



**LENOWISCO Planning District
2021 Hazard Mitigation Plan
Jurisdiction Annexes**





THIS PAGE IS INTENTIONALLY LEFT BLANK



Contents

Section 2 Lee County Hazard Mitigation Annex	7
2.1 Community Profile	7
2.2 Critical Facilities	12
2.3 Natural Hazard Event History	15
2.3.1 Community Data to Utilize to Enhance Whole Community Resilience	19
2.3.2 Jurisdiction-Specific Hazards and Impacts	19
2.4 Hazard Ranking Analysis	25
2.4.1 Hazard Ranking Methodology	25
2.4.2 Hazard Ranking Results by Factor	26
2.4.3 Hazard Ranking Overall Results.....	28
2.5 Capability Assessment	29
2.5.1 Ordinances	31
2.6 Mitigation Strategy.....	33
2.7 Lee County Jurisdictions	35
2.7.1 Town of Pennington Gap	35
2.7.2 Town of Jonesville	51
2.7.3 Town of St. Charles	51
Section 3 Scott County Hazard Mitigation Annex	55
3.1 Community Profile	55
3.2 Critical Facilities	59
3.3 Natural Hazard Event History	61
3.4 Hazard Ranking Analysis	71
3.5 Capability Assessment	75
3.5.1 Ordinances	77
3.6 Mitigation Strategy.....	79
3.7 Scott County Jurisdictions	83
3.7.1 Town of Gate City	83
3.7.2 Town of Clinchport.....	101
3.7.3 Town of Duffield.....	101
3.7.4 Town of Dungannon	101
3.7.5 Town of Nickelsville	102
3.7.6 Town of Weber City	102
Section 4 Wise County Hazard Mitigation Annex	105
4.1 Community Profile	105



4.2 Critical Facilities	109
4.3 Natural Hazard Event History	111
4.4 Hazard Ranking Analysis	123
4.5 Capability Assessment	127
Ordinances	129
4.6 Mitigation Strategy.....	131
4.7 Wise County Jurisdictions	135
4.7.1 Town of Big Stone Gap.....	135
4.7.2 Town of Coeburn	153
4.7.3 Town of Pound.....	169
4.7.4 Town of St. Paul	187
4.7.5 Town of Wise	207
4.7.6 Town of Appalachia	225
Section 5 City of Norton Hazard Mitigation Annex.....	229
5.1 Community Profile	229
5.2 Critical Facilities	233
5.3 Natural Hazard Event History	234
Community Data to Utilize to Enhance Whole Community Resilience	236
Jurisdiction-Specific Hazards and Impacts	236
5.4 Hazard Ranking Analysis	243
Hazard Ranking Methodology	243
Hazard Ranking Results by Factor	244
Hazard Ranking Overall Results.....	245
5.5 Capability Assessment	247
Ordinances	249
5.6 Mitigation Strategy.....	251



Lee County

Hazard Mitigation Annex

LENOWISCO Planning District
2021 Hazard Mitigation Plan Update



THIS PAGE IS INTENTIONALLY LEFT BLANK



Section 2 Lee County Hazard Mitigation Annex

2.1 Community Profile

Lee County is the southwestern-most county in the U.S. Commonwealth of Virginia, bordered by both Kentucky and Tennessee. There are three incorporated towns within Lee County - Pennington Gap, St. Charles, and the county seat of Jonesville. Pennington Gap is the only jurisdiction that participated in the 2021 Hazard Mitigation Plan update. Additional census-designated places in the county include Ewing, Rose Hill, Dryden, and Keokee.

Lee County comprises 438 square miles, mostly in the Valley and Ridge province with the northern portion of the county falling in the Appalachian Plateau. These two regions differ in their geography and geology, leading to significantly different development patterns across the county. The northern portion of the county, near St. Charles and Cumberland Mountain, has steep ridges, a network of streams, and other physical constraints to development. The valley and ridge portion of the county has many valleys that have formed important transportation routes and centers of development.

Land Use

According to the [Lee County Comprehensive Plan](#), the many topographic elements in the county control the pattern and distribution of land uses. The elements are important to understand for hazard mitigation and include:

- The largest land use in the county (more than two-thirds) is forest.
- Continued flooding of streams and rivers restricted development near the waterways. Areas that are developed near the waterways are subject to inundation and experience deteriorating building conditions. The county conducted a map analysis to demonstrate that extensive urban and built-up development in areas of the county is subject to flooding. The extension of public water and sewer services to areas with the greatest developmental capability would provide alternative construction sites, while simultaneously solving sanitation and flooding problems.
- The rugged topography and excessive slopes restricted development between ridges and adjacent to major roads serving the area. The rugged topography initially encouraged development in the flat flood plains.
- Highways and railroads have followed the paths of rivers and creeks between ridges and restricted development opportunities to small areas along the roadways.
- Soil characteristics, such as poor permeability, depth to bedrock, subsoil instability, found in the county are not conducive to new development.
- Land suitable for development on plateaus, ridge tops, and hollows is restricted due to inadequate access and lack of utilities.
- Incompatible land use mixtures resulted from a lack of developable land and contributed to the physical deterioration of limited sections of the county.
- More than a fourth of the land in the county is classified as agricultural land with the majority falling between Stone Mountain to the north and Powell Mountain to the south and stretches in a northeast-southwest direction between the Lee-Wise County line and Cumberland Gap.
- The third-largest land use in the county is surface mined areas and primarily in the northern region of the county. The development potential of reclaimed mined land is limited due to a lack of available utilities.

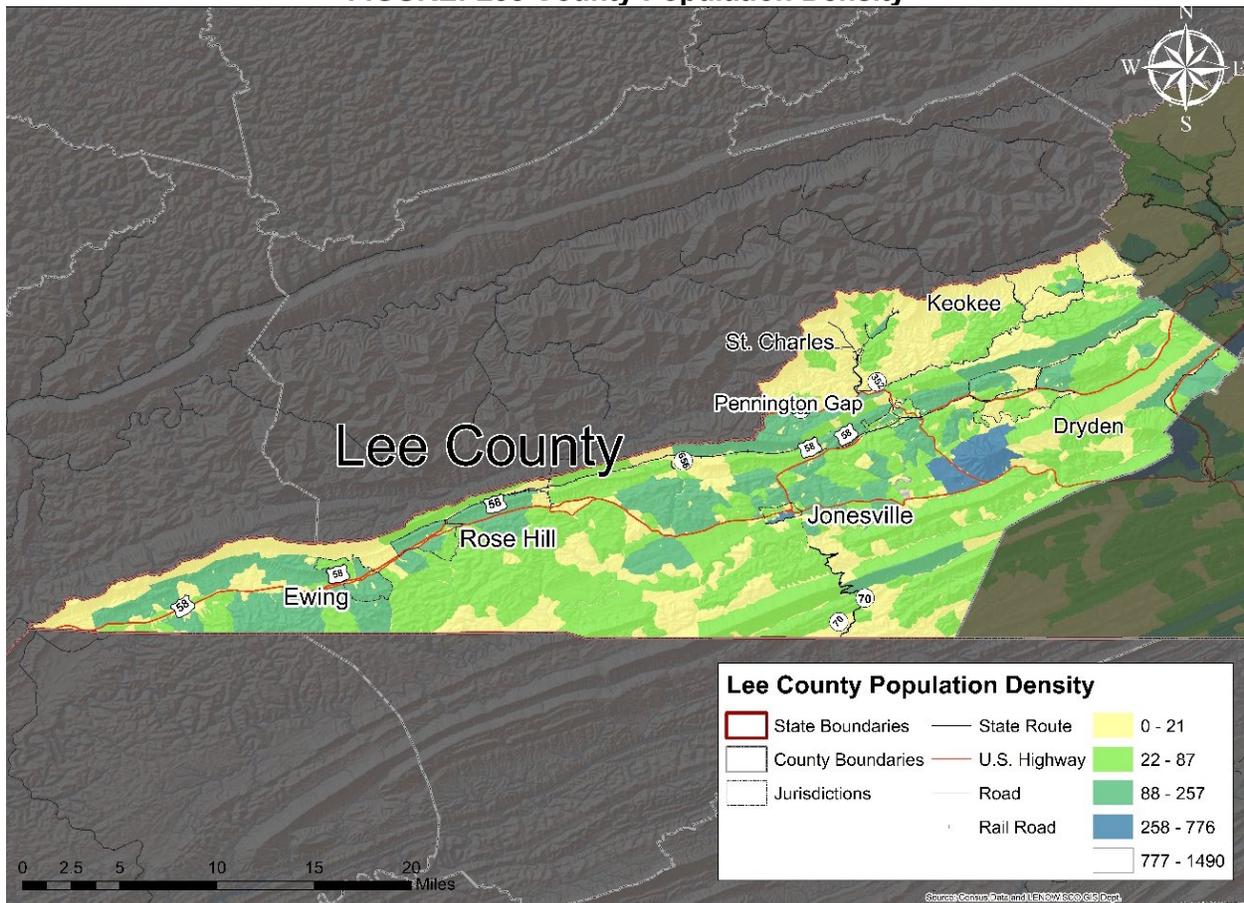


A full description of development and land use patterns in Lee County is included in section 1.5.7.

Population

According to [American Community Survey 5-Year Estimates](#), the population of Lee County was 24,134 in 2018. The historic population of the county has ranged from a low of 18,216 in 1890 to a high of 38,296 in 1940 ([Lee County Comprehensive Plan, p. 9](#)). The population is projected to remain relatively stable, with some decline, reaching a population of 23,258 by 2040 ([Demographics Research Group, UVA Weldon Cooper Center](#)). The following map illustrates population densities across the county.

FIGURE: Lee County Population Density





Climate

Lee County sees between 45-50 inches of precipitation each year, making it one of the wettest parts of the country. Most of this precipitation is rainfall throughout the year, but Lee County does see 10-12 inches of snow annually as well. Minor flooding in streams across the county occurs annually ([Lee County Comprehensive Plan, p. 4](#)).

Economy

Lee County was a primarily agricultural community through the Civil War era. A coal boom in the late 19th century led to population and economic growth in the county, leading to the railroad system and new townships. As of 2018, Lee County residents had a median household income of \$32,718, significantly lower than the U.S. national average of about \$60,000 ([2018 American Community Survey 5-Year Estimates](#)). Lee County industries are in transition, with more people now employed in health care services and educational services, and fewer in agricultural, manufacturing, or mining - the historic centers of the industry for the region.

The county features a number of outdoor recreation areas, including Jefferson National Forest, Cumberland Gap National Historical Park, Cave Springs Recreation Area, and Wilderness Road State Park, as well as Leeman Field in Pennington Gap and Cumberland Bowl Park in Jonesville. In addition to the tourism and historic preservation opportunities these areas offer, Lee County has encouraged economic development through transportation access, the development of industrial parks, manufacturing and retail recruitment, and federal Opportunity Zones.

Fiscal Capability

Lee County has limited fiscal capability to implement hazard mitigation strategies. For [Fiscal Year 2019](#), the County's budgeted expenditures were almost \$28 million. The majority of these funds are obligated to operations, with public safety costing \$6.4 million, public works costing \$2 million, community development costing \$400K, and health and welfare costing \$10 million.

Community Facilities and Services

Public services in Lee County include solid waste disposal, Lee County Sheriff's Office, and library services. Critical county facilities, according to the [Lee County Comprehensive Plan \(p. 18-20\)](#), include the following:

- Lee County Courthouse (Jonesville) - home to County Administration; Building Inspection; Commissioner of the Revenue; Commonwealth's Attorney; E-911; Economic Development Authority; Treasurer; Sheriff; and Zoning, Planning, and Tourism
- Jonesville Town Hall - home to the Mayor's office, Town Administration, and Public Works
- Pennington Gap Town Hall - home to the Mayor, Town Manager, Clerk, Treasurer, and Superintendent's offices, in addition to the Town Council Chambers and Public Works department
- Lonesome Pine Library System, Pennington Gap Branch
- Lonesome Pine Library System, Rose Hill Satellite



Fire Departments

There are eleven volunteer fire departments in Lee County: Blackwater; Dryden; Jasper; Jonesville; Keokee; 41 Pennington Gap #1; Pennington Gap #2 (Woodway); Pennington Gap #3 (St. Charles); Sticklebyville; Thomas Walker #1 and Thomas Walker #2. All departments respond outside their own town limits or communities when needed. The fire departments have a verbal mutual aid agreement to respond when called on by another department. There are six volunteer rescue squads, including Lee County (Pennington Gap), Jonesville, Keokee, Thomas Walker, St. Charles, and Dryden.

Healthcare Facilities

Lee County health care facilities consist of an urgent care facility, four health care clinics, a respiratory clinic, three dentists, and Lee County Health Department.

Staff and Organizational Capability

Lee County has limited staff and organizational capability to implement hazard mitigation strategies. Lee County is governed by a five-member Board of Supervisors, with members representing the five districts into which the county is divided. There is also a County Administrator. The Board bears the responsibility of serving the people and improving the quality of life in the County. The business of the County is conducted through the department and board system.

- The Emergency Services Department is responsible for the mitigation, preparedness, response, and recovery operations that deal with both natural and man-made disaster events.
- The Building Inspection Department enforces the National Flood Insurance Program requirements and other applicable local codes.
- The Public Service Authority oversees the maintenance of sewer and water treatment facilities.

The county's professional staff departments, boards, authorities, and commissions are as follows:

- County Administration
- Central Accounting
- Central Purchasing
- County Attorney
- Community Development Department
- Building Inspections
- Animal Control
- Litter Control
- Emergency Services Department
- Solid Waste Management Department
- Electoral Board
- General Registrar
- Commissioner of the Revenue
- Treasurer
- Commonwealth's Attorney



- Clerk of Circuit Court
- Sheriff's Department
- Juvenile and Domestic Relations Court
- Planning Commission
- Industrial Development Authority
- Board of Zoning Appeals
- Public Service Authority
- Airport Authority

Of the above departments, agencies, and offices, County Administration and Emergency Services have specifically delegated responsibilities to carry out mitigation activities or hazard control tasks, and are adequately staffed, trained, and funded to accomplish their missions.



THIS PAGE IS INTENTIONALLY LEFT BLANK



2.2 Critical Facilities

The map and table below include critical facilities as defined by the LENOWISCO Planning District, including roadways, school buildings, fire rescue stations, hospitals, and police stations.

FIGURE: Lee County Critical Facilities

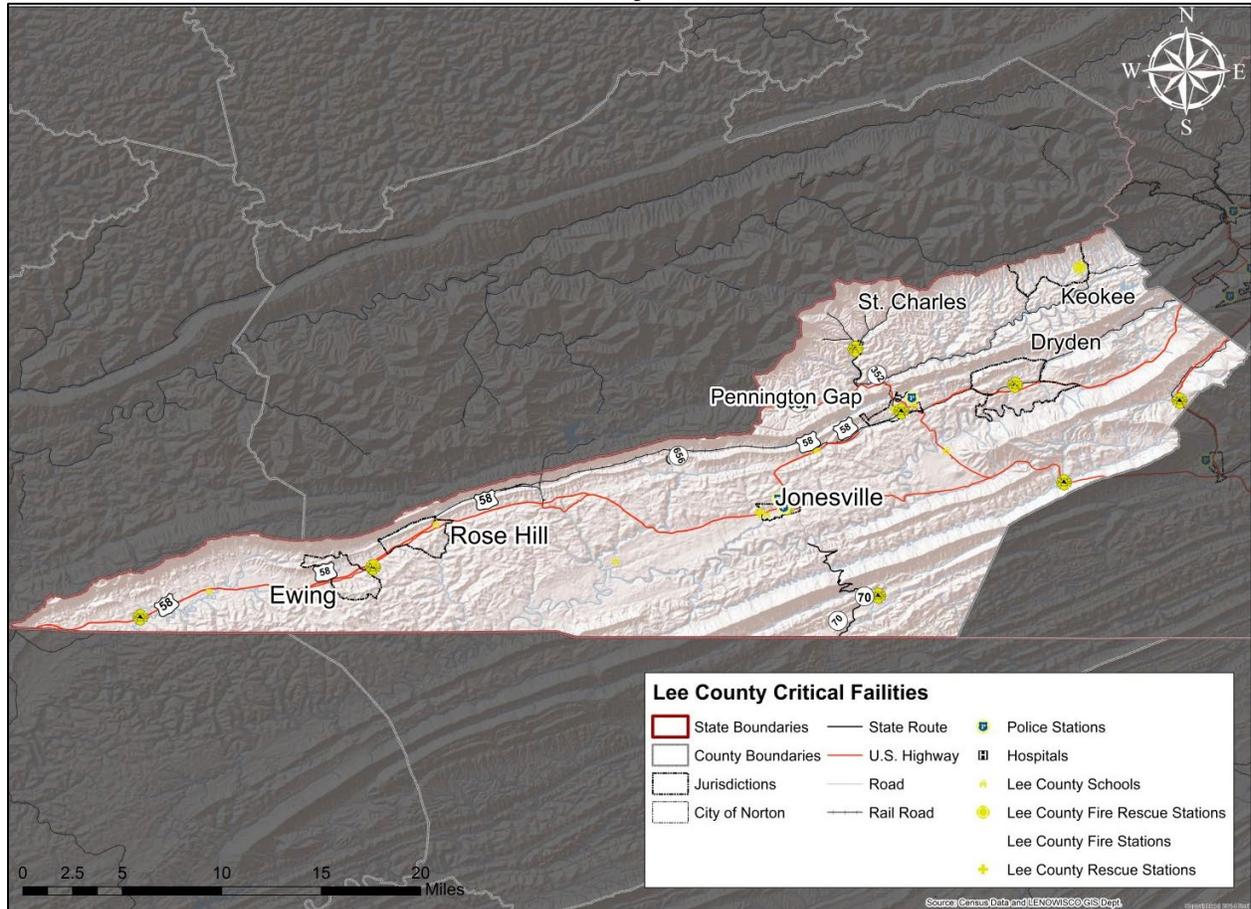




TABLE: Critical Facilities in Lee County		
Type	Name	Address
School	St. Charles Elementary	2434 Saint Charles Rd, St. Charles, VA 24282
School	Rose Hill Elementary	150 Rose Hill Dr, Rose Hill, VA 24281
School	Jonesville Middle	160 Bulldog Cir, Jonesville, VA 24263
School	Pennington Middle	121 Bobcat Circle, Pennington Gap, VA 24277
School	Elk Knob Elementary	148 Hornet Loop Pennington Gap, VA 24277
School	Dryden Elementary	176 School House Ridge Rd, Dryden, VA 24243
School	Elydale Middle	128 Elydale Rd, Ewing, VA 24248
School	Thomas Walker High	126 Bluegrass Dr, Ewing, VA 24248
School	Lee High	200 General Ln, Jonesville, VA 24263
School	Flatwoods Elementary	205 Flatwoods School Rd, Jonesville, VA 24263
School	Lee County Career - Technical Center	181 Vo-Tech Dr, Ben Hur, VA 24218
Fire Rescue	Keokee Volunteer Fire Department and Rescue Squad	153 Fire Hall Rd, Keokee, VA
Fire Station	Blackwater Volunteer Fire Department	1001 A J Osborne HWY, Blackwater, VA
Fire Station	Thomas Walker Volunteer Fire Department Station #2	598 Neighborhood Ln, Ewing, VA 24248
Fire Station	Jonesville Volunteer Fire Department	33831 Wilderness Rd., Jonesville, VA
Fire Station	Pennington Gap Volunteer Fire Department	343 Doris Ave. Pennington Gap, VA
Fire Station	Dryden Volunteer Fire Department & Rescue Squad	961 Dryden Loop, Dryden, VA
Fire Station	St. Charles Volunteer Fire Department	2441 St. Charles Rd., St. Charles, VA
Fire Station	Thomas Walker Volunteer Fire Department	170 Pioneer Rd, Ewing, VA 24248
Rescue Squad	Thomas Walker Rescue Squad	St. Rt. 879 Ewing, VA 24248
Rescue Squad	Pennington Gap Rescue Squad	316 KY Ave, Pennington Gap, VA 242777
Rescue Squad	Jonesville Rescue Squad	32254 Wilderness Rd. Jonesville, VA
Rescue Squad	St. Charles Rescue Squad	VA Rt. 352 St. Charles, VA 24282
Police Department	Pennington Gap Police Department	528 Industrial Dr. Pennington Gap, VA 24277
Police Department	Jonesville Police Department	842 Park St. Jonesville, VA 24263
Sheriff's Department	Lee County Sheriff's Department	33640 Main St. U 101 Jonesville, VA 24263



2.3 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Lee County Natural Hazard Events				
<i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production of heavy snow with up to 19 inches reported.		02/21/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/04/2015	\$500
Blizzard	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region on March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. The lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer leads to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Thunderstorm Wind	A cold front tracked through southwest Virginia on the 25th triggering thunderstorm activity. Many trees were downed by thunderstorm wind gusts and hail as large as golf balls were also seen.		04/25/2015	\$5,000
Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/14/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Thunderstorm Wind	A couple of severe thunderstorms formed in the unstable air in the vicinity of an air mass boundary situated along the Tennessee and Kentucky border northeast paralleling the Southwest Virginia border. The storms produced some isolated areas of damaging wind.		05/07/2016	
Thunderstorm Wind	A few severe thunderstorms developed in a weak to moderately unstable environment in advance of an outflow boundary building southeast out of the Upper Ohio Valley. The storms were enhanced over the higher terrain on the Cumberland Plateau.		06/21/2016	
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.		06/23/2016	



Thunderstorm Wind	A few pulses of severe thunderstorms developed across northeastern parts of the region including Southwest Virginia and Northeast Tennessee at mid-afternoon. Following this development, a more organized line of storms formed along an outflow boundary that moved out of South-Central Kentucky and Middle Tennessee onto the Cumberland Plateau and continued southeast across much of Central East and Southeast Tennessee. The mode of severe weather was straight-line winds which ended up downing numerous trees and power lines.		07/06/2016	
Thunderstorm Wind	A well-developed upper-level trough moved from the Eastern Plains to the Eastern Seaboard with an associated strong low-pressure system and cold front. A squall line formed ahead of the front and swept across the Southern Appalachian region from mid-morning through the mid-afternoon hours. Several reports of straight-line wind damage were received during the event. Most of the damage was on the Cumberland Plateau and across Southeast Tennessee with more isolated damage reported in Southwest Virginia and Southwest North Carolina.		03/01/2017	
Thunderstorm Wind	Isolated severe thunderstorms formed ahead of a cold front which moved south across Southwest Virginia and Northeast Tennessee. A few trees were downed in the area due to convective gusts.		05/11/2017	
Thunderstorm Wind	A few thunderstorms became severe later in the evening ahead of a slow-moving cold front associated with a deep upper trough lumbering east toward the Appalachian Spine.		05/20/2017	
Thunderstorm Wind	A few severe thunderstorms formed ahead of a cool front during the heat of the afternoon producing strong wind gusts across the Southern Appalachian Region.		07/06/2017	
Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	



Thunderstorm Wind	A strong low-pressure system moved northeast out of the Midwest into the Eastern Great Lakes while pulling colder air southeast across the Southern Appalachian region. Severe convection developed ahead of the front generating wind gusts strong enough to down trees and produce some limited structural damage to homes. The damage reports were mainly over the higher Cumberland Plateau terrain.		04/04/2018	
Hail	A weak short wave passed across the Southern Appalachians generating a couple of thunderstorms that produced marginally severe hail.		05/05/2018	
Thunderstorm Wind	A few storms became severe in a strongly unstable environment ahead of a cold front during the afternoon. The storms produced a couple of reports of small hail but, the main impact was from a few reports of damaging winds gusts along with some localized flooding.		06/03/2018	
Thunderstorm Wind	A very moist and unstable environment existed across the Southern Appalachian region during the mid to late evening hours. Widespread wind damage occurred as a bowing convective segment moved south across the region.		07/20/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Thunderstorm Wind	Thunderstorms were suppressed across the Great Valley throughout the daytime hours with development on the Tennessee and North Carolina border terrain. By late afternoon, the local air mass over the valley had become moderately unstable and supported the development of widely scattered severe convection across Central East Tennessee and a small part of Southwest Virginia.		05/18/2019	
Thunderstorm Wind	A long-lived bowing line of convection moved into the Southern Appalachian region late in the evening and made rapid progress across the region into the early morning hours of the next day. The strong winds associated with the line of storms produced widespread wind damage. While the damage was reported in a few spots across Northeast Tennessee, most of the event impacted Central East and Southeast Tennessee and Southwest North Carolina.		06/21/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	



2.3.1 Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Lee County Community Resilience Profile*	
<i>Source: American Community Survey 2018 Five-Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	4,759
Members of the community under 18 years old	4,580
Members of the community that identify as having disability status	5,859
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	5,414
Number of mobile homes in the community	2,583
Members of the community without health insurance	2,981
Occupied housing units with tenants without a vehicle	989
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

2.3.2 Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Lee County, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Lee County were detected in March 2020, with positive case rates rising in the fall and winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities and nursing homes are some of the most vulnerable to a communicable disease, including Lee Health and Rehab in Pennington Gap, and Chestnut Grove Assisted Living in Dryden. People over the age of 65 make up nearly 20% of the population of Lee County and have been found to be more at-risk to severe illness from COVID-19. Additionally, about 13% of the population is uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak. As with many communities, Lee County Health Department experienced challenges with public education and participation in recommended mitigation behaviors, such as mask-wearing and social distancing, during the pandemic.

