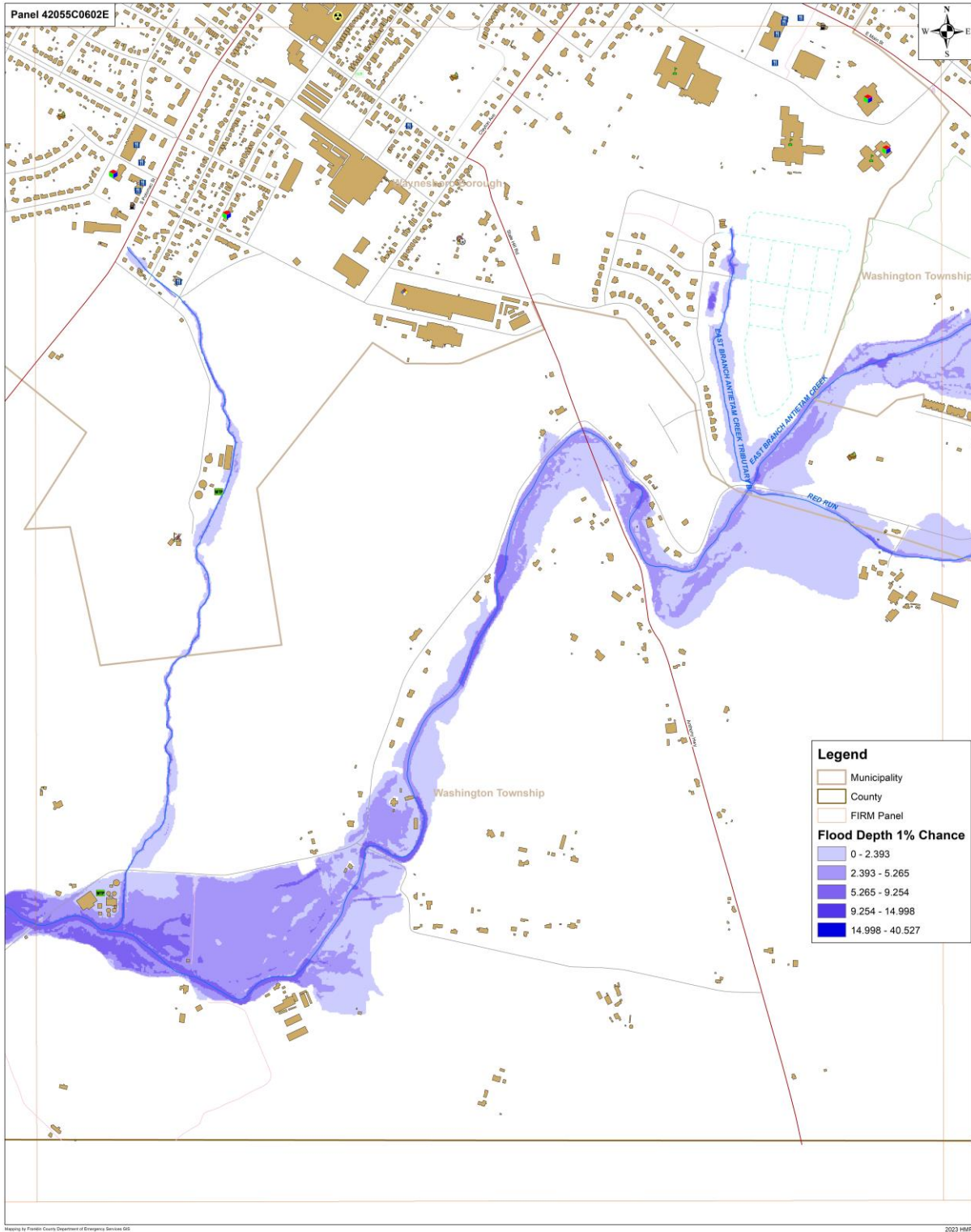


Figure G.116: Quadrant 4, Panel Number 42055C0602E

Appendix G: Franklin County DFIRM

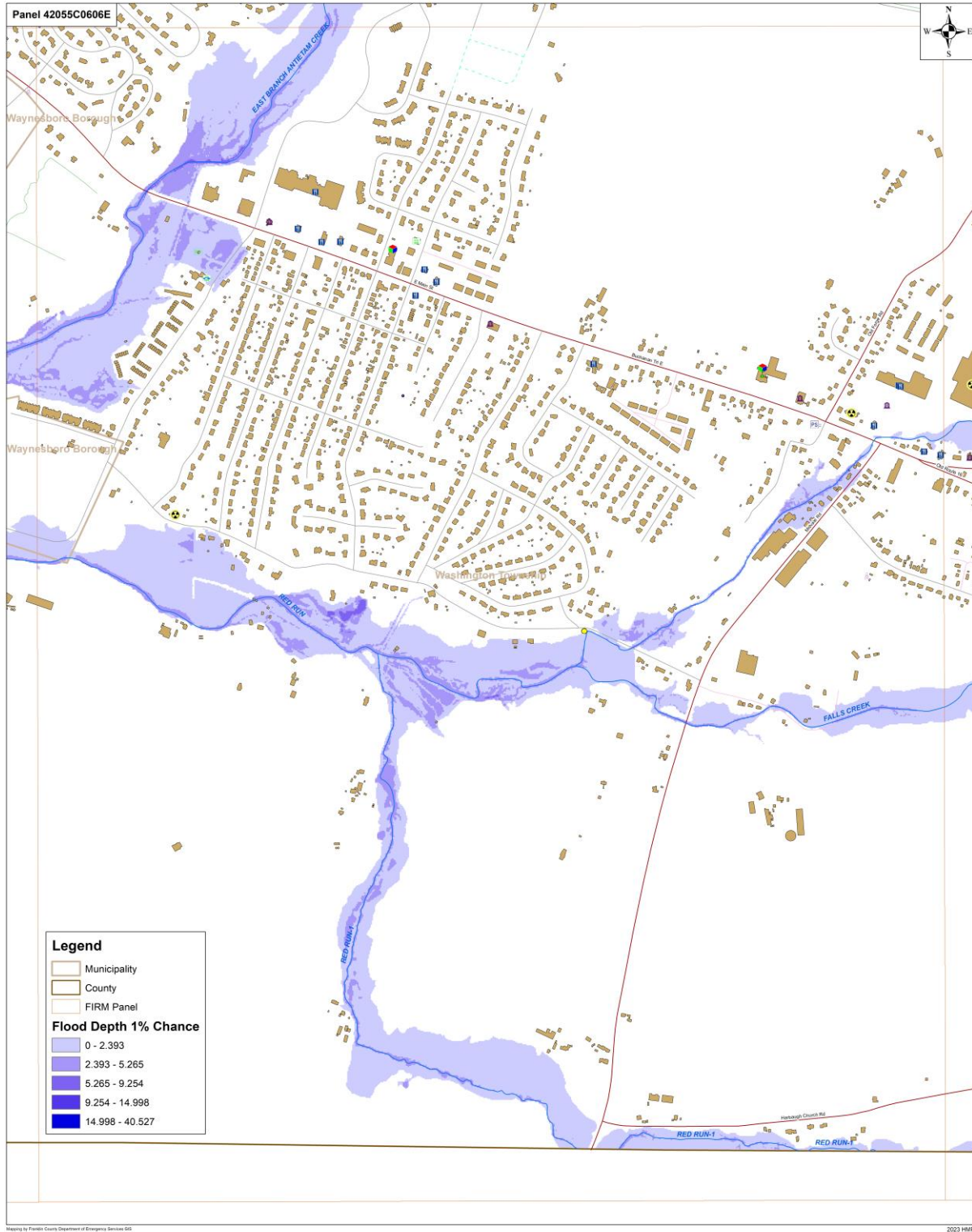


Figure G.117: Quadrant 4, Panel Number 42055C0606E