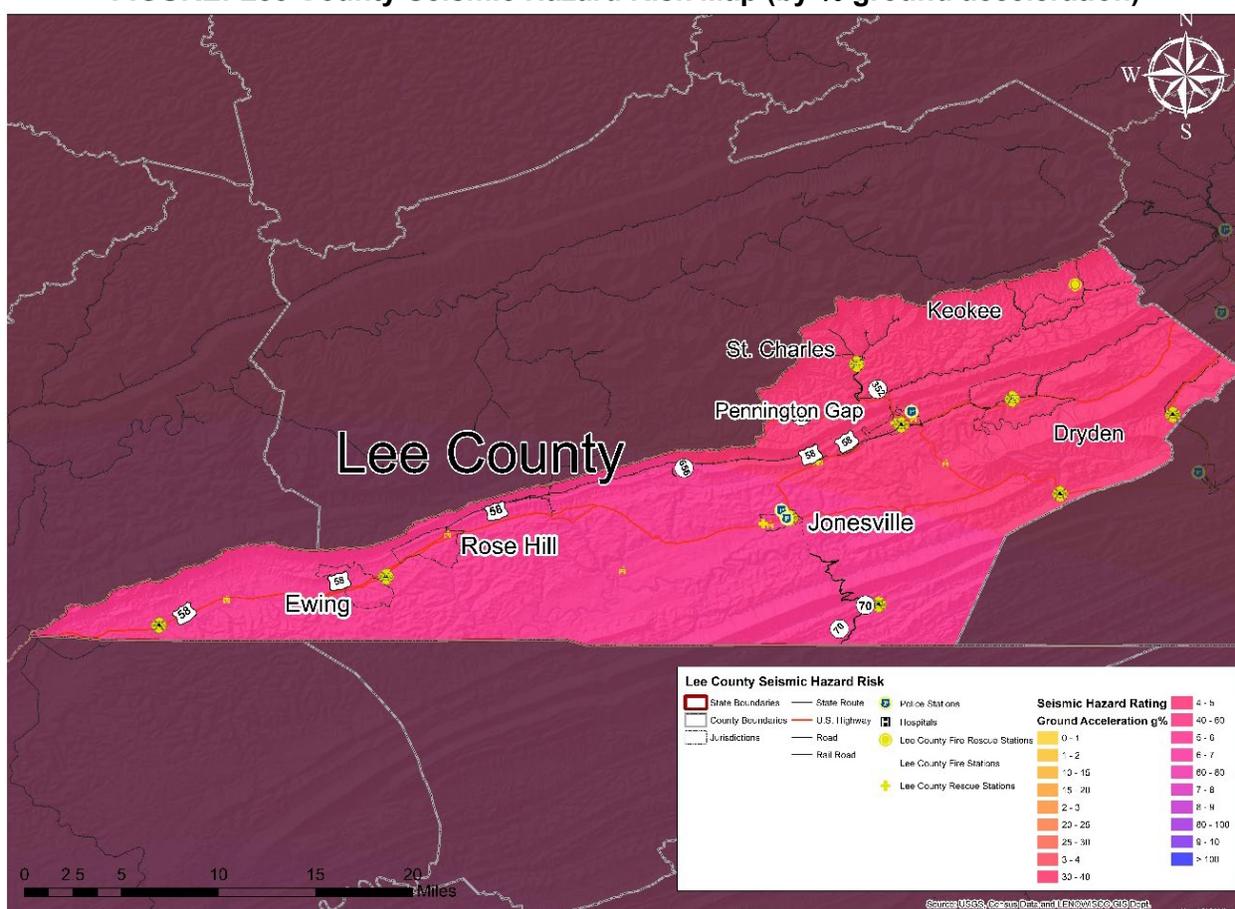
Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Agricultural lands across Lee County would experience significant impacts in the event of a prolonged drought event. The Lee County public water supply is sourced from the Powell River, which may be vulnerable to shortages during a significant drought event. Lee County



Public Service Authority uses a local quarry as the primary water source for western Lee County. Additionally, the PSA has invested in interconnections between water sources across the county as well as inter-county and inter-state as back-up supplies.

Earthquake: The [U.S. Geological Survey \(USGS\)](https://www.usgs.gov/) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. County residents have felt small tremors in the past, but there has been no documented structural damage from earthquakes. There are some older buildings across the County that pre-date seismic building standards, but no centralized historic district or area of concern. The map below illustrates the seismic hazard risk in Lee County, with the southern portion of the county at slightly higher risk to ground acceleration.

FIGURE: Lee County Seismic Hazard Risk Map (by % ground acceleration)





Flooding: Historically, more flood-prone areas of Lee County include St. Charles, Stone Creek, North Fork of Powell River, Leeman Field, East Pennington Gap, and all areas adjacent to Powell River.

Lee County participates in the National Flood Insurance Program (CID #510085) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). Lee County does not have any repetitive loss properties.

TABLE: NFIP Statistics for Lee County				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damage Claims Since 1978
34	\$4,046,300	37	\$256,229.86	5

The following maps illustrate the 100-year and 500-year floodplains in Lee County.

FIGURE: Lee County 100-year Floodplain

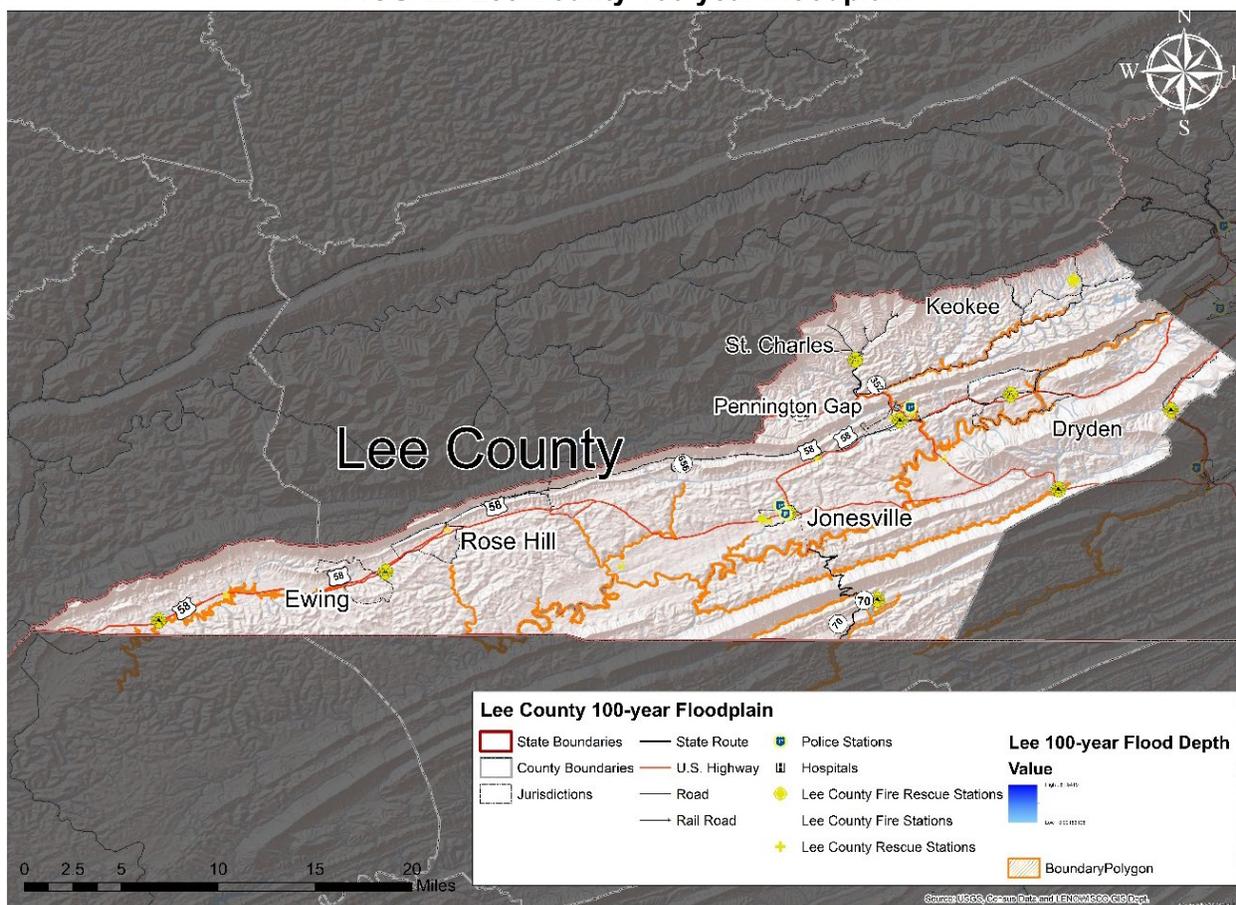
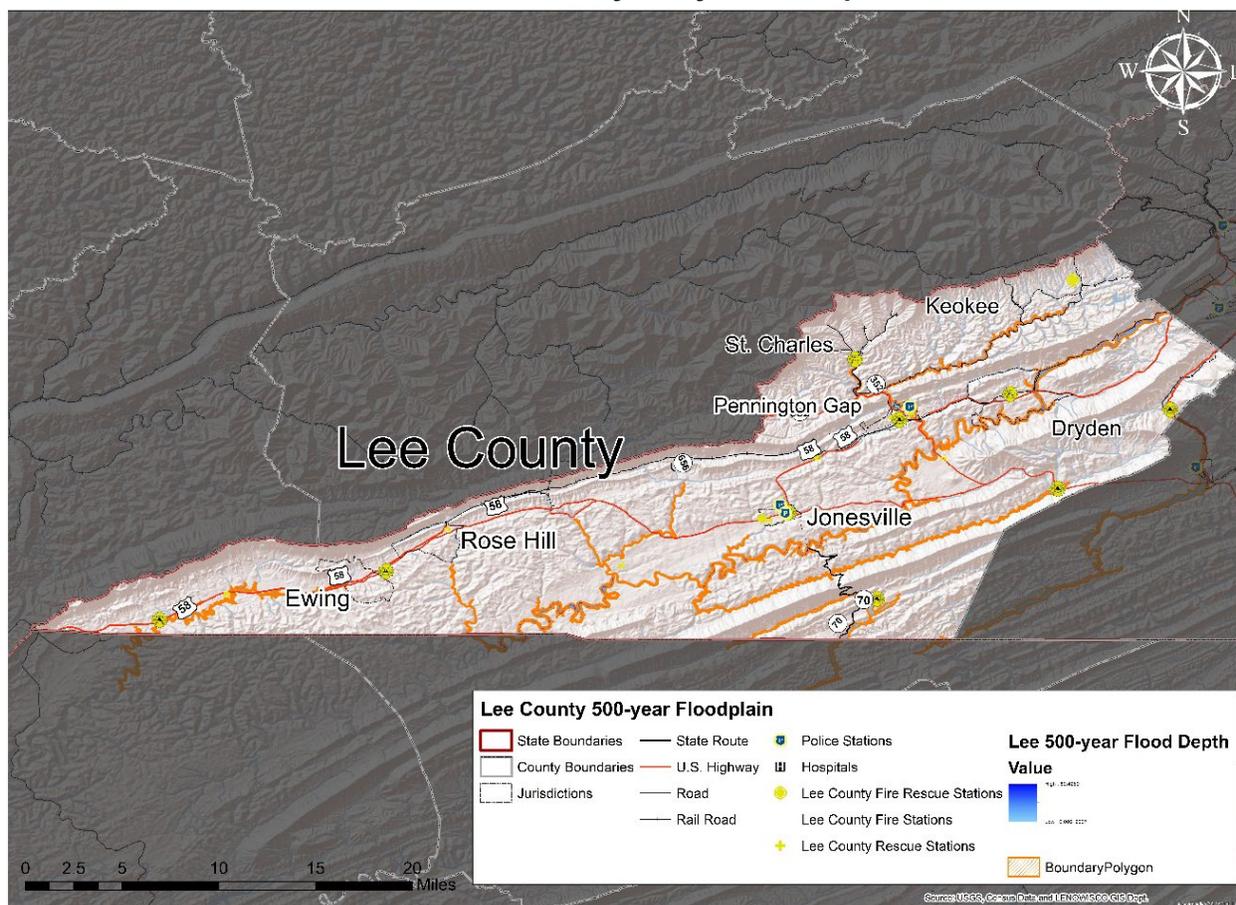




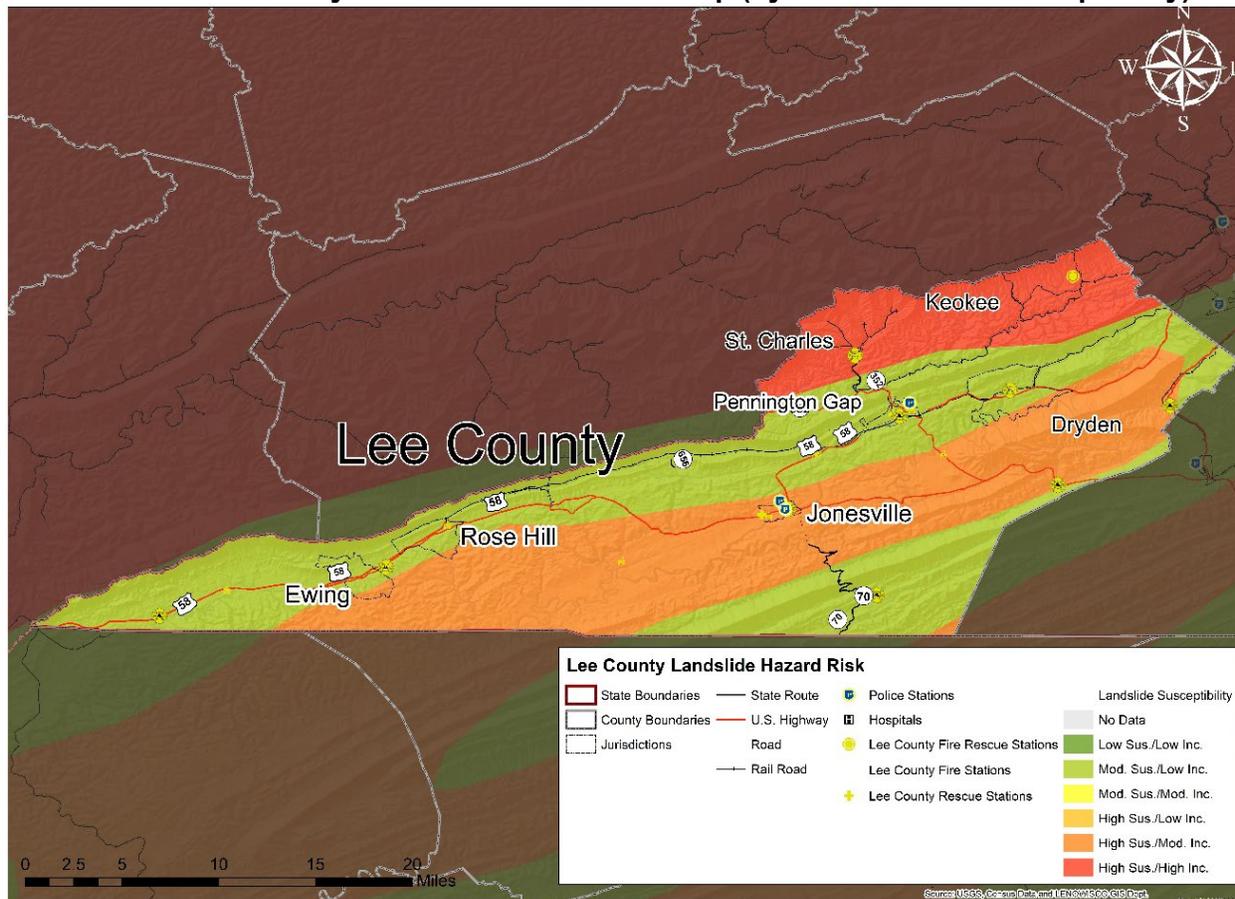
FIGURE: Lee County 500-year Floodplain





Landslide: Steep slopes along roadways in Lee County are at higher risk to landslide events, including along US Highways 58/421 and Route 70 crossing Powell Mountain and Wallens Ridge. Powell Mountain in particular has experienced landslide events. These areas are maintained and repaired by the Virginia Department of Transportation (VDOT). VDOT also provides warnings for potential or actual road closures due to landslides. Additional areas of concern include old underground coal mine operations and shafts. The map below illustrates landslide risk in Lee County, with higher susceptibility and incidence in the northern portion of the county near St. Charles, as well as along much of Highway 58 through the center of the county near Jonesville.

FIGURE: Lee County Landslide Hazard Risk Map (by incidence and susceptibility)



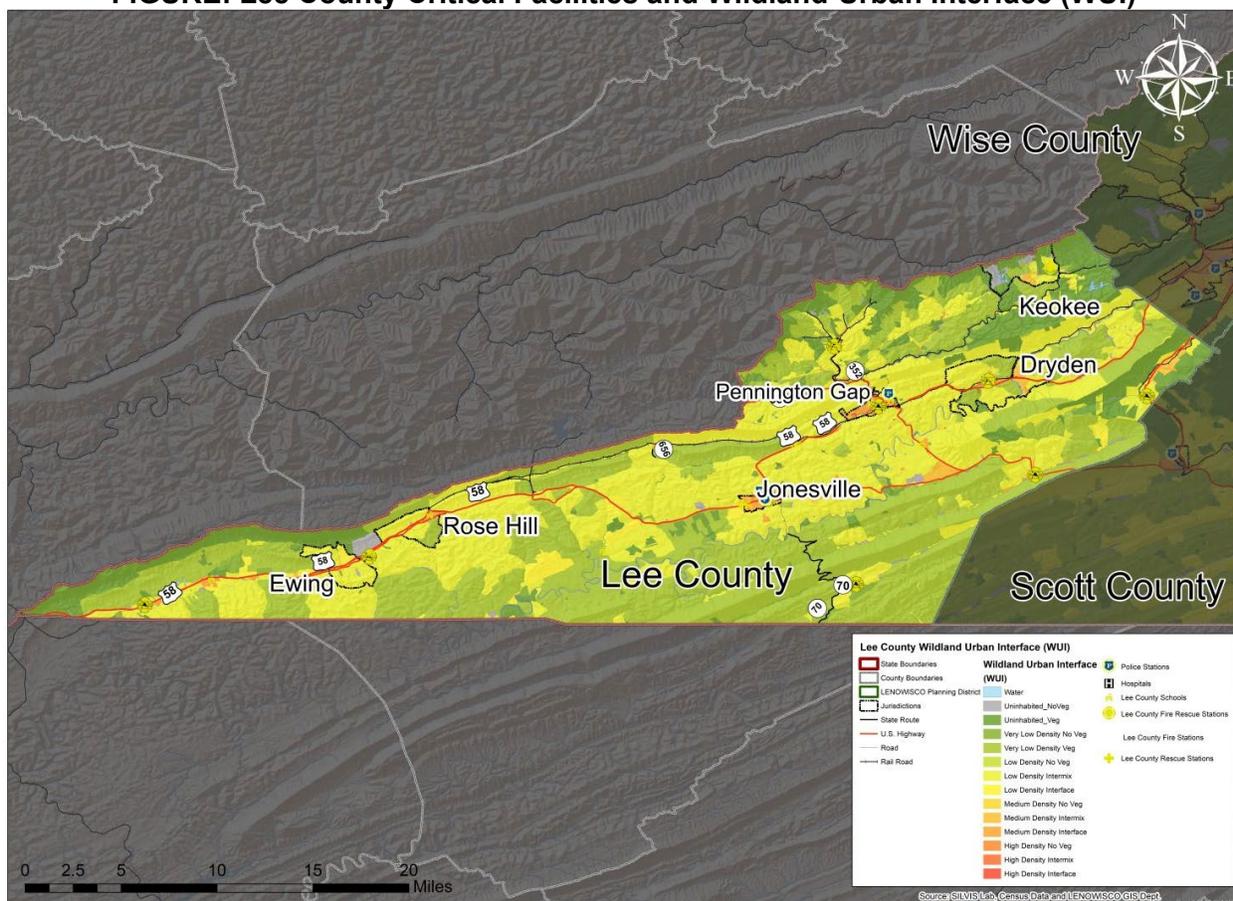
Non-Rotational Winds: Thunderstorm wind events occur annually in Lee County. The Powell Valley and Wallens Creek areas see more significant wind impacts. There are an estimated 2,500 mobile homes in the County, whose residents are more vulnerable to severe weather events. Mobile homes are scattered across the County, with some small groupings of 15-20 units. These homes are required to have tie-downs and anchors to reduce damages from wind events.

Tornado: Lee County is at moderate risk of non-rotational wind events, and the Powell Valley and Wallens Creek areas see more significant wind impacts. As stated above, residents of mobile homes are more vulnerable to tornado and severe weather events. Lee County has experienced a few small, EF-1 tornadoes since 1955.



Wildfire: All areas of Lee County, including National Forest areas, northern mountain regions, Powell Mountain, and Wallens Ridge would experience significant impacts during a wildfire event. Lee County experiences small wildfire events every year but has not seen a major wildfire in seven years or so. The County maintains 11 volunteer fire departments who support the U.S. Forest Service crew as needed. Lee County does not have a Community Wildfire Protection Plan and does not participate in the FireWise program. The figure below depicts the portions of Lee County by density of Wildland-Urban Interface.

FIGURE: Lee County Critical Facilities and Wildland-Urban Interface (WUI)



Winter Storm: All areas of Lee County experience winter storm events, but those areas north of Cumberland/Stone Mountain and higher ridges of Wallens Ridge and Powell Mountain experience the greatest impacts. Even though the data was not captured by NOAA, the last major snowstorm in 2015 caused significant structural damage. Utilities across the County are provided by two private providers with variable response times to restore power. During some storms, power may not be restored for 1-2 weeks. In these extreme cases, law enforcement and fire officials work to deliver medications and food to vulnerable or isolated residents. VDOT is responsible for snow clearing through the County.



2.4 Hazard Ranking Analysis

2.4.1 Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

2.4.2 Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Lee County.

TABLE: Population Exposed Ranking for Lee County			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	Medium	2	6
Drought	High	3	9
Earthquake	Medium	2	6
Flooding	Medium	2	6
Dam Failure	Low	1	3
Karst/Subsidence	Low	1	3
Landslide	Low	1	3
Non-Rotational Winds	Medium	2	6
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Lee County		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Lee County			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Medium	2	4
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Lee County		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Low	1
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Lee County			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	Medium	2	6
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	Medium	2	6
Karst/Subsidence	Unlikely	0	0
Landslide	Unlikely	0	0
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3



2.4.3 Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- **High:** Significant hazard event likely to occur annually (Probability Factor = 3)
- **Medium:** Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- **Low:** Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- **Unlikely:** There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Medium	2
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	Medium	2
Tornado	Low	1
Wildfire	Medium	2
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Lee County.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	17	51	2	High
Communicable Disease	2	15	30	3	Medium
Non-Rotational Winds	2	14	28	4	Medium
Drought	2	13	26	5	Medium
Wildfire	2	12	24	7	Low
Earthquake	1	20	20	7 (tie)	Low
Tornado	1	20	20	7 (tie)	Low
Landslide	2	10	20	7 (tie)	Low
Dam Failure	1	15	15	10	Low
Karst/Subsidence	1	6	6	11	Low



2.5 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Building code enforcement is the responsibility of each jurisdiction. Lee County established a Department of Building Safety and Inspection for construction on county-lands.
Zoning	-	Yes	-	Lee County has a Board of Zoning Appeals and enforces a county-wide zoning ordinance which was adopted in 1993.
Subdivisions	-	Yes	-	Currently, few subdivisions exist within the county, Lee County has adopted a Subdivision Ordinance.
Stormwater Management	-	-	Yes	Lee County utilizes the guidance of the Virginia Department of Environmental Quality. Lee County has not adopted stormwater regulations.
Post Disaster Recovery	-	-	-	
Growth Management	-	Yes	-	Growth management is the responsibility of the Community Development & Zoning Department.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Lee County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	-	Yes	-	The Lee County Comprehensive Plan was updated in 2020. The Plan was developed by the LENOWISCO Planning District and adopted by the Lee County Planning Commission and County Board of Supervisors.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Lee County relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.



Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Lee County has developed an Emergency Operations Plan.
Community Wildfire Protection Plan	-	-	Yes	The U.S. Forest Service plan covers parts of Lee County.
Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	

TABLE: Administrative and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	The County does not have a full-time planner on staff to administer hazard mitigation programs.
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes, but vacant	Have layers but not a full GIS system
Emergency manager	Yes	Emergency Services Department
Grant writers	Yes	Under Contract; LENOWISCO Planning District

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	Building Official
Are any certified floodplain managers on staff or under contract with your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes, they have this with their GIS layer
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
If participating, is your jurisdiction seeking to improve its Community Rating System (CRS) Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	510085	03/04/1987
Community Rating System	No	-	-
Building Code Effectiveness Grading Schedule	Yes	Class 5:1-2 family dwelling Class 4: All other construction	March 24, 2020
Public Protection/ISO	Yes		
StormReady	No	-	-
Tree City USA	No	-	-



2.5.1 Ordinances

The following ordinances apply to natural hazard mitigation in Lee County.

TABLE: Ordinances in Lee County		
Ordinance	Adoption Date	Description
Flood Damage Prevention and Control Ordinance	2011	<p>The Ordinance is designed to minimize public and private losses due to flood conditions in specific areas. It requires a development permit to be submitted to the County prior to any construction or substantial improvement activities. Permits will only be approved if they meet the provisions of the ordinance, which include development standards that will minimize the potential for flood losses. Standards are established for construction materials, equipment, methods, practices, and uses. Most importantly, establishes the requirements for elevation and floodproofing (non-residential) to base flood elevation.</p> <p>The Ordinance requires the minimum standards of the National Flood Insurance Program (NFIP). The County's floodplain areas are currently being re-studied as part of the State's Floodplain Mapping Program. Potentially those floodplain areas will be delineated with updated topography, and base flood elevations will be recalculated.</p>
Subdivision Ordinance	1996	<p>The Ordinance is designed to regulate all divisions of land for purposes of sale or building development (immediate or future), including all divisions of land involving the dedication of new streets/roads or a change in existing streets/roads. All proposed subdivisions must go through an approval process involving the Planning Commission, County Attorney's Office, and Inspections Office (for flood zone clearance). Subdivision plats are required for review and must include the location of areas subject to flooding.</p> <p>While not designed specifically for hazard mitigation purposes, this Ordinance will prevent flood losses in tandem with the Flood Damage Prevention Ordinance. It will also minimize the adverse effects that development can have on stormwater drainage through impervious surface requirements and through sedimentation and erosion control. Through its roadway requirements, the ordinance also provides for adequate ingress and egress to subdivisions by emergency vehicles for fires or severe weather events.</p>
State of Emergency Ordinance	October 1974	<p>The purpose of this Ordinance is to authorize the proclamation of a State of Emergency and the imposition of prohibitions and restrictions during a State of Emergency. Establishes the authority and procedures for the Board of Supervisors to proclaim a State of Emergency, and to impose the following restrictions as described in the ordinance: curfew; evacuation; possession/transportation/transfer of intoxicating liquors, dangerous weapons and substances; access to areas; movements of people in public places; operation of businesses and other places; and other activities or conditions the control of which may be reasonably necessary to maintain order and protect lives or property during the State of Emergency.</p> <p>The Ordinance does not incorporate any long-term mitigation actions, such as temporary moratoria on the reconstruction of structures damaged or destroyed by a disaster event.</p>



THIS PAGE IS INTENTIONALLY LEFT BLANK



2.6 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Lee County New Mitigation Actions							
Action #	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	Not Started	All-Hazard	Develop and deliver a public education and awareness program of mitigation strategies, including limiting the spread of communicable diseases.	Lee County Pennington Gap	Emergency Management	LENOWISCO Health District Community-based and faith-based organizations	4 - Whole Community
2	Not Started	All-Hazard	Develop an inventory of at-risk public buildings and infrastructure and prioritize mitigation projects based on those providing the most benefit (at the least cost) to the County and residents.	Lee County Pennington Gap	Public Works	Emergency Management	2 - Mitigation 4 - Whole Community
3	Ongoing	Drought	Establish sufficient public water system interconnects between communities and across county and state lines.	Lee County	Lee County PSA	Public Works	1 - Protection
4	Not Started	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Purchase at least three generators for emergency shelters and ensure all shelters are wired for portable generators (including any locations in Pennington Gap).	Lee County Pennington Gap	Emergency Management	Lee County Public Schools	1 - Protection



TABLE: Lee County New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	VDEM, VDOH, local funds	Low	Low	Medium	Short-Term	Identify priority populations for outreach and appropriate platforms and communication tools. Work with state agencies to seek funding and best practice public awareness campaigns. Implement best practice programs through awarded grant support, when available.	22
2	HMA, USACE	Medium	Medium	Medium	Short-Term	Develop an inventory of un-reinforced masonry buildings to target for mitigation. Develop an inventory of commercial and public buildings in need of flood, windstorm, and earthquake mitigation. Identify at-risk bridges for flood and earthquake hazards, identify enhancements, and implement projects needed to reduce the risks. Review and improve utility operations and services to mitigate for natural hazards.	19
3	Local funds	Medium	Medium	Medium	Ongoing	Prioritize additional water sources. Outreach to other PSAs and municipal providers to draft an interconnect agreement. Revise and revisit as needed.	19
4	FEMA	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	27

TABLE: Lee County Completed or Removed Mitigation Actions

Action #	Status	Mitigation Action/Strategy	Applicable Jurisdiction	Reasoning
1	Removed	Potential residential acquisition project(s) in flood-prone areas.	Jonesville	Jonesville did not participate in the 2021 update. The acquisition project continues as a District-wide initiative.
2	Removed	Need for an early warning system in town.	Jonesville	Jonesville did not participate in the 2021 update.



2.7 Lee County Jurisdictions

Pennington Gap was the only jurisdiction in Lee County to participate in the 2021 plan update. Jonesville and St. Charles, the other incorporated towns in the county, did not participate.

2.7.1 Town of Pennington Gap

2.7.1.1 Community Profile

Pennington Gap is an incorporated town (since 1892) in central Lee County, just seven miles from the Kentucky state border. The town comprises 1.44 square miles. The North Fork of the Powell River flows through the town, as well as U.S. Routes 58 and 421. According to [American Community Survey 5-Year Estimates](#), the population of Pennington Gap was 1,974 in 2018. This is a slight increase from the 2000 census population of 1,781.

Pennington Gap has a moderate climate with cool winters and warm, moist summers. The town is located in a valley at 1,400 ft. elevation, near the dividing point of the Valley and Ridge province and Appalachian Plateau ([Pennington Gap Comprehensive Plan](#), p.14).

Pennington Gap historically relied on mining as the main industry and source of employment. There is now more reliance on education, health, and social services. As of 2018, the median household income in Pennington Gap was \$18,816 ([2018 American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

Public services and facilities in Pennington Gap include the following:

- Leeman Field (recreational area)
- Lonesome Pine Regional Library System, Lee County Branch
- Pennington Gap Water Treatment Plant
- Pennington Gap Wastewater Treatment Plant
- Pennington Gap Police Department
- Pennington Gap Volunteer Fire Department
- Lee Regional Medical Center
- Five elementary schools, two middle schools, and two high schools

Source: [Pennington Gap Comprehensive Plan](#), p. 3-6



2.7.1.2 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of Pennington Gap Natural Hazard Events* <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production of heavy snow with up to 19 inches reported.		02/21/2015	
Blizzard	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region on March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. The lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer leads to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	



Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	
Hail	A weak short wave passed across the Southern Appalachians generating a couple of thunderstorms that produced marginally severe hail.		05/05/2018	
Thunderstorm Wind	A few storms became severe in a strongly unstable environment ahead of a cold front during the afternoon. The storms produced a couple of reports of small hail but, the main impact was from a few reports of damaging winds gusts along with some localized flooding.		06/03/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	

** The table above includes all events affecting the Lee County "zone" or those specific to Pennington Gap, according to the Storm Events Database. Records were confirmed with local stakeholders when possible.*



Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of Pennington Gap Community Resilience Profile*	
Source: American Community Survey 2018 Five-Year Estimates	
Factors	Number in Community
Members of the community over 65 years old	520
Members of the community under 18 years old	306
Members of the community that identify as having disability status	560
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	656
Number of mobile homes in the community	168
Members of the community without health insurance	349
Occupied housing units with tenants without a vehicle	259
The number of houses without electric	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Lee County, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Lee County were detected in March 2020, with positive case rates rising in the fall and winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Lee County has a Pandemic Plan covering Pennington Gap, as well as a county Emergency Operations Plan. People over the age of 65 make up more than 26% of the population of Pennington Gap, and have been found to be more at-risk to severe illness from COVID-19. Assisted living facilities and nursing homes are some of the most vulnerable to a communicable disease, including Lee Health and Rehab in Pennington Gap which is a 100-bed facility. Additionally, the 2018 American Community Survey estimated that about 18% of individuals in Pennington Gap were uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak. There is not currently a shelter for individuals experiencing homelessness in Pennington Gap, which has emerged as a need during the pandemic response.

Drought: Agricultural lands across Lee County would experience significant impacts in the event of a prolonged drought event. The Lee County Public Service Authority draws about 70% of the County's water supply from the Pennington Gap water plant along Cane Creek. A long-term drought could impact water quality and supply from this source. The local health department has a Water Business Plan.



Earthquake: Most buildings in downtown Pennington Gap are more than 100-years old and do not meet current seismic standards. Zoning and building codes are managed by Lee County.

Flooding: Wallen Creek runs through Pennington Gap and poses a significant flood risk. Portions of the north and east parts of the town lie in the 100-year flood plain, and the south end of town floods regularly. Highway 421 regularly experiences flooding impacts and flows through a tunnel system through the center of town. The tunnel is failing and potentially starting to collapse and runs underneath numerous commercial properties. North Kentucky Street is a major flood concern if the tunnel were to fail. VDOT maintains a portion of the tunnel adjacent to North Kentucky Street.

The Town of Pennington Gap participates in the National Flood Insurance Program (CID #510087) and the last FIRM map for the area was issued on 02/18/2011 ([FEMA, 2019](#)). Pennington Gap has two Repetitive Loss (RL) buildings with four total RL losses. None of the RL losses were insured and payments totaled \$196,918.67.

TABLE: NFIP Statistics for Pennington Gap				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damage Claims Since 1978
3	\$914,900	16	\$436,619.98	1

Dam Failure: There are four dams in Lee County, including one high hazard dam at Keokee Lake on the North Fork Powell River. The dam is state-regulated and has an Emergency Action Plan, according to the [National Dams Inventory](#). Pennington Gap is not at risk of inundation from any dams in the county.

Karst/Subsidence: Pennington Gap does not have any areas of concern.

Landslide: Steep slopes along roadways in Lee County are at higher risk to landslide events, including along US Highways 421 which serves as the primary access route for Pennington Gap. VDOT is responsible for maintenance along the highway.

Non-Rotational Winds: Thunderstorm wind events occur annually in Lee County. Pennington Gap has experienced occasional tree damage due to wind impacts. Residents of mobile homes are more vulnerable to damage from wind events, and the town does not currently have a shelter site for these residents. The Town relies on Lee County to open shelters, including the middle school.

Tornado: There is no history of tornado events in the Town of Pennington Gap. There are approximately 168 mobile homes in Pennington Gap, which would experience significant damages in a tornado event. Of particular concern in Pennington Gap is the ability of residents to evacuate or seek shelter in advance of a significant wind or tornado event. About 30% of occupied housing units do not have a vehicle available to them, according to the 2018 American Community Survey estimates. While some essential facilities, including the nursing home and water plant, have generators, there is a potential need for generators at shelter sites. As noted above, there is not a shelter site identified for residents of mobile homes.

Wildfire: The Pennington Gap area is at lower risk of wildfire events than some of the neighboring forest areas in the northern part of Lee County. The Town manages a volunteer fire



department that helps to respond to grassfires outside of town. The fire department is not fully equipped to respond to a large wildfire event.

Winter Storm: All areas of Lee County experience winter storm events, but the Pennington Gap area is at lower risk to winter storm events than some of the neighboring mountain and forest areas in the northern part of Lee County. If a significant winter storm were to impact Pennington Gap, more vulnerable residents, including the elderly, disabled, and those without access to a vehicle may be isolated in their homes and more vulnerable to storm impacts such as power outages. There have been instances of fallen power lines leading to isolated residents.

2.7.1.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be



more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)

- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).

- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Pennington Gap.

TABLE: Population Exposed Ranking for Pennington Gap			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	No Impact	0	0
Karst/Subsidence	No Impact	0	0
Landslide	Low	1	3
Non-Rotational Winds	High	3	9
Tornado	High	3	9
Wildfire	Low	1	3
Winter Storm	High	3	9



TABLE: Property Exposed Ranking for Pennington Gap		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	Medium	2
Flooding	High	3
Dam Failure	No Impact	0
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Low	1
Winter Storm	High	3

TABLE: Property Damages from Major Event Ranking for Pennington Gap			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	High	3	6
Dam Failure	No Impact	0	0
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Medium	2	4
Tornado	Medium	2	4
Wildfire	Low	1	2
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Pennington Gap		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Low	1
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	No Impact	0
Karst/Subsidence	No Impact	0
Landslide	Medium	2
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Pennington Gap			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Medium	2	6
Dam Failure	Unlikely	0	0
Karst/Subsidence	Unlikely	0	0
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3



Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Medium	2
Earthquake	Low	1
Flooding	High	3
Dam Failure	Unlikely	0
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	Medium	2

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking for each hazard in Pennington Gap.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Flooding	3	23	69	1	High
Non-Rotational Winds	3	17	51	2	Medium
Winter Storm	2	21	42	3 (tie)	Medium
Communicable Disease	2	21	42	3 (tie)	Medium
Landslide	2	14	28	5	Medium
Drought	2	13	26	6	Medium
Tornado	1	24	24	7	Low
Earthquake	1	23	23	8	Low
Wildfire	1	10	10	9	Low
Karst/Subsidence	1	3	3	10	Low
Dam Failure	0	0	0	11	Low



2.7.1.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	
Zonings	Yes	-	-	Pennington Gap Administrator and Town Council enforce a zoning ordinance adopted in 2008.
Subdivisions	-	-	-	Pennington Gap does not have a subdivision ordinance.
Stormwater Management	-	-	-	
Post Disaster Recovery	-	-	-	
Growth Management	Yes	-	-	The Town Council and Industrial Development Authority provide economic development and growth management planning.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Lee County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	The Pennington Gap Comprehensive Plan was last updated in 2006. The Plan was developed by LENOWISCO Planning District with guidance from the Pennington Gap Planning Commission.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Pennington Gap relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Lee County has developed an Emergency Operations Plan.
Community Wildfire Protection Plan	-	-	-	
Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	



TABLE: Administration and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract
Planners or engineers with an understanding of natural hazards	Yes	Under Contract
Surveyors	Yes	Under Contract
Personnel skilled or trained in GIS applications	Yes	Maintenance Supervisor
Emergency manager	Yes	Fire Chief
Grant writers	Yes	Various staff support

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	County Building Official
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, building public awareness
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	510087	09/04/1986
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection/ISO	Yes	5/5	2014
StormReady	No		
Tree City USA	No		



THIS PAGE IS INTENTIONALLY LEFT BLANK



2.7.1.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Pennington Gap New Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Develop and deliver a public education and awareness program of mitigation strategies, including limiting the spread of communicable diseases.	Lee County Town of Pennington Gap	Emergency Management	LENOWISCO Health District; community-based and faith-based organizations	3 - Plans & Policies 4 - Whole Community
2	New	Not Started	All-Hazard	Develop an inventory of at-risk public buildings and infrastructure and prioritize mitigation projects based on those providing the most benefit (at the least cost) to the Town and residents.	Lee County Town of Pennington Gap	Public Works	Emergency Management	2 - Mitigation 4 - Whole Community
3	New	Not Started	Communicable Disease	Establish an emergency shelter for those experiencing homelessness that meets social distancing standards.	Town of Pennington Gap	Social Services	Emergency Management	1 - Protection



4	New	Not Started	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Work with the County to purchase at least three generators for emergency shelters and ensure all shelters are wired for portable generators (including any locations in Pennington Gap).	Lee County Town of Pennington Gap	Emergency Management	Lee County Public Schools	1 - Protection
5	New	Not Started	Flooding	Initiate an impact assessment for the potential tunnel failure of Wallen Creek.	Town of Pennington Gap	Public Works	VDOT	2 - Mitigation
6	New	Not Started	Non-Rotational Wind Tornado Winter Storm	Conduct a survey to estimate the costs of burying utility lines.	Town of Pennington Gap	Public Utility Companies	Public Works	1 - Protection
7	New	Not Started	Wildfire	Secure a new apparatus for the local fire department that can respond to wildfire/grassfire events, as well as additional protective equipment.	Town of Pennington Gap	Pennington Gap Fire Department	Town Administrator/Clerk	1 - Protection 4 - Whole Community
8	New	Not Started	Winter Storm	Secure additional heavy equipment for snow removal operations.	Town of Pennington Gap	Public Works	VDOT	1 - Protection



TABLE: Pennington Gap New Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	VDEM, VDOH, local funds	Low	Low	Medium	Short-Term	Identify priority populations for outreach and appropriate platforms and communication tools. Work with state agencies to seek funding and best practice public awareness campaigns. Implement best practice programs through awarded grant support, when available.	20
2	HMA, USACE	Medium	Medium	Medium	Short-Term	Develop an inventory of un-reinforced masonry buildings to target for mitigation; Develop an inventory of commercial and public buildings in need of flood, windstorm, and earthquake mitigation; Identify at-risk bridges for flood and earthquake hazards, identify enhancements, and implement projects needed to reduce the risks; and Review and improve utility operations and services to mitigate for natural hazards.	18
3	DHHS	Medium	Medium	Medium	Short-Term	Identify service population needs and managing organization capacity (CBO, faith-based org, city-operated, etc.) Scope project design and cost. Secure funding for construction and operations.	18
4	FEMA	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	28
5	VDOT	Medium	Medium	Medium	Short-Term	Scope the project cost and secure funding for an assessment. Scope the cost and design of structural mitigation.	22



6	FEMA	Medium	Medium	Low	Short-Term	Secure funding and a contractor for survey estimate. Conduct survey and identify priority areas for project investment. Consider a Benefit-Cost Analysis of burying powerlines.	11
7	U.S. Fire Administration, USFS, VA Department of Forestry	High	Medium	Medium	Short-Term	Complete an assessment of equipment costs. Secure funding for the purchase.	23
8	FEMA	High	Low	Low	Long-Term	Scope equipment needs and cost. Identify and secure funding.	

TABLE: Pennington Gap Completed or Removed Actions

Action #	Status	Mitigation Action/Strategy	Reasoning
1	Completed	Stormwater mitigation and drainage culverts underneath downtown.	Since the 2013 plan, stormwater mitigation projects were implemented. The primary concern for flooding is now the potential tunnel failure and a new mitigation action was identified.
2	Removed	Needed improvements in early warning system in town.	This was adapted into a District-wide action regarding early warning systems.



2.7.2 Town of Jonesville

Jonesville is the seat of Lee County, with an estimated population of 1,248 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 1.1 square miles. U.S. Highway 58 extends through the town, serving as the main roadway and travel corridor.

Jonesville participates in the National Flood Insurance Program (CID #510086) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). Jonesville does not have any repetitive loss properties.

TABLE: NFIP Statistics for Jonesville				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
0	\$0	3	\$9,661	0

The Town of Jonesville did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Jonesville representatives participated in the 2013 plan update, but the jurisdiction did not officially adopt the plan.

2.7.3 Town of St. Charles

St. Charles is one of three incorporated towns in Lee County, located just east of the Kentucky-Virginia border. St. Charles has an estimated population of 89 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 0.2 square miles.

St. Charles participates in the National Flood Insurance Program (CID #510088) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). St. Charles does not have any repetitive loss properties.

TABLE: NFIP Statistics for St. Charles				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
3	\$1,462,200	17	\$92,567.65	1

The Town of St. Charles did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. St. Charles representatives also did not participate in the 2013 plan update.



THIS PAGE IS INTENTIONALLY LEFT BLANK



Scott County

Hazard Mitigation Annex

LENOWISCO Planning District
2021 Hazard Mitigation Plan Update



THIS PAGE IS INTENTIONALLY LEFT BLANK



Section 3 Scott County Hazard Mitigation Annex

3.1 Community Profile

Scott County is located along Virginia's southern border with Tennessee. There are six towns in Scott County - Clinchport, Duffield, Dungannon, Nickelsville, Weber City, and the county seat Gate City. About 18% of the county population lives in one of these incorporated towns ([Scott County Comprehensive Plan, p. 15](#)). Gate City is the only jurisdiction to participate in the 2021 Hazard Mitigation Plan update.

Scott County is comprised of 538 square miles of Virginia's Valley and Ridge province. A small portion of northern Scott County is in the Appalachian Plateau. The elevation in the county ranges from 1,200' to 3,860', but most towns are in valleys at lower elevations. Scott County has an average annual precipitation of 39 inches.

Land Use

According to the [Scott County 2017 Comprehensive Plan](#), the many topographic elements in the county control the pattern and distribution of land uses. The elements are important to understand for hazard mitigation and include:

- Flooding of rivers and streams restricted development; however, much of the developed areas of the region are subject to flash floods due to local topography.
- The rugged topography and excessive slopes tended to restrict development to areas between the ridges and adjacent to major roads serving the area.
- Highways and railroads followed the paths of rivers and creeks between ridges and have restricted development opportunities to small areas along the roadways.
- Soil characteristics, such as poor permeability, depth to bedrock, subsoil suitability, etc., are not conducive to new development.
- Land suitable for development on plateaus, ridge tops, and hollows are restricted because of inadequate access and lack of utilities.
- Incompatible land use mixtures have resulted from a lack of developable land.