Appendix G: Franklin County DFIRM

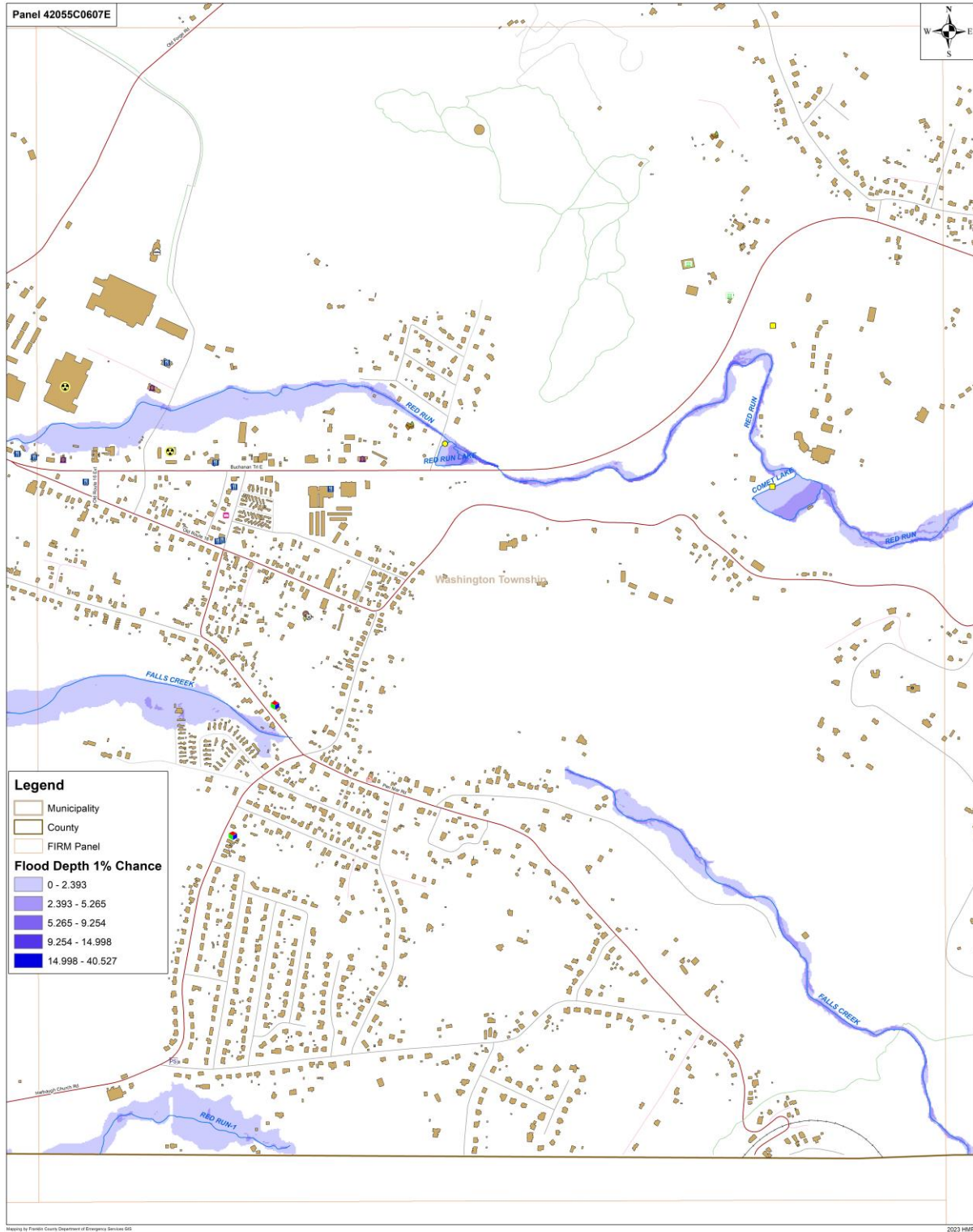


Figure G.118: Quadrant 4, Panel Number 42055C0607E

Appendix G: Franklin County DFIRM

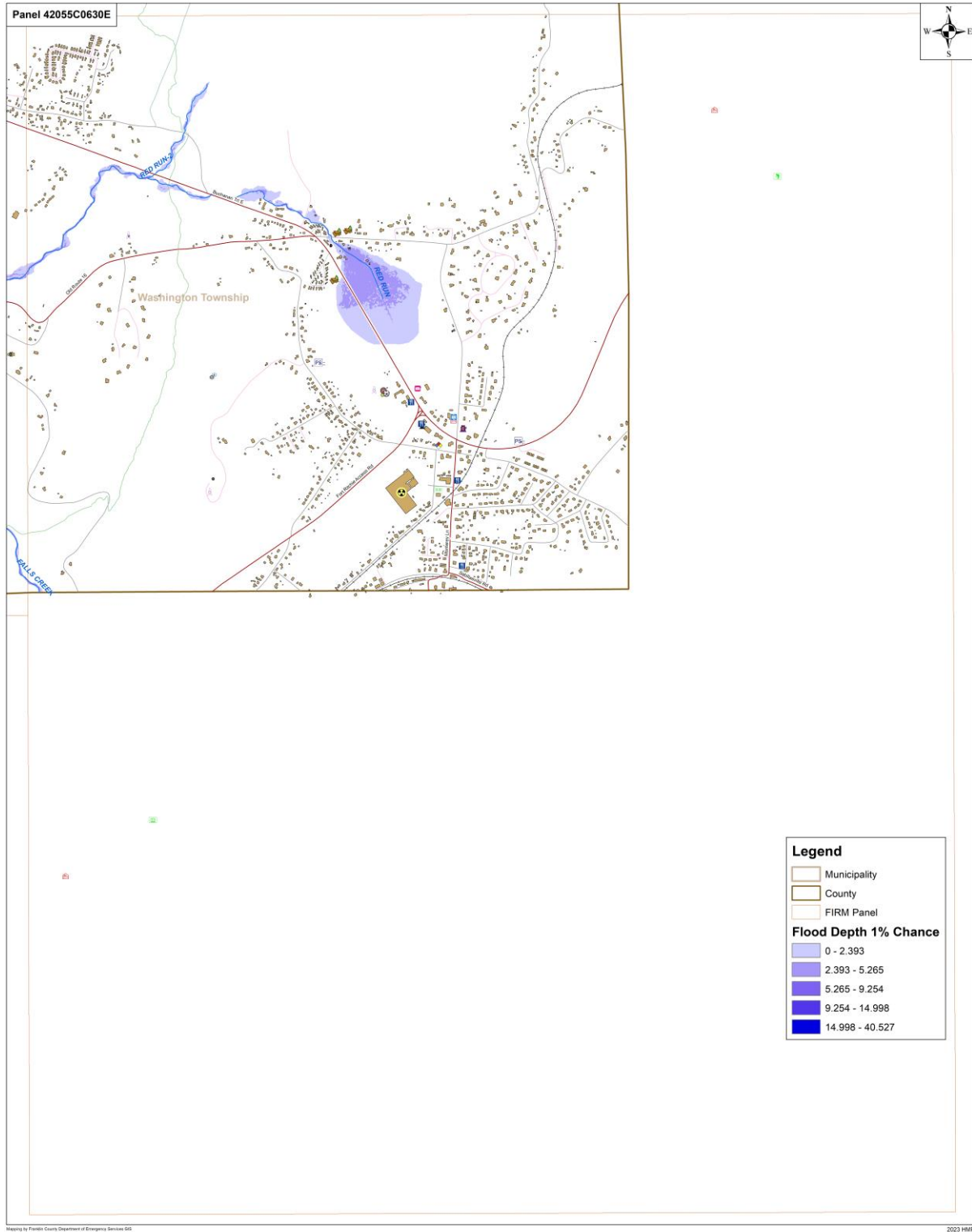


Figure G.119: Quadrant 4, Panel Number 42055C0630E

Appendix H: Municipal Adoption Resolutions

The resolutions will be uploaded once all 22 municipalities have adopted the plan and submitted their resolutions. The plan adoption date is the date that the first municipality signed the Municipal Adoption Resolution. St. Thomas Township was the first municipality to adopt the plan on October 18, 2023. Municipalities have one year from this date to adopt the plan.