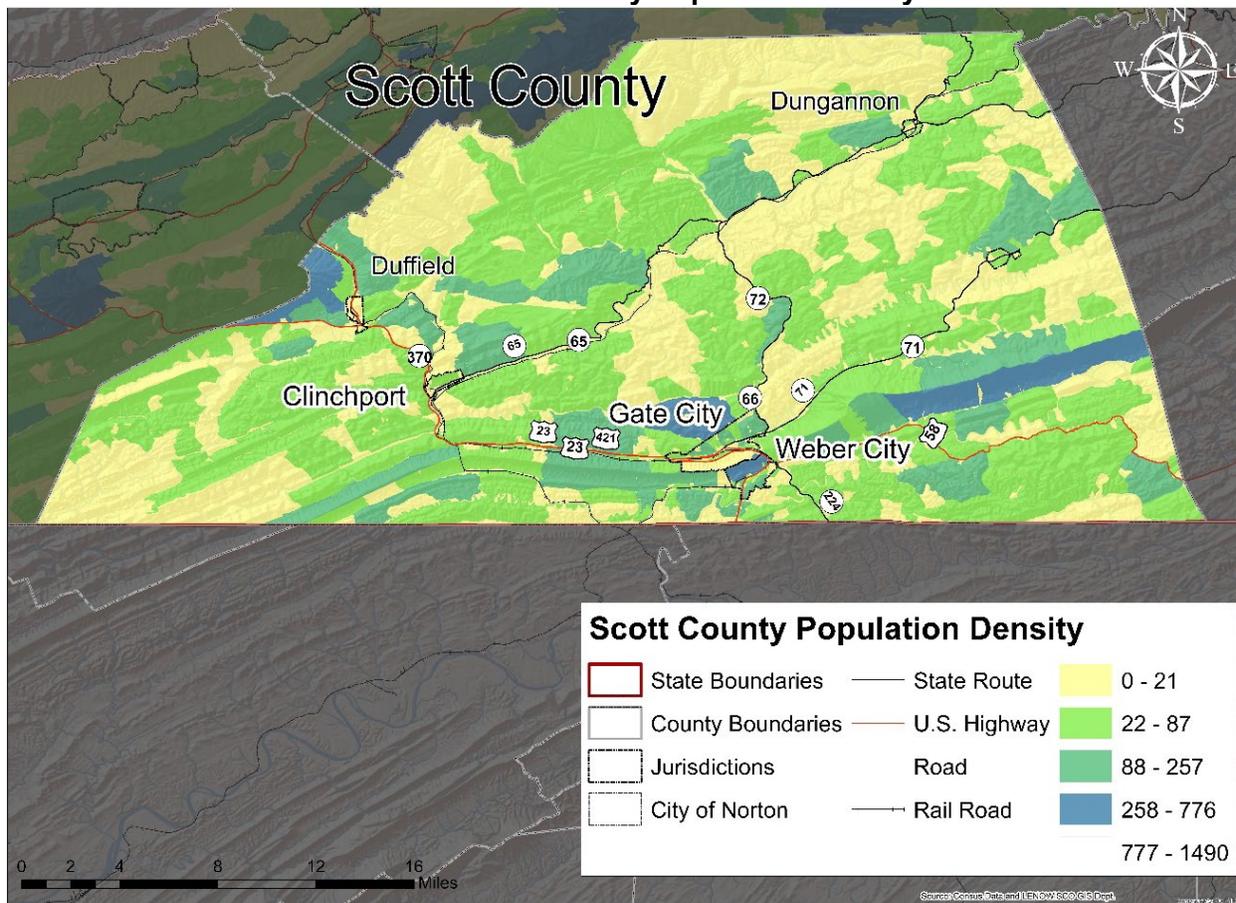
A full description of development and land use patterns in Scott County is included in section 1.5.7.



Population

According to [American Community Survey 5-Year Estimates](#), the population of Scott County was 22,009 in 2018. The historic population of the county has reached as high as 27,640 in 1950 ([Scott County Comprehensive Plan, p. 15](#)). The population is projected to remain relatively stable, with some decline, reaching a population of 19,740 by 2040 ([Demographics Research Group, UVA Weldon Cooper Center](#)). The following map illustrates population densities across the county.

FIGURE: Scott County Population Density



Climate

Scott County has a mild and warm-to-temperate climate, with short winters and warm summers, both seasons characterized by heavy rainfall. Heavy thunderstorms can occur during the summer, while the late winter brings heavy and sudden rainfalls that can result in flash flooding.

Economy

Scott County's economy was historically based in agriculture but transitioned to manufacturing and coal mining in the late 20th century. As of 2018, Scott County residents had a median household income of \$39,144, higher than other parts of the LENOWISCO Planning District, but significantly lower than the U.S. average overall ([2018 American Community Survey 5-Year](#)



[Estimates](#)). Scott County is home to several recreational areas, including local parks, Scott County Park, Natural Tunnel State Park, Jefferson National Forest, and boat access to the Holston and Clinch Rivers ([Scott County Comprehensive Plan, p. 39](#)).

Fiscal Capability

Scott County has limited fiscal capability to implement hazard mitigation strategies. For [Fiscal Year 2020](#), the County's budgeted expenditures were \$18.4 million. The majority of these funds are obligated to operations, with public safety costing \$6.5 million, public works costing \$1.9 million, community development costing \$1 million, and health and welfare costing \$5 million. The County had a \$3.1 million in net position change of governmental activities.

Community Facilities and Services

Public services in Scott County include solid waste management, a network of thirteen public schools, Scott County Sheriff's Office, Enhanced 9-1-1, Scott County Health Department, library services, and additional health and social services providers. Critical county facilities, according to the [Scott County Comprehensive Plan](#), include the following:

- Scott County Career Technical Center
- Three high schools, three middle schools, and seven elementary schools
- Scott County Courthouse (Gate City)
- Scott County Community Services building - home to the County Administrator, County Attorney, Commissioner of Revenue, Treasurer, Building Officials, Public Works, Tourism, Court Services Unit, Department of Social Services, and Scott County Health Department
- Lonesome Pine Regional Library System, Gate City Branch

Fire Departments

Scott County is served by ten emergency service operations. These include a public life-saving crew, a private ambulance and convalescent service, Duffield Fire and Rescue, Nickelsville Rescue, and six volunteer fire departments. A county-wide rescue squad association was formed in April 1989 to provide more efficient service.

Healthcare Facilities

The Scott County Health Department, originally located in the Daniel Boone area west of Gate City, is now situated in Gate City. It is one of three health departments in the LENOWISCO Health District, with a staff of 22. Although Scott County currently has no hospital facilities, with none planned, the area is adjacent to Sullivan County, Tennessee, with numerous hospitals including large regional health facilities.

Staff and Organizational Capability

Scott County has limited staff and organizational capability to implement hazard mitigation strategies. Scott County is governed by a seven-member Board of Supervisors. The members represent the six election districts into which the county is divided, while one Supervisor is elected at-large. There is also a County Administrator.



- The Emergency Management Department is responsible for the mitigation, preparedness, response, and recovery operations that deal with both natural and manmade disaster events.
- The Inspections Department enforces the National Flood Insurance Program requirements and other applicable local codes.
- The Public Works Department oversees the maintenance of the county's buildings and grounds. Stormwater facilities fall under the purview of either the individual towns or VDOT. Sanitary sewer and water treatment facilities and the transmission lines for both fall under the control of either the towns or the Public Service Authority.

The Board bears the responsibility of serving the people and improving the quality of life in the County. The business of the County is conducted under the County Board Form as authorized under VA Code Section 15.2-400 et. seq. Scott County is one of four counties using this form.

The county's professional staff departments, boards, authorities, and commissions are as follows:

- Animal Control
- Board of Elections
- Central Accounting
- Central Purchasing
- Clerk of the Court
- Commissioner of Revenue
- Commonwealth's Attorney
- County Administrator
- County Attorney
- Department of Social Services
- E-911 Department
- Economic Development Authority
- Emergency Management
- GIS Department
- Health Department
- Housing & Redevelopment Authority
- Inspections
- Parks/Golf Course Department
- Public Service Authority
- Public Works Department
- Recreation Department
- School Board
- Sheriff's Department
- Treasurer
- Zoning

Of the above departments, agencies, and offices, the Emergency Management Department and Inspections Department has specifically delegated responsibilities to carry out mitigation activities or hazard control tasks, and are adequately staffed, trained, and funded to accomplish their missions.



3.2 Critical Facilities

The map and table below include critical facilities as defined by the LENOWISCO Planning District, including roadways, school buildings, fire rescue stations, hospitals, and police stations.

FIGURE: Scott County Critical Facilities

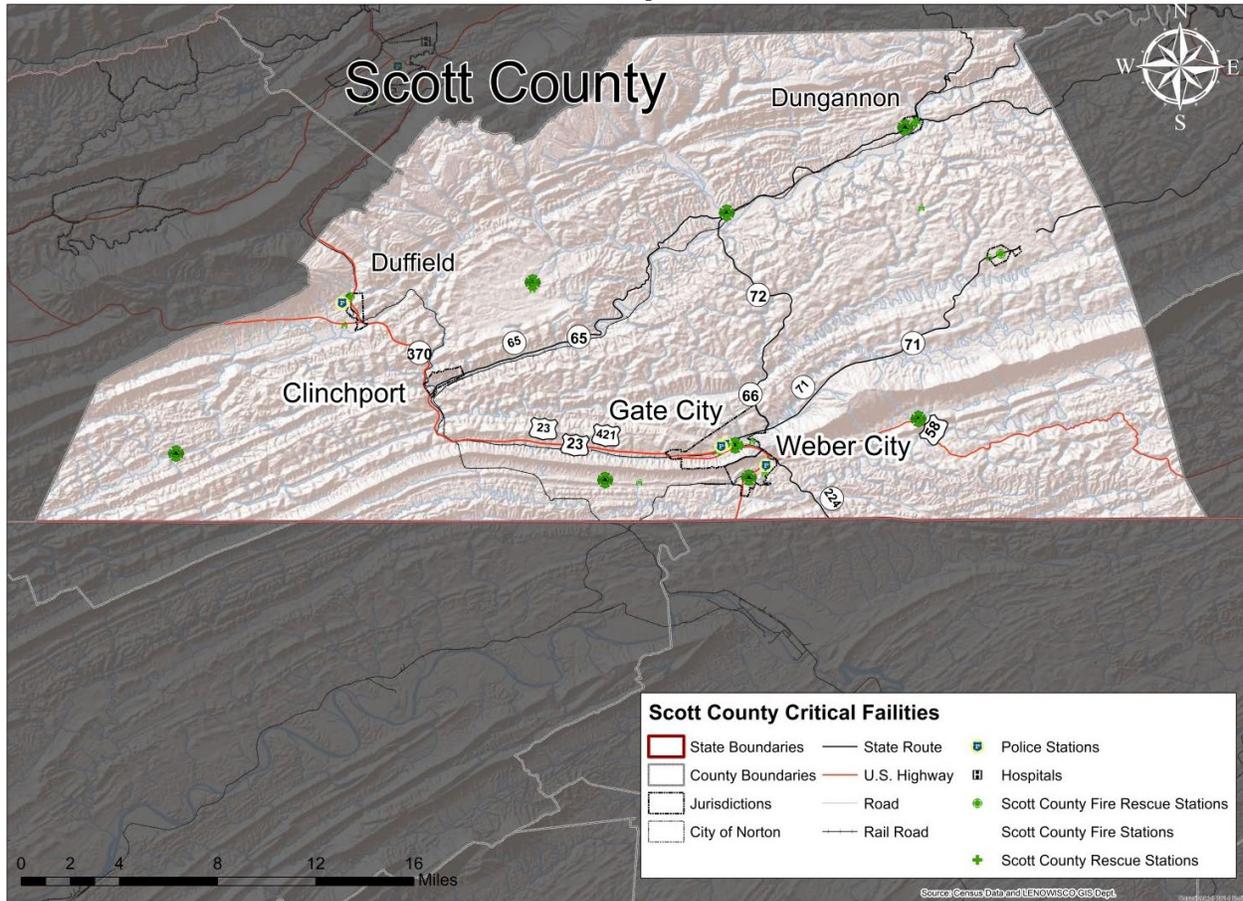




TABLE: Critical Facilities in Scott County		
Type	Name	Address
School	Scott County Career-Technical Center	387 Broadwater Ave, Gate City, VA 24251
School	Weber City Elementary	322 Jennings St, Weber City, VA 24290
School	Fort Blackmore Elementary	214 Big Stoney Creek Rd, Fort Blackmore, VA 24250
School	Dungannon Intermediate	113 Fifth Ave, Dungannon, VA 24245
School	Duffield-Pattonsville Primary School	663 Duffield-Pattonsville High, Duffield, VA 24244
School	Rye Cove Intermediate	158 Memorial School Ln, Duffield, VA 24244
School	Rye Cove High	164 Eagles Nest Ln, Duffield, VA 24244
School	Yuma Elementary	130 Grover Cleveland Ln, Gate City, VA 24251
School	Shoemaker Elementary	218 Shoemaker Dr, Gate City, VA 24251
School	Gate City Middle	170 Harry Fry Dr, Gate City, VA 24251
School	Gate City High	178 Harry Fry Dr, Gate City, VA 24251
School	Hilton Elementary	303 Academy Rd, Hiltons, VA 24258
School	Nickelsville Elementary	11415 Nickelsville Hwy, Nickelsville, VA 24271
School	Twin Springs High	273 Titan Ln, Nickelsville, VA 24271
Fire Rescue	Duffield Volunteer Fire Department & Rescue Station #1	1326 Industrial Park Rd. Duffield, VA 24244
Fire Rescue	Nickelsville Volunteer Fire Department & Rescue Squad	11826 Nickelsville Hwy
Fire Station	Weber City Volunteer Fire Department Station #1	149 Roland St. Weber City, VA 24290
Fire Station	Duffield Volunteer Fire Department Substation #3	110 Eagles Nest Rd Duffield, VA 24244
Fire Station	Ft. Blackmore Volunteer Fire Department	11181 Veterans Memorial Hwy Blackmore, VA 2
Fire Station	Weber City Volunteer Fire Department Substation #2	5032 Yuma Rd. Weber City, VA 24290
Fire Station	Duffield Volunteer Fire Department Substation #2	9473 Fairview Rd. Duffield, VA 24244
Fire Station	Hilton Volunteer Fire Department	St. RT. 709 Hilton, VA 24258
Fire Station	Gate City Volunteer Fire Department	140 Bishop St. Gate City, VA 24251
Fire Station	Dungannon Volunteer Fire Department	18759 Veterans Memorial Hwy
Rescue Squad	Gate City Rescue Squad	100 Park St. Gate City, VA 24251
Rescue Squad	Dungannon Rescue Squad	522 4th Ave. Dungannon, VA 24245
Police Department	Gate City Police Department	176 E. Jackson St. Gate City, VA
Police Department	Weber City Police Department	2758 US 23 N. Weber City, VA
Sheriff's Department	Scott Co. Sheriff's Department	267 Willow St. Gate City, VA
Jail	Southwest Virginia Regional Jail	1037 Boone Trail Rd. Duffield, VA



3.3 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within Scott County.

TABLE: Scott County Natural Hazard Events				
<i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow and ice accumulations up to inches.	-	02/16/2015	-
Heavy Snow	For the second time this month, the atmosphere was favorable in the production of heavy snow with up to 19 inches reported.	-	02/21/2015	-
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.	-	03/05/2015	\$1,000
Thunderstorm Wind	A front tracked through southwest Virginia on the 19th triggering thunderstorms in the evening hours. Trees were downed with the strongest storms.	-	04/19/2015	\$10,000
Thunderstorm Wind	Low-level moisture increased across the region in the southerly flow ahead of a short-wave trough building southeast through the Midwest states. In addition, an outflow boundary served as an additional focus for convection which became severe in a moderately unstable environment.		06/08/2015	
Hail	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	
Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.	-	07/13/2015	-
Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.	-	07/14/2015	-



Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.	-	01/20/2016	-
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.	-	01/22/2016	-
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.	-	02/14/2016	-
Thunderstorm Wind	Scattered severe thunderstorms developed late in the afternoon over Southwest Virginia and Northeast Tennessee ahead of a gust front producing some wind damage.	-	07/04/2016	-
Thunderstorm Wind	A few severe thunderstorms formed along a weak cool frontal boundary during the middle to late afternoon hours producing some wind damage in isolated sections of Southwest Virginia as well as Northeast and North Central Tennessee.	-	07/19/2016	-
Thunderstorm Wind	A few severe storms formed in the heat of the afternoon across Southwest Virginia and Northeast Tennessee. A few trees were downed due to convective gusts.	-	08/14/2016	-
Thunderstorm Wind	Thunderstorms became severe during the early to mid-afternoon hours across Northeast Tennessee and Southwest Virginia in association with a surface trough drifting north into the Central Appalachians. No hail was reported in the tropical environment however, several trees were downed during the event.	-	08/15/2016	-



Thunderstorm Wind	A well developed upper-level trough moved from the Eastern Plains to the Eastern Seaboard with an associated strong low-pressure system and cold front. A squall line formed ahead of the front and swept across the Southern Appalachian region from mid-morning through the mid-afternoon hours. Several reports of straight-line wind damage were received during the event. Most of the damage was on the Cumberland Plateau and across Southeast Tennessee with more isolated damage reported in Southwest Virginia and Southwest North Carolina.	-	03/01/2017	-
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.	-	04/23/2017	\$1,000
Thunderstorm Wind	A few thunderstorms became severe later in the evening ahead of a slow-moving cold front associated with a deep upper trough lumbering east toward the Appalachian Spine.	-	05/20/2017	-
Thunderstorm Wind	An amplified upper-level trough directed a deep surface low across the Southern Appalachian Region with sufficient moisture but insufficient instability. Some of the storms had a great deal of directional wind shear along with a decent amount of low-level speed shear. Some of these storms generated a fair amount of straight-line wind damage across the tri-state area.	-	05/24/2017	-
Hail	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.	-	05/27/2017	-
Flash Flood	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.	-	05/27/2017	\$1,000
Thunderstorm Wind	A line of thunderstorms formed along a pre-frontal trough late in the evening across Southwest Virginia. One of the storms generated some isolated wind damage.	-	07/23/2017	-



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.	-	02/10/2018	-
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.	-	12/09/2018	-
Flash Flood	A strong low-pressure system moved northeast from the Lower Mississippi Valley across the southern tip of the Appalachian Mountains. Locally heavy rain produced some flooding.	-	04/19/2019	-
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.	-	10/31/2019	-

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below.

TABLE: Scott County Community Resilience Profile*	
Source: American Community Survey 2018 Five Year Estimates	
Factors	Number in Community
Members of the community over 65 years old	4,999
Members of the community under 18 years old	4,062
Members of the community that identify as having disability status	5,286
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	3,923
Number of mobile homes in the community	2,991
Members of the community without health insurance	2,320
Occupied housing units with tenants without a vehicle	680
Housing units without heating fuel	24

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*



Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

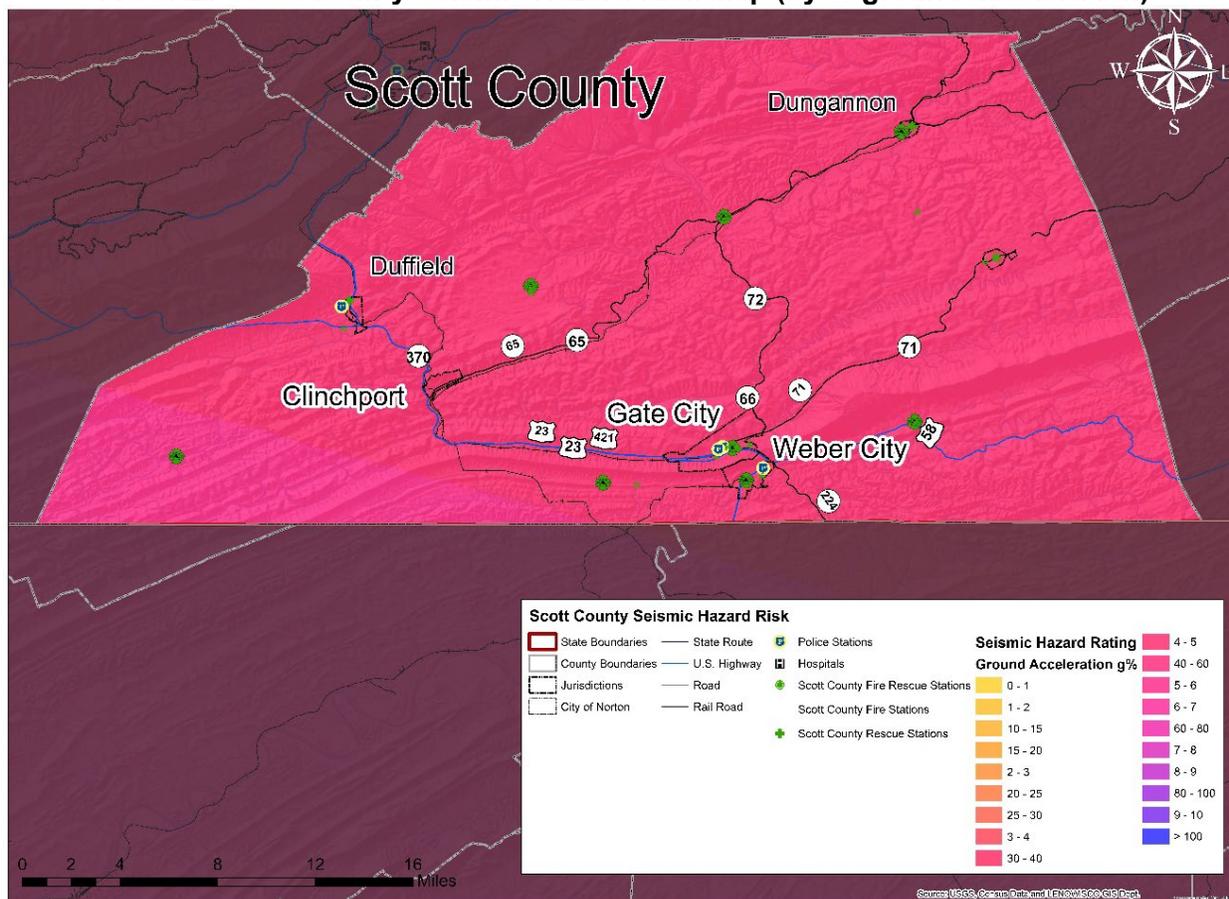
Communicable Disease: Scott County, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Scott County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities and nursing homes are some of the most vulnerable to a communicable disease, including Kingston Center Assisted Living and Ridgecrest Manor Nursing and Rehabilitation in Duffield, and Nova Health & Rehab Center in Weber City. People over the age of 65 makeup nearly 23% of the population of Scott County and have been found to be more at-risk to severe illness from COVID-19. Additionally, nearly 11% of the population is uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Water supply concerns pose the greatest risk for Scott County during a drought event. Many residents in the County rely on wells or springs for their water, and the County is currently working with the Scott County Public Service Authority to expand the public water supply. The Town of Duffield, in the Blackgum Road area, has experienced water quality and supply challenges.



Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. The southeastern portion of Scott County is located within the Giles County Seismic Zone, and the southwestern portion of the county is in the Eastern Tennessee Seismic Zone. As shown in the map below, southwestern Scott County has some of the highest potentials for ground motion in the District, and therefore potential impacts, from an earthquake event. The County uses the current Virginia Uniform Statewide Building Code. There is some concern about the vulnerability of structures built more than 50 years ago (pre-1970) that do not meet current seismic design standards.

FIGURE: Scott County Seismic Hazard Risk Map (by % ground acceleration)





Flooding: Flooding in Scott County is a problem along secondary and primary roadways. This is especially a problem along the Clinch and North Fork of the Holston Rivers, as well as along Big Moccasin, Copper Creek, Stock Creek, Copper Creek, and Little Stoney Creeks. Runoff on roadways is a significant issue in the County, frequently closing or limiting access to critical routes. Scott County is at moderate risk for flooding events, with over \$134 million in property located in the 100-year floodplain. Much of the at-risk property is residential (\$87 million). Scott County has a history of property buy-outs, including an acquisition effort along the Stoney Creek in 2000-2002. Since 2002 there have not been any major acquisitions.

Scott County participates in the National Flood Insurance Program (CID #510142) and the last FIRM map for the area was issued on 01/07/15 ([FEMA, 2019](#)). Scott County has three Repetitive Loss (RL) structures with four total RL losses. None of the RL losses were insured and payments totaled \$47,204.06.

TABLE: NFIP Statistics for Scott County				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
60	\$11,175,400	30	\$277,722.46	5

The maps below illustrate the 100-year and 500-year floodplains in Scott County.

FIGURE: Scott County 100-Year Floodplain

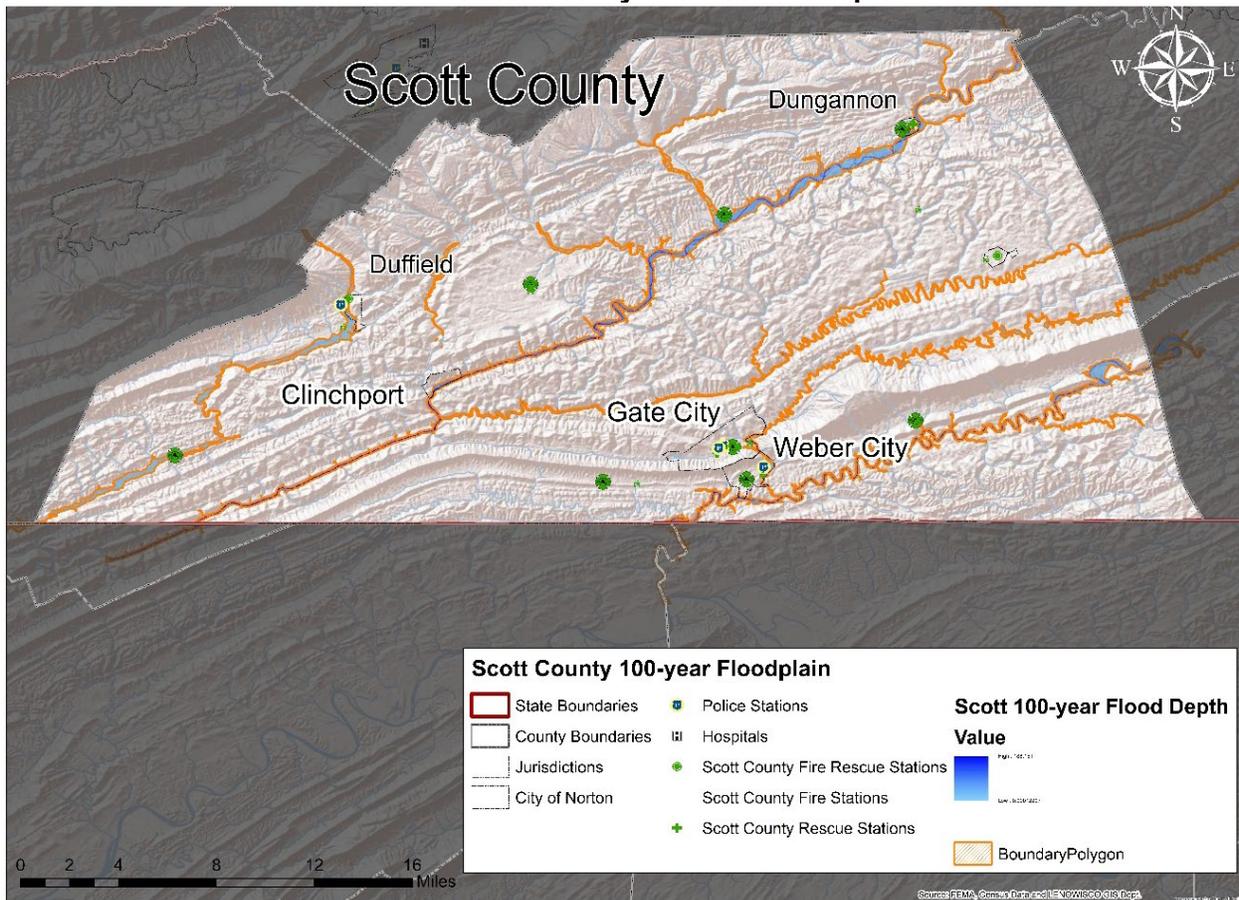
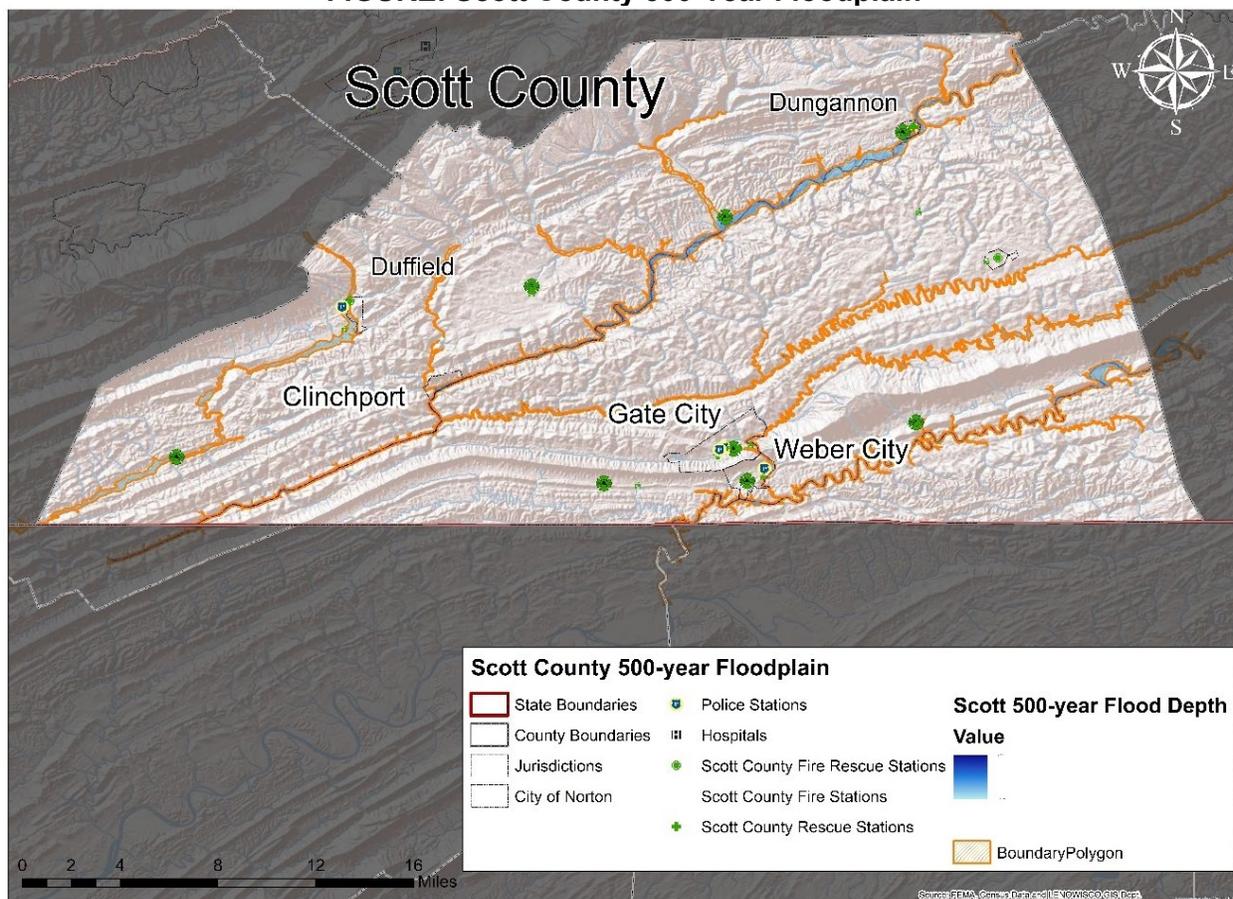




FIGURE: Scott County 500-Year Floodplain



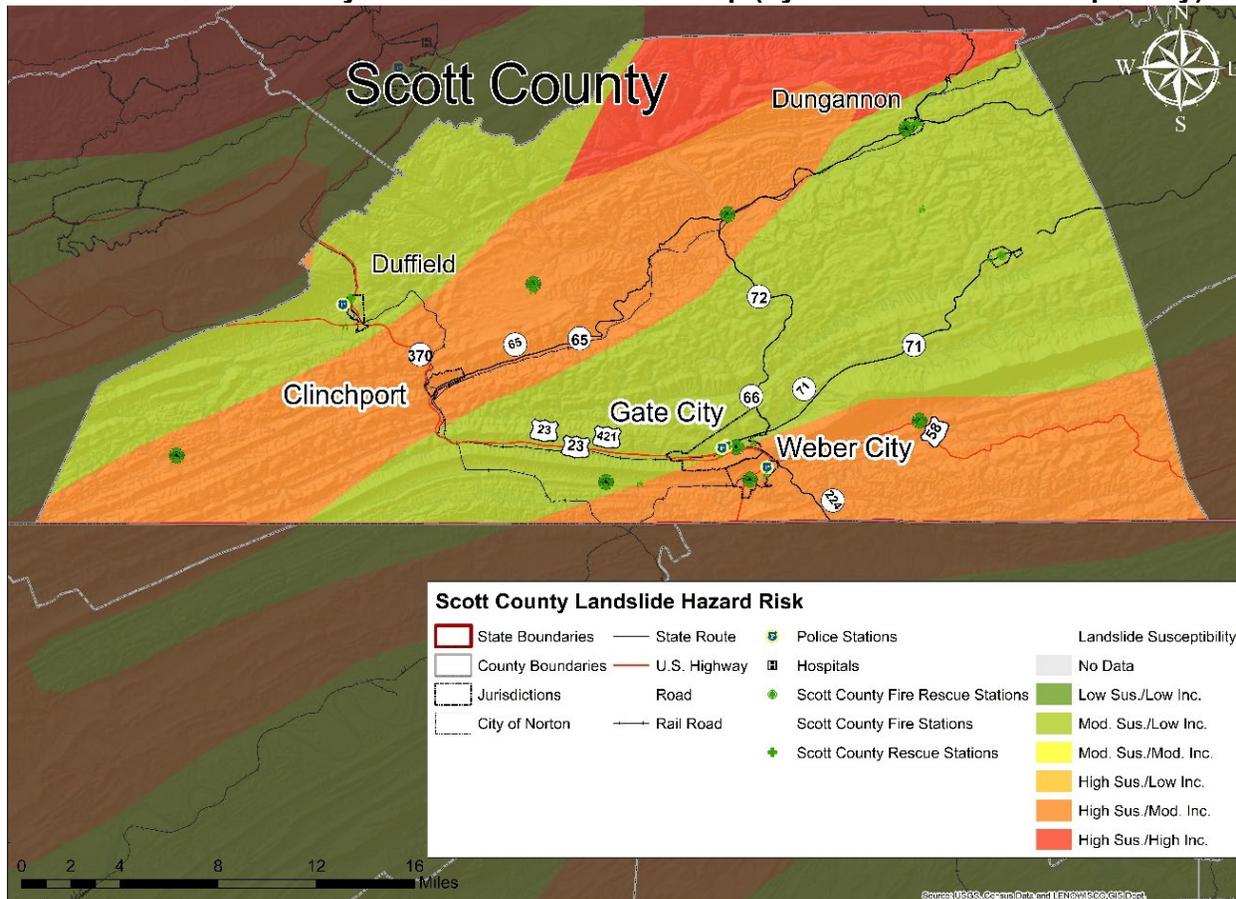
Dam Failure: There is one major dam in Scott County, the Bark Camp Dam at Corder Bottom Lake, which has a "high" hazard potential according to the [National Dams Inventory](#). The dam has an Emergency Action Plan and is state-regulated through the Virginia Department of Conservation and Recreation's Dam Safety Program. The dam is owned by the Virginia Department of Game and Inland Fisheries. The State completes regular safety studies of the dam.

Karst/Subsidence: There are numerous caves and sinkholes in Scott County, the extent of which have been studied by Virginia Tech and the Virginia Department of Environmental Quality. The County is home to many abandoned mines, which have been closed and monitored for runoff or associated water impacts. The County relies on state agencies and other research bodies to monitor for any water quality or subsidence issues related to mining activities.



Landslide: Landslides have occurred all over Scott County and are a major concern. Northern Scott County has both high incidence and high susceptibility to a landslide event, as shown in the map below. Virginia Department of Transportation has documented landslides along major roadways, primarily U.S. 58 and U.S. 23/421 in the southern part of the County.

FIGURE: Scott County Landslide Hazard Risk Map (by incidence and susceptibility)



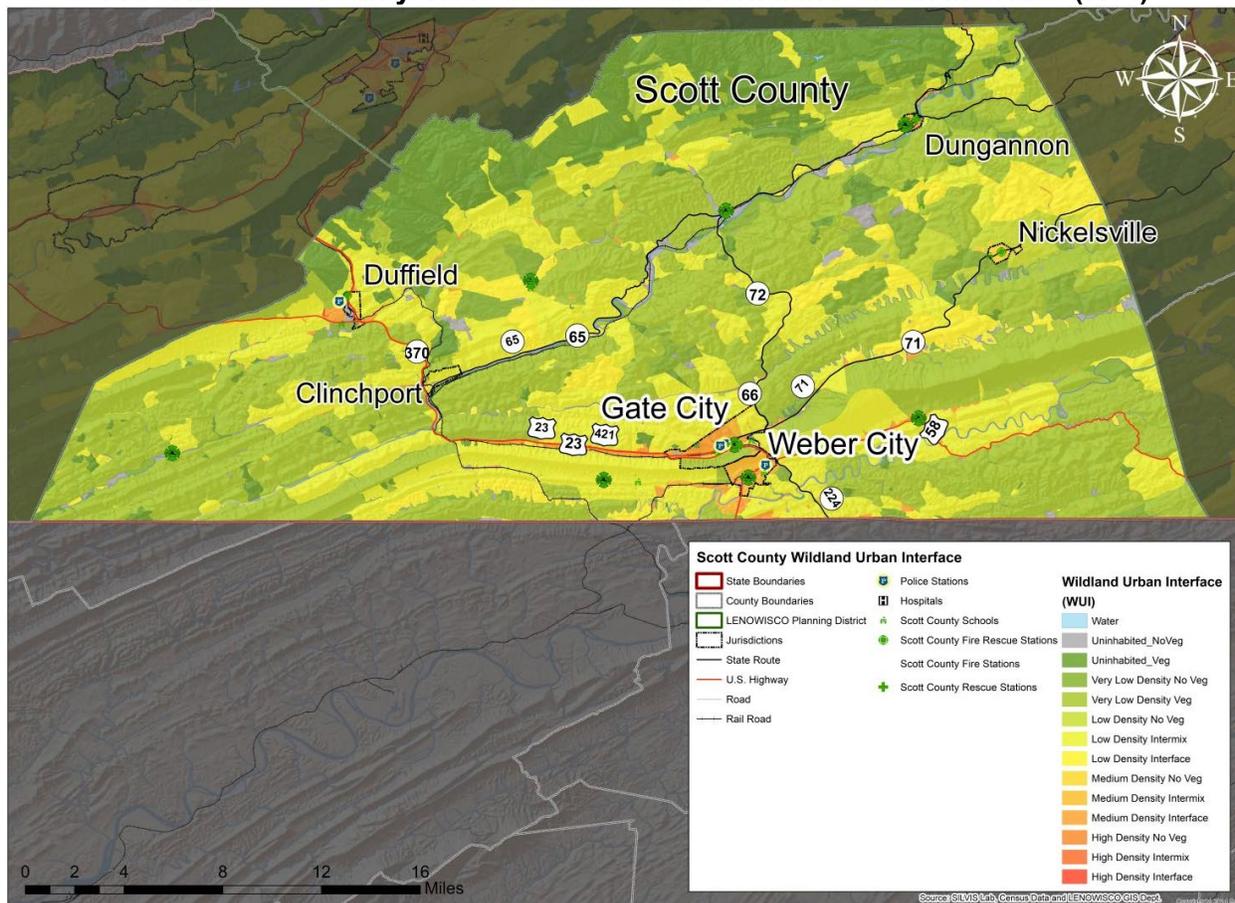
Non-Rotational Winds: Thunderstorm wind events occur annually in Scott County. Residents rely on the National Weather Service for notification of events. The County is at moderate risk of non-rotational wind events. Residents living in mobile homes are at greater risk of wind damage.

Tornado: Tornadoes have impacted Scott County in the past, including three in the historical records since 1950, and one major tornado event in 1929. Scott County is home to many people with disabilities and older adults, making up nearly 25% and 23% of the population, respectively. Additionally, with over 2,900 mobile homes in the County, many residents are at increased risk to the impacts of a tornado event. Mobile homes are required to have a tie-down, which is enforced through the inspection process. Scott County opens school buildings to serve as shelters for people living in vulnerable housing units in anticipation of severe wind and weather events.



Wildfire: Scott County supports efforts to support residents in reducing their fire risk, including cutbacks and clearing efforts. There is concern that heavy fuel growth in nearby forest lands has increased vulnerability to wildfire events. The County does not currently have a Community Wildfire Protection Plan and does not participate in the FireWise program. The map below illustrates the density of Wildland-Urban Interface across the county.

FIGURE: Scott County Critical Facilities and Wildland-Urban Interface (WUI)



Winter Storm: Heavy snow events occur annually in Scott County, but with less snowfall and less frequency than other parts of the LENOWISCO Planning District. There are several residential-access roadways, maintained by VDOT in the U.S. Forest Service land near High Knob, that are low-priority plowing routes after heavy snow events. Residents along these roadways are vulnerable to isolation and may not be able to access supplies or other essential items for several days after a storm. The Scott County Fire Department conducts some welfare checks, but there have been incidences of emergency rescues for vulnerable residents in these isolated areas.



3.4 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Scott County.

TABLE: Population Exposed Ranking for Scott County			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	Low	1	3
Karst/Subsidence	Medium	2	6
Landslide	Low	1	3
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Scott County		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Low	1
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Scott County			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Low	1	2
Landslide	Low	1	2
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Scott County		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Scott County			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	Medium	2	6
Karst/Subsidence	Unlikely	0	0
Landslide	Unlikely	0	0
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3



Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Medium	2
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	Medium	2

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Scott County.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Flooding	3	17	51	1	High
Non-Rotational Winds	3	15	45	2	Medium
Winter Storm	2	21	42	3 (tie)	Medium
Communicable Disease	2	21	42	3 (tie)	Medium
Drought	2	14	28	5	Medium
Earthquake	1	24	24	6	Low
Karst/Subsidence	2	10	20	7 (tie)	Low
Tornado	1	20	20	7 (tie)	Low
Landslide	2	8	16	9	Low
Dam Failure	1	15	15	10 (tie)	Low
Wildfire	1	15	15	10 (tie)	Low



3.5 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Scott County adopted a building code and established an Inspections Office to carry out its building inspection functions.
Zoning	-	Yes	-	Scott County adopted a county-wide zoning ordinance in January 2009, which was last amended in 2017. Included is a Subdivision Ordinance and Floodplain Ordinance.
Subdivisions	-	Yes	-	
Stormwater Management	-	Yes	-	This ordinance is administered under an agreement with the Scott County Soil and Conservation District. Scott County’s Floodplain Ordinance was adopted in June 1991 and is administered by the Inspections Department.
Post Disaster Recovery	-	Yes	-	
Growth Management	-	Yes	-	Scott County Economic Development Authority provides growth management and economic development planning for the County.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Scott County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	-	Yes	-	The Scott County Comprehensive Plan was last updated in 2017. The Plan was developed by LENOWISCO Planning District and adopted by the Scott County Planning Commission and County Board of Supervisors.
Environmental Protection	-	Yes	-	
Transportation Plan	-	-	Yes	Scott County relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				



Comprehensive Emergency Management Plan	-	Yes	-	Scott County developed and adopted an updated Comprehensive Emergency Management Plan in March 2010. Emergency management planning is the responsibility of the County's public safety department.
Community Wildfire Protection Plan	-	-	Yes	U.S. Forest Service plan covers parts of Scott County.
Post-Disaster Recovery Plan	-	Yes (As Needed)	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	Yes	-	

TABLE: Administration and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	The County does not have a full-time planner on staff to administer hazard mitigation programs.
Engineers or professionals trained in building or infrastructure construction practices	No	
Planners or engineers with an understanding of natural hazards	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	
Emergency manager	Yes	
Grant writers	No	

TABLE: National Flood Insurance Program (NFIP) Compliance

What department is responsible for floodplain management in your jurisdiction?	Building Inspector
Are any certified floodplain managers on staff or under contract with your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
If participating, is your jurisdiction seeking to improve its Community Rating System (CRS) Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications

	Participating?	Classification	Date Classified
NFIP	Yes	510142	11/01/79
Community Rating System	No	-	-
Building Code Effectiveness Grading Schedule	No	-	-
Public Protection/ISO	No	-	-
StormReady	No	-	-
Tree City USA	No	-	-



3.5.1 Ordinances

The following ordinances apply to natural hazard mitigation in Scott County.

TABLE: Ordinances in Scott County		
Ordinance	Adoption Date	Description/ Purpose
Flood Damage Prevention and Control Ordinance	June 1991	<p>The Ordinance is designed to minimize public and private losses due to flood conditions in specific areas. It requires a development permit to be submitted to the County prior to any construction or substantial improvement activities. Permits will only be approved if they meet the provisions of the ordinance, which include development standards that will minimize the potential for flood losses. Standards are established for construction materials, equipment, methods, practices, and uses. Most importantly, establishes the requirements for elevation and floodproofing (non-residential) to base flood elevation.</p> <p>The Ordinance requires the minimum standards of the National Flood Insurance Program (NFIP). The County's floodplain areas are currently being re-studied as part of the State's Floodplain Mapping Program. Potentially those floodplain areas will be delineated with updated topography, and base flood elevations will be recalculated.</p>
Subdivision Ordinance	1988	<p>The Ordinance is designed to regulate all divisions of land for purposes of sale or building development (immediate or future), including all divisions of land involving the dedication of new streets/roads or a change in existing streets/roads. All proposed subdivisions must go through an approval process involving the Planning Commission, County Attorney's Office, and Inspections Office (for flood zone clearance). Subdivision plats are required for review and must include the location of areas subject to flooding.</p> <p>While not designed specifically for hazard mitigation purposes, this Ordinance will prevent flood losses in tandem with the Flood Damage Prevention Ordinance. It will also minimize the adverse effects that development can have on stormwater drainage through impervious surface requirements and through sedimentation and erosion control. Through its roadway requirements, the ordinance also provides for adequate ingress and egress to subdivisions by emergency vehicles for fires or severe weather events.</p>
State of Emergency Ordinance	October 1974	<p>The purpose of this Ordinance is to authorize the proclamation of a State of Emergency and the imposition of prohibitions</p> <p>and restrictions during a State of Emergency. Establishes the authority and procedures for the Board of Supervisors to proclaim a State of Emergency, and to impose the following restrictions as described in the ordinance: curfew; evacuation; possession/transportation/transfer of intoxicating liquors, dangerous weapons and substances; access to areas; movements of people in public places; operation of businesses and other places; and other activities or conditions the control of which may be reasonably necessary to maintain order and protect lives or property during the State of Emergency.</p> <p>The Ordinance does not incorporate any long-term mitigation actions, such as temporary moratoria on the reconstruction of structures damaged or destroyed by a disaster event.</p>



THIS PAGE IS INTENTIONALLY LEFT BLANK



3.6 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Scott County New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Develop an inventory of at-risk public buildings and infrastructure and prioritize mitigation projects based on those providing the most benefit (at the least cost) to the County and residents.	Scott County Town of Gate City	Public Works	Emergency Management	2 - Mitigation 4 - Whole Community
2	New	In Progress	All-Hazard	Develop and implement outreach and educational programs aimed at mitigating and reducing the risk of natural hazards, particularly those residing in flood-prone areas, mobile homes subject to high winds and tornadoes, and residents at-risk to extreme weather and/or communicable disease.	Scott County	Emergency Management	Community-based and faith-based organizations	4 - Whole Community
3	New	Not Started	Dam Failure	Install an outdoor warning system for residents within the Bark Camp Dam inundation area.	Scott County	Emergency Management	DCR, USACE	1 - Protection



4	New	Not Started	Drought	Expand the public water supply through Scott County Public Service Authority to provide a reliable and safe water supply to residents using wells/springs.	Scott County	Scott County PSA	Public Works	1 - Protection
5	New	Not Started	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Purchase at least three generators for emergency shelters and ensure all shelters are wired for portable generators (including any locations in Gate City).	Scott County Town of Gate City	Emergency Management	Scott County Public Schools	1 - Protection
6	New	Not Started	Flooding	Conduct a water study to document the need for improved storm drain infrastructure.	Scott County	Public Works	Floodplain Coordinator	2 - Mitigation
7	New	Not Started	Landslide	Identify and scope mitigation projects for potential landslide areas on critical roadways.	Scott County	Virginia Department of Transportation	Public Works	2 - Mitigation
8	New	Not Started	Wildfire	Explore changes to building and zoning code to encourage fire protective development strategies.	Scott County	Building & Zoning	Fire Department	2 - Mitigation
9	New	Not Started	Winter Storm	Secure funding for contract plowing/road clearing services to supplement low-priority routes maintained by VDOT.	Scott County	Public Works	VDOT	1 - Protection



TABLE: Scott County New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	HMA, USACE	Medium	Medium	Medium	Short-Term	Develop an inventory of un-reinforced masonry buildings to target for mitigation; Develop an inventory of commercial and public buildings in need of flood, windstorm, and earthquake mitigation; Identify at-risk bridges for flood and earthquake hazards, identify enhancements, and implement projects needed to reduce the risks; and Review and improve utility operations and services to mitigate for natural hazards.	21
2	VDEM, Local funds	Medium	Medium	Medium	Ongoing	Identify priority populations for outreach and appropriate platforms and communication tools. Work with state agencies to seek funding and best practice public awareness campaigns. Implement best practice programs through awarded grant support, when available.	25
3	Virginia DCR, FEMA	Medium	High	Medium	Short-Term	Develop a project scope based on the inundation area that includes the number and type of signals/structures. Secure funding. Install warning system. Conduct an outreach and awareness campaign to notify residents of the new system.	22
4	Local funds	High	Medium	Medium	Ongoing	Prioritize additional water sources. Scope project costs, including pump installation and equipment. Secure funding for project.	22
5	FEMA, DHHS	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	28
6	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	24



7	VDOT, USDOT, FHWA, USFS, VA DOF	High	Medium	Low	Long-Term	Review historic data on landslide events affecting roadways in partnership with VDOT. Determine priority mitigation actions. Determine authority responsible for improvements. Secure funding for projects as needed.	14
8	Local funds	Low	Medium	Low	Long-Term	Review best practices in code and ordinances for fire protective development. Prioritize and recommend changes.	13
9	VDOT	Medium	Medium	Low	Ongoing	Scope project extent and costs. Identify potential contractors. Secure funding for contract support.	13

TABLE: Scott County Completed or Removed Mitigation Actions

Status	Mitigation Action/Strategy	Applicable Jurisdiction	Reasoning
Completed	Potential residential acquisition projects in flood-prone areas.	Scott County	Since the 2013 plan, several acquisition projects occurred in Scott County, which improved the community's resilience against flooding. Exact dates of acquisitions were not recorded and a past District mitigation action was updated to include better tracking of acquisition projects. Scott County recognizes that flooding remains a hazard likely to impact the area and developed a new mitigation action focused on improved stormwater drainage.



3.7 Scott County Jurisdictions

Gate City was the only jurisdiction in Scott County to participate in the 2021 plan update. Clinchport, Duffield, Dungannon, Nickelsville, and Weber City did not participate.

3.7.1 Town of Gate City

3.7.1.1 Community Profile

Gate City is the seat of Scott County, located in the southern portion of the county along the Little Moccasin Creek, just four miles from the Tennessee state border. The town is located in a valley between the Clinch Mountain and Moccasin Ridge. Gate City has a mild climate receiving an average of 43 inches of precipitation this year.

According to [American Community Survey 5-Year Estimates](#), the population of Gate City was 1,941 in 2018. This is a slight decrease from the 2010 Census estimate of 2,034. The town has an elevation of 1,400' elevation and comprises 1.93 square miles (Gate City Comprehensive Plan, p. 1). The railroad first arrived in Gate City in 1887 and has since been a formative factor in regional and local economic growth. Gate City was historically an agricultural trade center but transitioned to manufacturing in the late 20th century. Cattle farming remains a primary agricultural activity in the County and near Gate City. Due to its close proximity to Kingsport, Tennessee, many Gate City residents commute for additional job opportunities. As of 2018, the median household income in Gate City was \$34,228 ([2018 American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

Public services and facilities in Gate City include the local police department, water treatment plant, library services provided by Lonesome Pine Regional Library, solid waste collection, and sewer service provided by Gate City Sanitation Authority. Gate City is also home to a volunteer fire department and a lifesaving crew.

Source: Gate City Comprehensive Plan, p. 2



3.8.1.2 Gate City Natural Hazard Event History

The Natural Hazard Events table below lists all past occurrences of natural hazards affecting the Scott County "zone" according to the Storm Events Database. Records were confirmed with local stakeholders and several events were added based on town records. The Town of Gate City has documented recent flooding events through photos, but does not have preliminary damage assessment information.

TABLE: Town of Gate City Natural Hazard Events				
Source: NOAA National Centers for Environmental Information Storm Events Database				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow and ice accumulations up to inches.		02/16/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production of heavy snow with up to 19 inches reported.		02/21/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/05/2015	
Thunderstorm Wind	A front tracked through southwest Virginia on the 19th triggering thunderstorms in the evening hours. Trees were downed with the strongest storms.		04/19/2015	
Thunderstorm Wind	Low-level moisture increased across the region in the southerly flow ahead of a short-wave trough building southeast through the Midwest states. In addition, an outflow boundary served as an additional focus for convection which became severe in a moderately unstable environment.		06/08/2015	
Hail	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	
Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/14/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Thunderstorm Wind	Scattered severe thunderstorms developed late in the afternoon over Southwest Virginia and Northeast Tennessee ahead of a gust front producing some wind damage.		07/04/2016	
Thunderstorm Wind	A few severe thunderstorms formed along a weak cool frontal boundary during the middle to late afternoon hours producing some wind damage in isolated sections of Southwest Virginia as well as Northeast and North Central Tennessee.		07/19/2016	
Thunderstorm Wind	A few severe storms formed in the heat of the afternoon across Southwest Virginia and Northeast Tennessee. A few trees were downed due to convective gusts.		08/14/2016	
Thunderstorm Wind	Thunderstorms became severe during the early to mid-afternoon hours across Northeast Tennessee and Southwest Virginia in association with a surface trough drifting north into the Central Appalachians. No hail was reported in the tropical environment however, several trees were downed during the event.		08/15/2016	



Thunderstorm Wind	A well developed upper-level trough moved from the Eastern Plains to the Eastern Seaboard with an associated strong low-pressure system and cold front. A squall line formed ahead of the front and swept across the Southern Appalachian region from mid-morning through the mid-afternoon hours. Several reports of straight-line wind damage were received during the event. Most of the damage was on the Cumberland Plateau and across Southeast Tennessee with more isolated damage reported in Southwest Virginia and Southwest North Carolina.		03/01/2017	
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.		04/23/2017	
Thunderstorm Wind	A few thunderstorms became severe later in the evening ahead of a slow-moving cold front associated with a deep upper trough lumbering east toward the Appalachian Spine.		05/20/2017	
Thunderstorm Wind	An amplified upper-level trough directed a deep surface low across the Southern Appalachian Region with sufficient moisture but insufficient instability. Some of the storms had a great deal of directional wind shear along with a decent amount of low-level speed shear. Some of these storms generated a fair amount of straight-line wind damage across the tri-state area.		05/24/2017	
Hail	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	
Flash Flood	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	
Thunderstorm Wind	A line of thunderstorms formed along a pre-frontal trough late in the evening across Southwest Virginia. One of the storms generated some isolated wind damage.		07/23/2017	
Flood	Based on local records – no description available.		02/07/2018	



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10-12/ 2018	
Flood	Based on local records – no description available.		09/28/18	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Flood	Based on local records – no description available.		02/12/2019	
Flood	Based on local records – no description available.		02/20/2019	
Flash Flood	A strong low-pressure system moved northeast from the Lower Mississippi Valley across the southern tip of the Appalachian Mountains. Locally heavy rain produced some flooding.		04/19/2019	
Flood	Based on local records – no description available.		05/13/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	
Flood	Based on local records – no description available.		02/05/2020	
Flood	Based on local records – no description available.		02/06/2020	
Flood	Based on local records – no description available.		04/13/2020	



Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below.

TABLE: Town of Gate City Community Resilience Profile*	
<i>Source: American Community Survey 2018 Five Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	470
Members of the community under 18 years old	612
Members of the community that identify as having disability status	265
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	497
Number of mobile homes in the community	21
Members of the community without health insurance	70
Occupied housing units with tenants without a vehicle	56
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: The Town of Gate City, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Scott County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities are some of the most vulnerable to communicable diseases, including Gatewood Apartments in Gate City. People over the age of 65 make up nearly 20% of the population of Gate City and have been found to be more at-risk to severe illness from COVID-19. Additionally, nearly 13% of the population is uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak.

Drought: The Town of Gate City could experience agricultural impacts from drought conditions, as well as impacts to plants and wildlife and the surface water supply and quality.

Earthquake: Gate City conducted a housing needs assessment in 2019 that analyzed the vulnerability of residential structures, including age, condition, and code compliance. The study found a mix of housing conditions that could lead to more significant damage during an earthquake event, including 50 vacant properties, 56 abandoned properties, and 157 properties with major deficiencies.



Flooding: Gate City does experience flooding issues. Gate City is at a lower elevation than the surrounding areas, located at the convergence of the Big and Little Moccasin creeks. Both Grogan Park and the Old Nickelsville Highway experience regular and significant flooding. The 2019 housing needs assessment found seven properties located in the floodway along the Old Nickelsville Highway. The Army Corps of Engineers is currently conducting a watershed survey to better understand the cause for increased flooding at Grogan Park and propose potential mitigation strategies. Gate City has also seen flooding issues on Kane and Water Street, and a private developer recently made improvements to Kane Street to raise it out of the floodway. Gate City regularly experiences flooding at the intersection of Jones Street and East Jackson Street, the entrance to a residential subdivision, caused by an outdated culvert.

The Town of Gate City participates in the National Flood Insurance Program (CID #510145) and the last FIRM map for the area was issued on 01/07/2015 ([FEMA, 2019](#)). Gate City does not have any repetitive loss properties.

TABLE: NFIP Statistics for Gate City				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
5	\$732,600	2	\$63,352.03	1

Dam Failure: There are no dams in or around Gate City.

Karst/Subsidence: There are numerous caves and sinkholes in Scott County, the extent of which have been studied by Virginia Tech and the Virginia Department of Environmental Quality. Gate City does not experience any issues with sinkholes or land subsidence within town limits.

Landslide: While landslide events may impact the areas surrounding Gate City, there are no areas of concern within town limits.

Non-Rotational Winds: Thunderstorm wind events occur annually in Gate City and across Scott County. Residents rely on the National Weather Service for notification of events. Residents living in mobile homes are at greater risk of wind damage, and there have been some damages to residential properties, as recent as 2020. The Old Nickelsville Highway has a concentration of mobile homes, where residents may be vulnerable to windstorms or need alternative shelter during severe weather events. As stated above, Gate City has a significant number of homes that may be vulnerable to wind events without necessary structural improvements.

Tornado: Tornadoes have impacted Scott County in the past, including three in the historical records since 1950, and one major tornado event in 1929. Again, residents of the estimated 50 mobile homes in Gate City are more vulnerable to severe weather events. There is no outdoor or digital emergency warning system for residents.

Wildfire: Scott County supports efforts to support residents in reducing their fire risk, including cutbacks and clearing efforts. There is concern that heavy fuel growth in nearby forest lands has increased vulnerability to wildfire events. The County does not currently have a Community Wildfire Protection Plan and does not participate in the FireWise program. Gate City has experienced some issues with residential burning that can lead to out-of-control grass fires.



Winter Storm: Heavy snow events occur annually in Gate City, but with less snowfall and less frequency than other parts of the LENOWISCO Planning District. Gate City is at a low to moderate risk for winter storm events. Roads in Gate City are owned by the Virginia Department of Transportation, and Gate City contracts to provide plowing services.



3.8.1.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Gate City.

TABLE: Population Exposed Ranking for Gate City			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	No Impact	0	0
Karst/Subsidence	Low	1	3
Landslide	Low	1	3
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Gate City		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	No Impact	0
Karst/Subsidence	Low	1
Landslide	Low	1
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Low	1
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Gate City			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	High	3	6
Flooding	Medium	2	4
Dam Failure	No Impact	0	0
Karst/Subsidence	No Impact	0	0
Landslide	Low	1	2
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Gate City		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	High	3
Flooding	Medium	2
Dam Failure	No Impact	0
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Gate City			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	High	3	9
Flooding	Low	1	3
Dam Failure	Unlikely	0	0
Karst/Subsidence	Unlikely	0	0
Landslide	Unlikely	0	0
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)



TABLE: Probability Ranking for Gate City		
Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Medium	2
Earthquake	Low	1
Flooding	High	3
Dam Failure	Unlikely	0
Karst/Subsidence	Low	1
Landslide	Low	1
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	Medium	2

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

TABLE: Overall Risk Ranking Scores	
Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Gate City.

TABLE: Overall Hazard Risk Ranking for Gate City					
Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Flooding	3	17	51	1	High
Non-Rotational Winds	3	15	45	2	Medium
Winter Storm	2	21	42	3 (tie)	Medium
Communicable Disease	2	21	42	3 (tie)	Medium
Earthquake	1	30	30	5	Medium
Drought	2	14	28	6	Medium
Tornado	1	21	21	7	Low
Wildfire	1	15	15	8	Low
Landslide	1	7	7	9	Low
Karst/Subsidence	1	4	4	10	Low
Dam Failure	0	0	0	11	Low



3.8.1.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	Yes	-	-	The Town of Gate City enforces the Virginia Uniform Statewide Building Code, which is enforced by the Town Manager.
Zoning	Yes	-	-	The Gate City zoning ordinance was most recently amended in 2017 and is inclusive of a subdivision ordinance and stormwater management ordinance. These ordinances and the city code are administered and enforced by the Town Manager.
Subdivisions	Yes	-	-	
Stormwater Management	Yes	-	-	
Post Disaster Recovery	-	-	-	
Growth Management	Yes	Yes	-	Gate City Economic Redevelopment and Revitalization Committee and the Scott County Economic Development Authority provide growth management and economic development planning for the town.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	Gate City last updated its comprehensive plan in 2019.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Gate City relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Scott County developed and adopted an updated Comprehensive Emergency Management Plan in March 2010.
Community Wildfire Protection Plan	-	-	-	



Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	Yes	-	-	Gate City developed a pandemic-specific continuity of operations plan in 2020.

TABLE: Administration and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract
Planners or engineers with an understanding of natural hazards	As needed	Under Contract
Surveyors	As needed	Under Contract
Personnel skilled or trained in GIS applications	Yes	Digital mapping through IMGIS.com; recently inputted all critical infrastructure, zoning, property, etc. on maps
Emergency manager	Yes	One specific for pandemic and safety coordinator
Grant writers	Yes	Town Manager, private contractors, and LENOWISCO Planning District

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	Scott County
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Needs updating; Kane Street is no longer in the floodplain
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, would like any training
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	510145	03/15/1979
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection/ISO	Yes	Class 6	
StormReady	No		
Tree City USA	No		



3.8.1.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Gate City New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	New	All-Hazard	Develop an inventory of at-risk public buildings and infrastructure and prioritize mitigation projects based on those providing the most benefit (at the least cost) to the County and residents.	Scott County Town of Gate City	Public Works	Emergency Management	2 - Mitigation 4 - Whole Community
2	New	In Progress	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Advance property mitigation as identified in the 2019 Gate City Housing Needs Assessment, including homes identified in the floodway and vacant/abandoned properties.	Town of Gate City	Community Development; Building & Zoning	Floodplain Coordinator	2 - Mitigation
3	New	New	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Create a strategy to inspect and document vacant buildings that may pose a threat to public safety during a hazard event.	Town of Gate City	Building & Zoning	Public Works	2 - Mitigation 3 - Plans & Policies



4	New	New	Earthquake Flooding Non- Rotational Winds Tornado Winter Storm	Work with the County to purchase at least three generators for emergency shelters and ensure all shelters are wired for portable generators (including any locations in Gate City).	Scott County Town of Gate City	Emergency Management	Scott County Public Schools	1 - Protection
5	New	In Progress	Flooding	Advance mitigation action items identified in the watershed survey to determine the source of flooding at Grogan Park, conducted by the Army Corps of Engineers.	Town of Gate City	Public Works	Army Corps of Engineers	2 - Mitigation
6	New	Not Started	Flooding	Install a back-up generator at the Gate City water treatment plant and in the water distribution system.	Town of Gate City	Public Works	VDH	1 - Protection
7	New	New	Flooding	Initiate culvert improvements or replacement at the East Jackson Street and Jones Street intersection.	Town of Gate City	Public Works	Floodplain Coordinator	2 - Mitigation
8	New	New	Winter Storm	Secure additional heavy equipment for snow removal operations.	Town of Gate City	Public Works	Emergency Management	1 - Protection



TABLE: Gate City New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	HMA, USACE	Medium	Medium	Medium	Short-Term	Develop an inventory of un-reinforced masonry buildings to target for mitigation; Develop an inventory of commercial and public buildings in need of flood, windstorm, and earthquake mitigation; Identify at-risk bridges for flood and earthquake hazards, identify enhancements, and implement projects needed to reduce the risks; and Review and improve utility operations and services to mitigate for natural hazards.	24
2	FEMA, VDEM	High	High	High	Ongoing	Provide information to owners of identified properties on acquisition/buy-out program options. Secure funding for property acquisition/demolition/relocation efforts. Secure funding for improvements for individual properties.	29
3	Local funds	Low	Medium	High	Short-Term	Review vacant/abandoned properties identified in the 2019 housing needs assessment. Prioritize those that require inspection or immediate mitigation based on public safety needs. Secure funding to address mitigation needs.	29
4	FEMA	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	29
5	FEMA, VDEM, local funds	High	High	High	Ongoing	Complete the watershed survey in partnership with the Army Corps of Engineers. Prioritize needed mitigation actions identified through survey. Scope project costs and design. Secure funding to complete projects.	31



6	FEMA, local funds	High	Medium	High	Short- Term	Scope the costs for purchase and installment. Identify and secure funding.	30
7	VDOT, FEMA	High	High	High	Short- Term	Scope the project cost and design. Identify and secure funding.	29
8	FEMA	High	Low	Low	Long- Term	Scope equipment needs and cost. Identify and secure funding.	14

Gate City does not have any completed or removed mitigation actions.



3.7.2 Town of Clinchport

Clinchport is an incorporated town in Scott County, with an estimated population of 54 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#), making it the smallest municipality in Virginia. The town encompasses 0.7 square miles. U.S. Highway 58 extends at the edge of the town, serving as the main roadway and travel corridor to Duffield to the north and to Gate City to the southeast.

Clinchport participates in the National Flood Insurance Program (CID #510143) and the last FIRM map for the area was issued on 01/07/15 ([FEMA, 2019](#)). Clinchport does not have any repetitive loss properties.

TABLE: NFIP Statistics for Clinchport				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
0	\$0	1	\$0	0

The Town of Clinchport did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Clinchport representatives did not participate in the 2013 plan update.

3.7.3 Town of Duffield

Duffield is an incorporated town in Scott County, with an estimated population of 79 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 0.6 square miles. Duffield is located at the southern edge of Jefferson National Forest.

Duffield participates in the National Flood Insurance Program (CID #510240) and the last FIRM map for the area was issued on 01/07/15 ([FEMA, 2019](#)). Duffield does not have any repetitive loss properties.

TABLE: NFIP Statistics for Duffield				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
0	\$0	0	\$0	0

The Town of Duffield did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Duffield representatives participated in the 2013 plan update but did not ultimately adopt the plan.

3.7.4 Town of Dungannon

Dungannon is an incorporated town in Scott County, with an estimated population of 321 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 0.4 square miles. Dungannon is located at the southeastern edge of the Jefferson National Forest, near the Wise County border.



Dungannon participates in the National Flood Insurance Program (CID #510144) and the last FIRM map for the area was issued on 01/07/15 ([FEMA, 2019](#)). Dungannon does not have any repetitive loss properties.

TABLE: NFIP Statistics for Dungannon				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
0	\$0	0	\$0	0

The Town of Dungannon did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Dungannon representatives did not participate in the 2013 plan update.

3.7.5 Town of Nickelsville

Nickelsville is an incorporated town on the eastern edge of Scott County, with an estimated population of 342 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 0.5 square miles.

Nickelsville does not participate in the National Flood Insurance Program ([FEMA, 2019](#)).

The Town of Nickelsville did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Nickelsville representatives participated in the 2013 plan update but did not ultimately adopt the plan.

3.7.6 Town of Weber City

Weber City is an incorporated town in Scott County, with an estimated population of 1,534 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 1.1 square miles. Weber City is located just north of the Tennessee-Virginia border.

Weber City participates in the National Flood Insurance Program (CID #510146) and the last FIRM map for the area was issued on 01/07/15 ([FEMA, 2019](#)). Weber City does not have any repetitive loss properties.

TABLE: NFIP Statistics for Weber City				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
1	\$210,000	3	\$101,335.84	0

Weber City did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Weber City representatives did not participate in the 2013 plan update.



Wise County

Hazard Mitigation Annex

LENOWISCO Planning District
2021 Hazard Mitigation Plan Update



THIS PAGE IS INTENTIONALLY LEFT BLANK



Section 4 Wise County Hazard Mitigation Annex

4.1 Community Profile

Wise County is in southwest Virginia along the Kentucky state border, separated by Black Mountain and Pine Mountain which form a natural border between the two states. Norton is an independent city located in Wise County, and there are an additional six incorporated towns - Appalachia, Big Stone Gap, Coeburn, Pound, St. Paul, and Wise. Norton and five of the six towns participated in the 2021 Hazard Mitigation Plan Update.

The vast majority of Wise County is in the Cumberland Mountain section of the Appalachian Plateau province. Most of the plateau is characterized by very steep valleys and ridges. The towns within Wise County sit at elevations between 1,169' (Appalachia) and 2,450' (Wise). High Knob is the highest elevation point in the county, reaching over 4,100 feet ([Wise County Comprehensive Plan, p. 53-54](#)).

Land Use

According to the [Wise County Comprehensive Plan](#), the many topographic elements in the county control the pattern and distribution of land uses. The elements are important to understand for hazard mitigation and include:

- Excessive slopes of more than 20% are unsuitable for development - and over 92% of the County's land area fits this definition
- Incorporated areas in the county have limited land with soil suitable for development that is currently served by public sewer services, forcing new development into areas without this service and requiring septic tank drain fields
- Much of the developed areas of the county are subject to flooding, and no future development is allowed within identified floodways
- Over 50% of the county's surface is not available for development due to underlying mineral ownership by coal and resource development companies
- Any previously mined or disturbed land can be at risk of subsidence

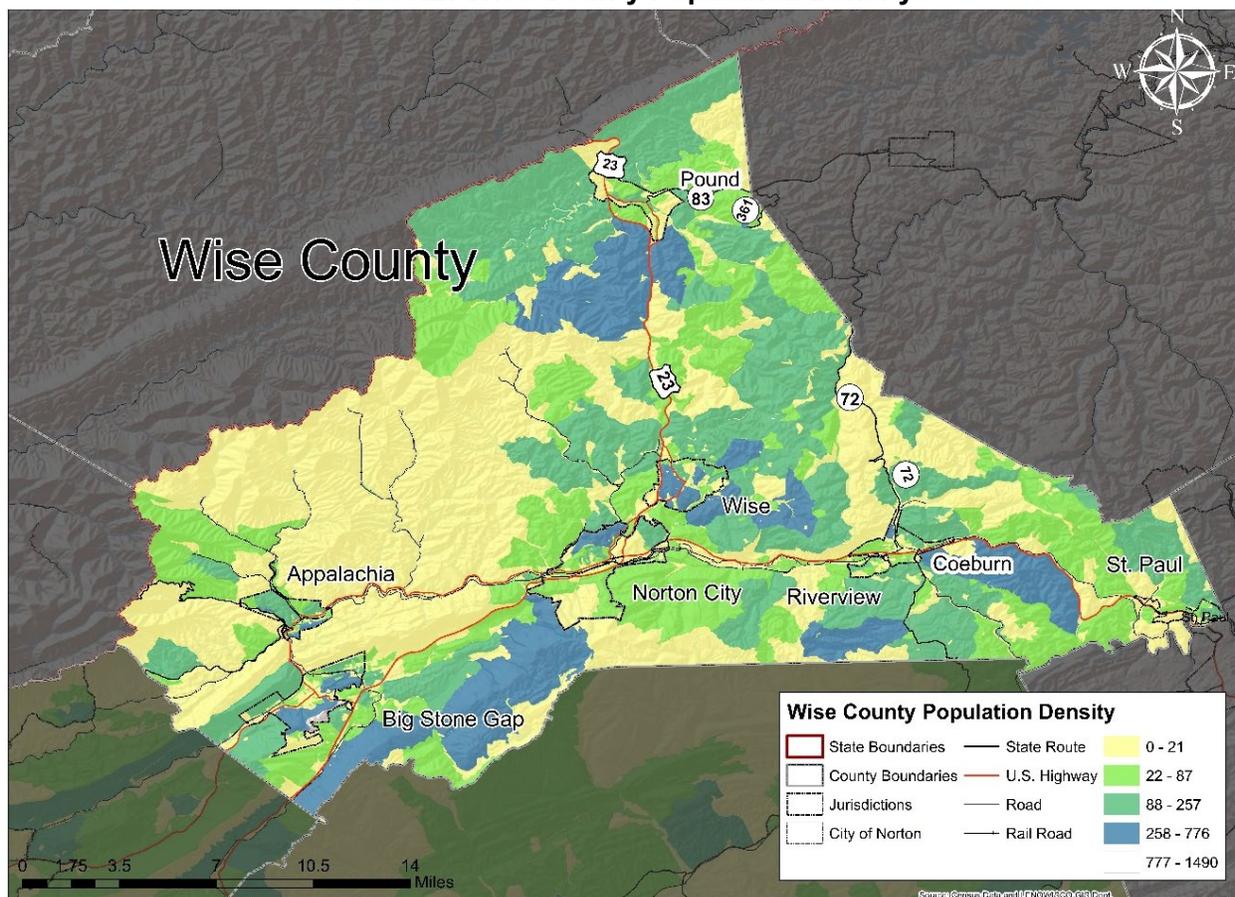
Given these land use trends and development restrictions, Wise County has very little developable land available. A full description of development and land use patterns in Wise County is included in section 1.5.7.



Population

Wise County was sparsely populated until the turn of the 20th century. In 1860, the county's population was just 4,308. With the completion of two railroads into the county in 1890, the population soared over 250% in 20 years, reaching 34,162 in 1910. The county population continued to grow significantly with the growth of the coal mining industry as a major employer. According to American Community Survey 5-Year Estimates, the population of Wise County was 39,025. The population is projected to decline over the next twenty years, reaching a population of 34,545 by 2040 ([Demographics Research Group, UVA Weldon Cooper Center](#)). The following map illustrates population densities across the county.

FIGURE: Wise County Population Density



Climate

Wise County has mild winters and warm summers, with temperatures ranging between mountains and valleys. The county receives an annual average of 45-50 inches of precipitation, making it one of the wettest regions in the country. Snow depths typically reach 30 inches annually, but severe winter storms can produce snowfall from 41-68 inches. Flooding occurs annually in streams across the county, with roughly 50% of rain falling during the growing season each year and 75% of flooding between December and March ([Wise County Comprehensive Plan, p. 55](#)).



Economy

Many Wise County residents engaged in both subsistence farming and coal mining through the 20th century, with two-thirds of farmers in 1940 reporting they also worked in the mines ([Wise County Comprehensive Plan, p. 50](#)). Like much of the region, the local industry has shifted from mining and manufacturing to retail trade, local government, and educational, social, and health services. Wise County School Board is the largest employer in the region. As of 2018, Wise County residents had a median household income of \$38,345, lower than the U.S. national average ([2018 American Community Survey 5-Year Estimates](#)). Wise County is investing in tourism and recreation as a potential economic driver, with a new series of trails opening in St. Paul in 2013, eight adventure tourism outfitters opening between 2015 and 2019, and recent investments in the High Knob Recreational Area. Additionally, the County's Industrial Development authority works to recruit new technology and industrial businesses.

Community Facilities and Services

Public services in Wise County include watershed protection, Wise County Public Service Authority, Wise County Public Health Department, Wise County Sheriff's Office, Enhanced 9-1-1, Mountain Empire Transit, public sewer systems, solid waste management and disposal, a network of eleven public schools, vocational and technical schools, two colleges, and additional health, social services, and educational providers.

Fire Departments

Each town and the City of Norton has a police department, public or volunteer fire department, and volunteer rescue squad. The exceptions are St. Paul, which is served by Castlewood Rescue Squad, and Coeburn, which is served by LifeCare. Wise County is considering cooperative efforts to make these fire and rescue services more efficient and available to all residents.

Healthcare Facilities

The Wise County and City of Norton Health Department is in Wise. It is one of three health departments in the LENOWISCO Health District. Hospital facilities serving Wise County include Norton Community Hospital, Lonesome Pine Hospital, and Southwest Virginia Regional Cancer Center. The county is also home to the Health Wagon, a community-based mobile health services provider visiting medically underserved individuals across southwestern Virginia.

Fiscal Capability

Due to significant changes in coal revenues over the last decade, Wise County has limited fiscal capability to implement hazard mitigation strategies. According to the [Wise County Comprehensive Plan](#), coal taxes provided a revenue of \$13 million in 2011 and dropped to just \$2 million in revenues in 2017. For 2021, Wise County estimates these taxes will be \$1.2 million of revenues. For Fiscal Year 2019, Wise County's actual expenditures were approximately \$52.8 million. The top three departments for spending included Education at \$12.5 million, health and welfare at \$11.6 million, and public safety at \$10.6 million. Public Works spent just \$1.3 million, while Community Development spent \$3.1 million ([Wise County Comprehensive Annual Financial Report](#)).



Staff and Organizational Capability

Wise County has some staff and organizational capability to implement hazard mitigation strategies. Wise County is governed by an eight-member Board of Supervisors. The members represent the four voting districts, with two Supervisors elected from each district. The county's professional staff departments include:

- Animal Control
- Building and Zoning
- County Administrator
- Data Processing
- Economic Development and Emergency Operations Center
- General Registrar
- Geographic Information Systems, E-9-1-1
- Litter Control
- Maintenance and Housekeeping Services
- Lonesome Pine Regional Library
- Public Works
- Virginia Cooperative Extension Service

Additional elected positions and constitutional officers include:

- Clerk of the Circuit Court
- Commissioner of the Revenue
- Commonwealth's Attorney
- Sheriff
- Treasurer

Of the above departments and offices, the Emergency Management Department, Building and Zoning, and Maintenance Department have responsibilities to carry out mitigation activities or hazard control tasks.

- The Emergency Management Department is responsible for the mitigation, preparedness, response, and recovery operations that deal with both natural and manmade disaster events. The Department manages the Emergency Operations Center and designated emergency shelters.
- The Building and Zoning Department enforces the National Flood Insurance Program requirements and other applicable local codes. This office also administers stormwater management and ordinances.
- The Maintenance Department oversees the maintenance of the county's buildings and grounds. Sanitary sewer and water treatment facilities and the transmission lines for both fall under the control of either the towns or the Public Service Authority.



4.2 Critical Facilities

The map and table below include critical facilities as defined by the LENOWISCO Planning District, including roadways, school buildings, fire rescue stations, hospitals, and police stations.

FIGURE: Wise County Critical Facilities

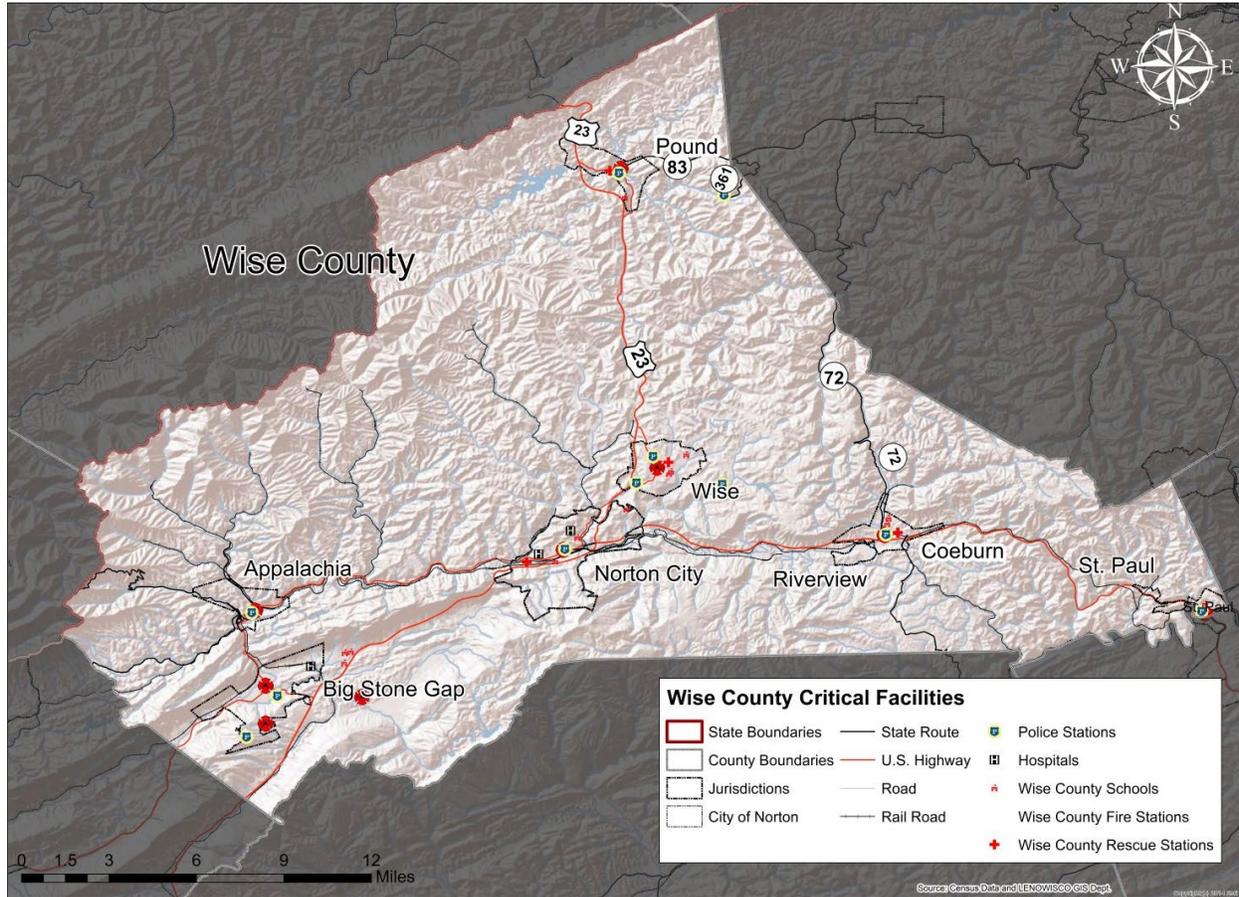




TABLE: Critical Facilities in Wise County		
Type	Name	Address
School	Union High School	2 Champions Ave, Big Stone Gap, VA 24219
School	Coeburn Primary School	332 Schoolhouse Hill Dr. NE, Coeburn, VA 24230
School	St. Paul Elementary School	3200 Deacon Dr, Saint Paul, VA 24283
School	Wise Co. Career-Technical Center	621 Lake St NE, Wise, VA 24293
School	L.F. Addington Middle School	324 School St, Wise, VA 24293
School	Wise Primary School	323 Railroad Ave SE, Wise, VA 24293
School	James Woodrow Adams Combined	10824 Orby Cantrell Hwy, Pound, VA 24279
School	Union Primary School	2945 2nd Ave E, Big Stone Gap, VA 24219
School	Union Middle School	30 Champions Ave, Big Stone Gap, VA 24219
School	Coeburn Middle School	518 Centre Ave NE, Coeburn, VA 24230
School	J.I. Burton High School	109 11Th St, Norton, VA 24273
School	Norton Elementary School	205 Park Avenue Northeast, Norton, Virginia, 24273
School	Central High School	5000 Warrior Dr, Norton, VA 24273
Fire Station	Pound Volunteer Fire District	8422 N River Rd. Pound, VA 24279
Fire Station	Big Stone Gap Volunteer Fire District	363 Shawnee Ave. E. Big Stone Gap, VA 24219
Fire Station	Wise Volunteer Fire District	307 Norton Rd. Wise, VA 24293
Fire Station	Norton Fire District	618 Virginia Avenue NW, Norton, VA 24273
Fire Station	St. Paul Volunteer Fire District	16636 Russell St., St. Paul, VA 24283
Fire Station	Powell Valley Volunteer Fire District	1946 Tate Springs. Rd. Big Stone Gap, VA 24219
Fire Station	Coeburn Volunteer Fire District	114 Front St. E. Coeburn, VA 24230
Fire Station	Big Stone Gap Volunteer Fire District Station 2	1364 Dogwood Dr. Big Stone Gap, VA 24219
Rescue Squad	Big Stone Gap Rescue Squad	361 Shawnee Ave. E. Big Stone Gap, VA 24219
Rescue Squad	CTRAN – Ambulance Service	119 W. Main St. Wise, VA 24293
Rescue Squad	CTRAN – Big Stone Gap Ambulance Service	6 E. 19th St. N. Big Stone Gap, VA 24219
Rescue Squad	Lifecare Ambulance Service	1728 Norton Rd. SW, Wise, VA 24293
Rescue Squad	Lifecare Coeburn Ambulance Service	118 Grand Ave. NE, Coeburn, VA 24230
Rescue Squad	Norton Rescue Squad	1710 Main Ave. SW Norton, VA 24273
Rescue Squad	Pound Rescue Squad	8316 Main St. Pound, VA 24279
Rescue Squad	Wise Rescue Squad	302 Railroad Ave. Wise, VA 24293
Police Department	Appalachia Police Department	508 Main St. Appalachia, VA 24216
Police Department	St. Paul Police Department	16531 Russell St., St. Paul, VA 24283
Police Department	Wise Police Department	501 W. Main St. Wise, VA 24293
Police Department	Norton City Police Department	618 Virginia Ave. NW Norton, VA 24273
Police Department	Coeburn Police Department	114 Front St. E. Coeburn, VA 24230
Police Department	Big Stone Gap Police Department	505 E. 5th St. Big Stone Gap, VA 24219
Police Department	Pound Police Department	8422 N. River Rd Pound, VA 24279
Police Department	VA State Police Headquarters	1207 Norton, Rd. Wise, VA 24293
Sheriff's Department	Wise Co. Sheriff's Department	5605 Patriot Dr. Wise, VA 24293
Prison	Wallens Ridge State Prison	1052 Dogwood Dr. Big Stone Gap, VA 24219
Prison	Red Onion State Prison	1080 Jack Rose Hwy Pound, VA 24279
Healthcare	Lonesome Pine Hospital	1990 Holton Ave. Big Stone Gap, VA 24219
Healthcare	Norton Community Hospital	100 15th St. NW Norton, VA 24273
Healthcare	Mountain View Regional Hospital	310 3rd St. NE Norton, VA 24273
Healthcare	Fresenius Kidney Care Dialysis Center	340 Anderson Hollow Road, Suite 100, Norton, VA 24723
Healthcare	Southwest Virginia Regional Cancer Treatment Center	671 US-58 Alt., Norton, VA 24273



4.3 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Wise County Natural Hazard Events				
Source: NOAA National Centers for Environmental Information Storm Events Database				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.	--	02/16/2015	--
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.	--	02/17/2015	--
Heavy Snow	For the second time this month, the atmosphere was favorable in the production heavy snow with up to 19 inches reported.	--	02/21/2015	--
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanked with snow.	--	02/26/2015	--
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.	--	03/04/2015	\$20,000
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. Lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer lead to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.	--	03/04/2015	--
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.	--	06/21/2015	--



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.	--	07/13/2015	--
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.	--	11/18/2015	--
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.	--	01/20/2016	--
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.	--	01/22/2016	--
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two-day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.	--	02/08/2016	--
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.	--	02/14/2016	--
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.	--	03/14/2016	--



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.	--	05/12/2016	--
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.	--	06/22/2016	--
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.	--	06/23/2016	--
Flash Flood	Summer convection produced flash flooding in Wise County.	--	07/27/2016	\$6,000
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.	--	01/06/2017	--
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.	--	04/22/2017	--
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.	--	05/19/2017	--
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.	--	05/27/2017	--



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.	--	02/10/2018	\$7,000
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.	--	03/12/2018	--
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.	--	03/17/2018	--
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid South.	--	04/23/2018	--
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.	--	05/26/2018	--
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.	--	06/26/2018	--
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.	--	06/26/2018	--
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.	--	12/09/2018	--
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.	--	05/29/2019	--



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.	--	08/20/2019	--
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.	--	10/31/2019	--

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Wise County Community Resilience Profile*	
<i>Source: American Community Survey 2018 Five Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	6,583
Members of the community under 18 years old	7,755
Members of the community that identify as having disability status	9,886
Members of the community that speak English less than "very well"	11
Members of the community living below the poverty line	7,890
Number of mobile homes in the community	4,976
Members of the community without health insurance	4,082
Occupied housing units with tenants without a vehicle	1,521
Housing units without heating fuel	64

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Wise County, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities and nursing homes are some of the most vulnerable to a communicable disease, including Heritage Hall of Wise, Heritage Hall of Big Stone Gap, The Laurels, and some smaller assisted living facilities. One of these facilities experienced a significant COVID-19 outbreak, with a 90% positivity rate. Additionally, three prisons in Wise County (Camp 19, Wallens Ridge State Prison, and Red Onion State Prison), housing authority complexes, and UVA College at Wise have all



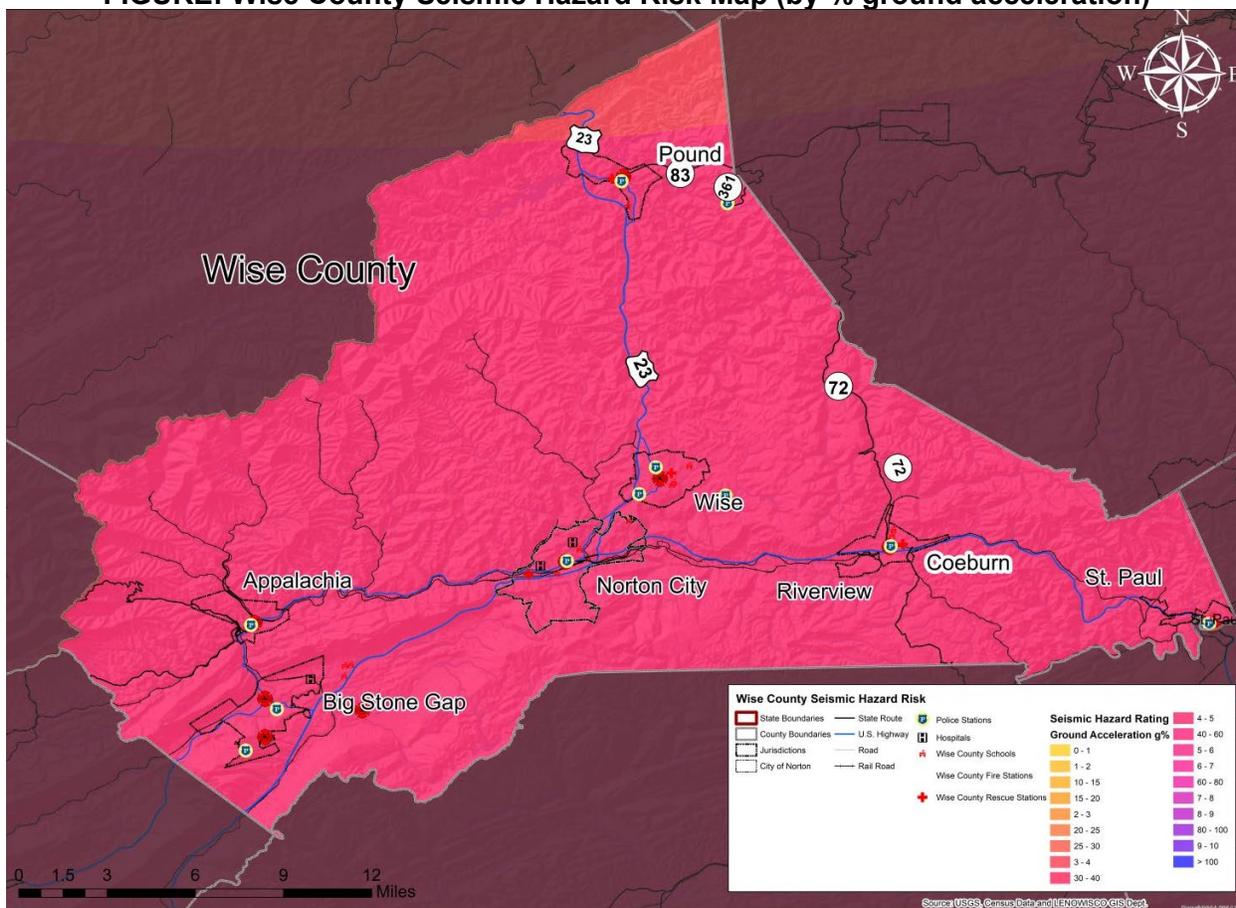
seen outbreaks of COVID-19 in 2020. People over the age of 65 make up more than 20% of the population of Wise County and have been found to be more at-risk to severe illness from COVID-19. Additionally, nearly 12% of the population is uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak. Other emerging infectious diseases of concern include hepatitis or another novel influenza that could significantly impact large portions of the county in a widespread outbreak.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Wise County relies on a network of reservoirs that serve as the municipal water source for several jurisdictions, including Wise Reservoir (Wise Municipal Water Source), Big Cherry Lake (Big Stone Gap Municipal Water Source), Pound Reservoir (Pound Municipal Water Source), Appalachia Reservoir (Appalachia Municipal Water Source), Town of Coeburn Water Source, Town of St. Paul Water Source, and Norton Reservoir (Norton Municipal Water Source). A prolonged drought event could impact water supply and quality for each of these municipalities.



Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. Wise County is at low risk to earthquake events, but due to its population density, the City of Norton in Wise County has a low to moderate risk. There are some parts of the County with a concentration of older buildings that do not meet more modern seismic building codes, including the Town of Big Stone Gap. The map below illustrates seismic risk for the county based on ground acceleration.

FIGURE: Wise County Seismic Hazard Risk Map (by % ground acceleration)





Flooding: Flooding occurs frequently in the Coeburn and Big Stone Gap communities, specifically Tacoma, Wallens Ridge Blvd, and Toms Creek. In the Town of Wise, flooding occurs at Yellow Creek and Dotson Creek. Flooding over the past several years has caused debris and silt buildup in numerous creeks and rivers in Wise County, with February as the worst month for flooding and debris issues. Emergency management and building officials have received several requests for creek/stream cleanouts near Big Stone Gap, Coeburn, and Pound. A sewer line in East Stone Gap was damaged during 2020 flooding and had to be repaired. There are areas throughout Wise County where water and/or sewer lines cross the creeks/river, posing a significant vulnerability to critical infrastructure. Additionally, the County Justice Center experiences regular flooding issues and is considering relocation.

Wise County participates in the National Flood Insurance Program (CID #510174) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). Wise County has 22 repetitive loss (RL) properties with a total 44 RL losses. These losses resulted in a total payment of \$425,688.79. Seven of the RL losses were insured, resulting in \$100,014.40 in payments. Wise County has three target RL buildings with 2-3 losses greater than the building value.

TABLE: NFIP Statistics for Wise County				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
98	\$11,681,300	154	\$949,811.99	12

The maps below illustrate the 100-year and 500-year floodplains in Wise County.

FIGURE: Wise County 100-Year Floodplain

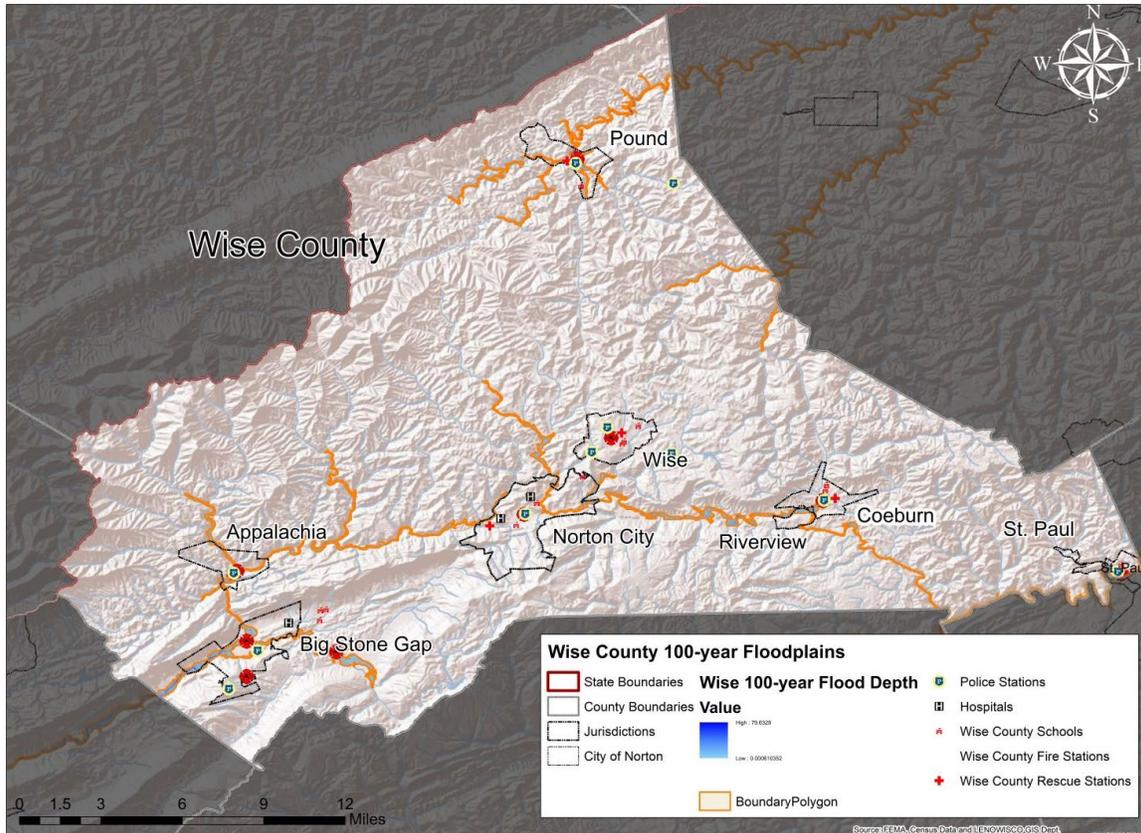
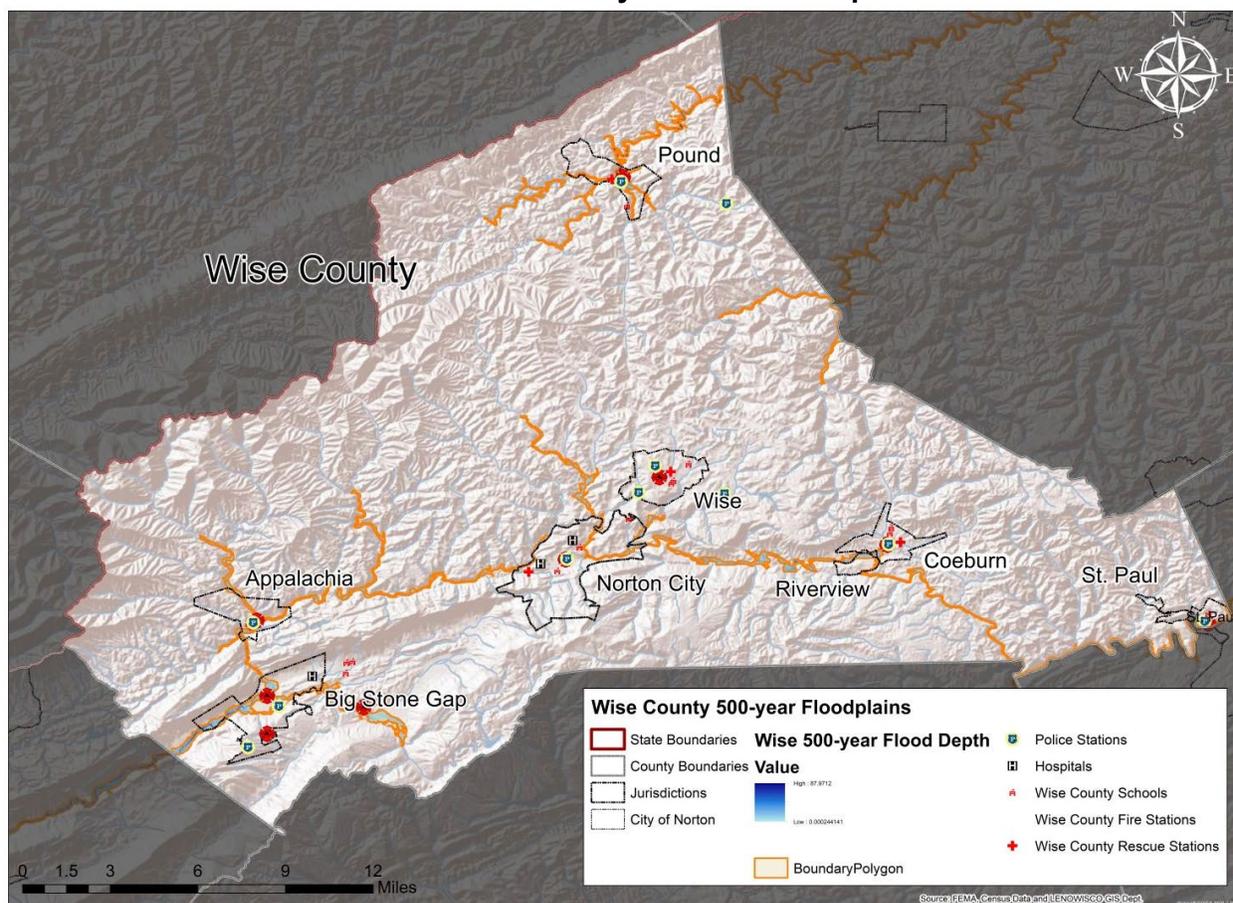




FIGURE: Wise County 500-Year Floodplain



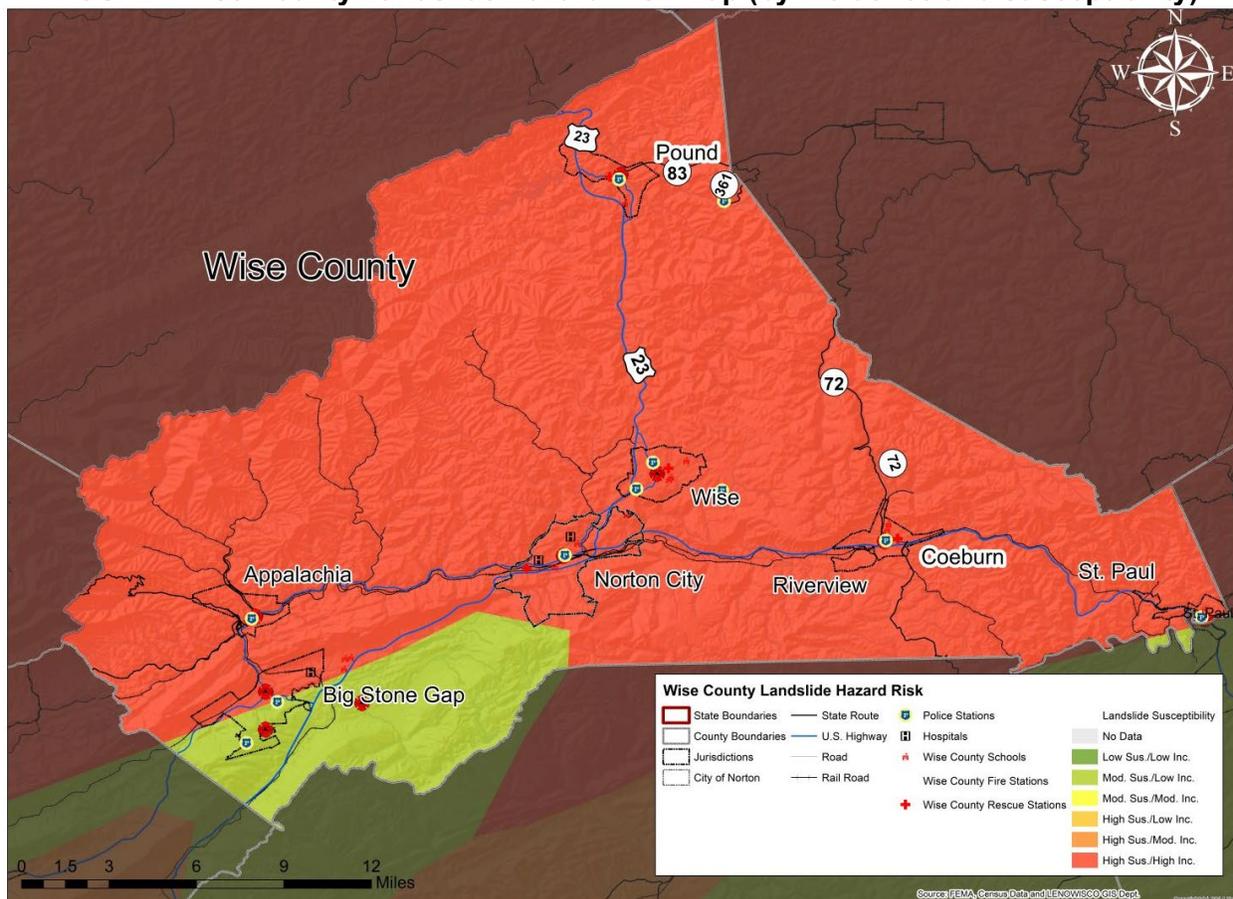
Dam Failure: There are 16 dams in Wise County according to the [National Dams Inventory \(NID\)](#). As noted above, many of these dams support water supply infrastructure for local municipalities. Seven dams are considered high hazard dams, and of those two do not have Emergency Action Plans - UVA-Wise #1 Dam and UVA-Wise #2 Dam. While the NID reports that a third dam does not have an EAP, the local Emergency Manager reported an updated EAP on file. Additionally, numerous coal slurry ponds remain in Wise County. Virginia Department of Conservation and Recreation (DCR) has issued permits for several ponds, but many remained unpermitted or unknown by DCR.

Karst/Subsidence: There are several areas in Wise County, specifically near the Big Stone Gap, Powell Valley, and Norton areas, that are susceptible to sinkholes. A home on Egan Road suffered damage to the foundation due to a Karst sinkhole. In addition, Wise County has numerous abandoned deep mines that pose a risk to land subsidence.



Landslide: In 2019, Wise County experienced the Big Cherry Landslide. This area is now monitored during heavy rainfall for additional movement, as there is a stream at the base of this landslide area. If there was a total failure that would occur it would impact access to the Town of Big Stone Gap Water Treatment Plant. Total failure would be catastrophic to homes downstream. Additional areas of concern in Wise County include Church Street and Country Club in the Town of Pound, and US-23 near Rim Rock.

FIGURE: Wise County Landslide Hazard Risk Map (by incidence and susceptibility)



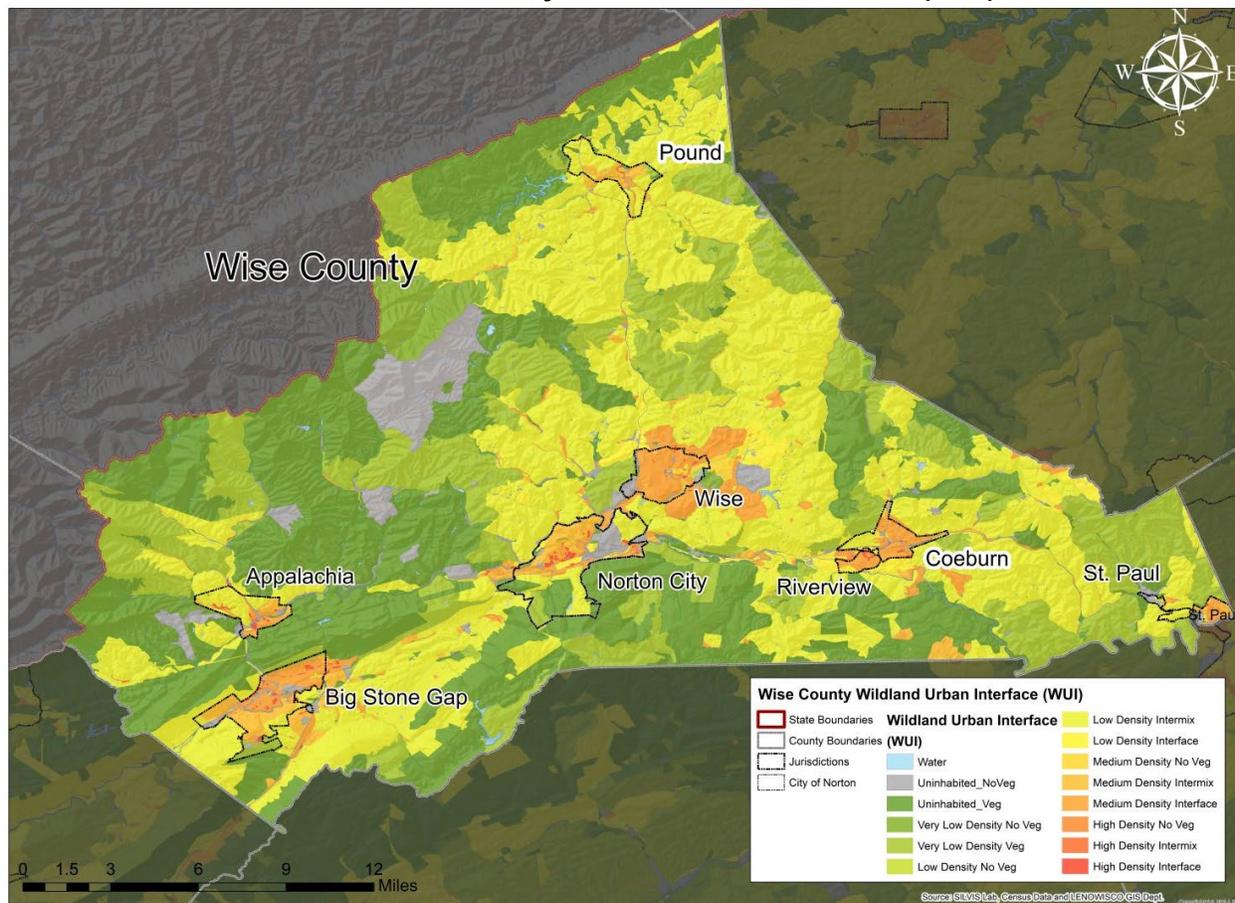
Non-Rotational Winds: Thunderstorm wind events occur annually in Wise County. The County is at moderate risk of non-rotational wind events and uses CodeRED as a warning service to notify residents of incoming severe weather events.

Tornado: Wise County has experienced several tornados in recent years, causing significant damage to homes and infrastructure. It is imperative that residents have multiple mediums to receive weather warnings. There are nearly 5,000 mobile homes across the County, which would experience significant damages in a tornado event.



Wildfire: Wise County has thousands of acreage of forest land, with many homes located on or near the boundaries. These homes would be at greater risk of a wildfire event. The density of this Wildland-Urban Interface is illustrated in the map below. Wise County does not have a Community Wildfire Protection Plan. The Camp Bethel Community, north of the Town of Wise, is the only to participate in the Virginia FireWise program. Some parts of the county, including High Knob Recreational Area, are covered by U.S. Forest Service wildfire planning. The County partners with the U.S. Forest Service and Virginia Department of Forestry, who both manage land in Wise County.

FIGURE: Wise County Wildland-Urban Interface (WUI)



Winter Storm: Heavy snow, ice, and blizzard events occur regularly in Wise County. US-58 and US-23 are critical roadways that, if closed due to heavy snow, can cripple the County. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. These primary roadways must remain clear and open during weather events or disasters. The County Social Services building recently relocated due to structural damage from snow load. In 2015, a multi-day storm led to nearly 40 inches of snow, requiring snow removal support and supply delivery from the Virginia Department of Forestry and Virginia National Guard.



THIS PAGE IS INTENTIONALLY LEFT BLANK



4.4 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Wise County.

TABLE: Population Exposed Ranking for Wise County			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	Low	1	3
Karst/Subsidence	Medium	2	6
Landslide	Medium	2	6
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Wise County		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Medium	2
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Wise County			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	High	3	6
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Wise County		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Wise County			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	High	3	9
Flooding	Low	1	3
Dam Failure	Medium	2	6
Karst/Subsidence	Unlikely	0	0
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)



- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	Medium	2

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Wise County.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	17	51	2	High
Non-Rotational Winds	3	15	45	3	Medium
Communicable Disease	2	21	42	4	Medium
Landslide	2	17	34	5	Medium
Earthquake	1	30	30	6	Medium
Tornado	1	21	21	7	Low
Karst/Subsidence	2	10	20	8	Low
Dam Failure	2	8	16	9 (tie)	Low
Wildfire	1	16	16	9 (tie)	Low
Drought	1	14	14	10	Low



4.5 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Wise County has adopted a building code and established an Inspections Office to carry out its building functions.
Zonings	-	Yes	-	Wise County adopted a county-wide zoning ordinance in 1991.
Subdivisions	-	Yes	-	Wise County adopted a subdivision ordinance that was last revised in 2003.
Stormwater Management	-	Yes	-	This ordinance is administered by the Wise County Building Official. Wise County’s Floodplain Ordinance was adopted in August 1980 and is administered by the Building and Zoning Office.
Post Disaster Recovery	-	Yes	-	
Growth Management	-	Yes	-	Wise County Economic and Industrial Development provides growth management and economic development planning for the County.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	-	Yes	-	Wise County Planning Commission and County Board of Supervisors adopted a new comprehensive plan in 2020.
Environmental Protection	-	Yes	-	Wise County has an Erosion and Sediment Control Plan and a Stormwater Protection Plan.
Transportation Plan	-	-	Yes	Wise County relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.



Response/Recovery Planning				
Comprehensive Emergency Management Plan		Yes		Wise County's Emergency Operations Plan was last updated in May 2017 and is also used by its local jurisdictions. The plan was adopted by the County Board of Supervisors and town Councils. The County Emergency Management Director and Coordinator lead plan updates and implementation.
Community Wildfire Protection Plan				
Post-Disaster Recovery Plan		Yes (as needed)		In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan		Yes		A new Continuity of Operations Plan is pending approval from the Board of County Commissioners.

TABLE: Administrative and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	County Administrator
Engineers or professionals trained in building or infrastructure construction practices	Yes	County Administrator
Planners or engineers with an understanding of natural hazards	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Geographic Information Officer
Emergency manager	Yes	Emergency Operations Coordinator
Grant writers	Yes	Grants Supervisor

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	Building and Zoning
Are any certified floodplain managers on staff or under contract with your jurisdiction?	Yes, under contract
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	No, the maps should be updated using LIDAR
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	
If participating, is your jurisdiction seeking to improve its Community Rating System (CRS) Classification? If not, is your jurisdiction interested in joining the CRS program?	

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	510174	08/17/1981
Community Rating System	No		
Building Code Effectiveness Grading Schedule	Yes	3 Residential; 3 Commercial	2018
Public Protection/ISO	Yes		
StormReady	Yes		2019
Tree City USA	No		



Ordinances

The following ordinances apply to natural hazard mitigation in Wise County.

TABLE: Ordinances in Wise County		
Ordinance	Adoption Date	Description/Purpose
Floodplain Ordinance	1980 August 2011 (revised)	<p>The Ordinance is designed to minimize public and private losses due to flood conditions in specific areas. It requires a development permit be submitted to the County prior to any construction or substantial improvement activities. Permits will only be approved if they meet the provisions of the ordinance, which include development standards that will minimize the potential for flood losses. Standards are established for construction materials, equipment, methods, practices and uses. Most importantly, establishes the requirements for elevation and floodproofing (non-residential) to base flood elevation.</p> <p>The Ordinance requires the minimum standards of the National Flood Insurance Program (NFIP). The County's floodplain areas are currently being re-studied as part of the State's Floodplain Mapping Program. It is possible those floodplain areas will be redelineated with updated topography, and that base flood elevations will be recalculated.</p>
Subdivision Ordinance	1976 2003 (revised)	<p>The Ordinance is designed to regulate all divisions of land for purposes of sale or building development (immediate or future), including all divisions of land involving the dedication of new streets/roads or a change in existing streets/roads. All proposed subdivisions must go through an approval process involving multiple individuals/agencies. Subdivision plats, required for review, must include the location of areas subject to flooding. Lands subject to flooding, irregular drainage conditions, excessive erosion and other reasons unsuitable for residential use shall not be platted for residential use unless the hazards can be and are corrected. For major subdivisions, a stormwater drainage plan must be prepared and necessary stormwater drainage improvements must be completed before final plat approval. Plats are also reviewed by the local permit officer to determine additional permits required. Furthermore, all waterfront development must meet, setback requirements and impervious surface requirements. Plats are also reviewed by engineers hired by the developer and the Virginia Department of Transportation to identify matters of topography and drainage.</p> <p>Although not designed specifically for hazard mitigation purposes, the Ordinance will prevent flood losses in tandem with the Flood Damage Prevention Ordinance. It will also minimize the adverse effects development can have on stormwater drainage through impervious surface requirements and through sedimentation and erosion control. Through its roadway requirements, the ordinance also provides for adequate ingress and egress to subdivisions by emergency vehicles for fires or severe weather events.</p>
State of Emergency Ordinance	September 1988	<p>The purpose of this Ordinance is to authorize the proclamation of a State of Emergency and the imposition of prohibitions and restrictions during a State of Emergency. Establishes the authority and procedures for the Board of Supervisors to proclaim a State of Emergency, and to impose the following restrictions as described in the ordinance: curfew; evacuation; possession/transportation/transfer of intoxicating liquors, dangerous weapons and substances; access to areas; movements of people in public places; operation of businesses and other places; and other activities or conditions the control of which may be reasonably necessary to maintain order and protect lives or property during the State of Emergency.</p> <p>The Ordinance does not incorporate any long-term mitigation actions, such as temporary moratoria on the reconstruction of structures damaged or destroyed by a disaster event.</p>



THIS PAGE IS INTENTIONALLY LEFT BLANK



4.6 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Wise County New Mitigation Actions

Action #	New/ Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Develop an inventory of at-risk public buildings and infrastructure and prioritize mitigation projects based on those providing the most benefit (at the least cost) to the County and residents.	Wise County	Wise County Public Works	Emergency Management	2 - Mitigation 4 - Whole Community
2	New	In Progress	All-Hazard	Develop and implement outreach and educational programs aimed at mitigating and reducing the risk of natural hazards. Add specific hazards and target populations here.	Wise County	Emergency Management	Community-based and faith-based organizations	4 - Whole Community
3	New	Not Started	Dam Failure	Update mapping of permitted and unpermitted coal slurry ponds throughout the county.	Wise County	Wise County Geographic Information Officer	DMME, DCR	2 – Mitigation
4	New	Not Started	Drought	Ensure adequate back-up potable water supplies to supplement municipal water sources through 1) purchase of portable storage tanks for potable water, including a specific back-up water supply for the regional dialysis center in Norton; and 2) securing contracts with water suppliers.	Wise County City of Norton	Wise County Emergency Management	Wide County Public Works	1 - Protection



5	Existing	In Progress	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Purchase generators for emergency shelters at JW Adams Elementary School (Town of Pound), Union Elementary (Big Stone Gap), Wise Elementary School, and other locations as identified. Ensure all shelters are wired for portable generators.	Wise County Town of Pound Town of Big Stone Gap Town of Wise	Wise County Emergency Management	Wise County Public Schools	1 – Protection
6	New	Not Started	Flooding	Identify and prioritize upgrades to sewer and water service infrastructure located in flood-prone areas, including those that cross creeks.	Wise County	Wise County Public Works	VDH	1 – Protection
7	New	Not Started	Flooding	Secure funding for debris removal and stream clean-outs in the identified problem areas, including the North Fork of the Pound River, near Big Stone Gap, and near Coeburn.	Wise County Big Stone Gap Coeburn Pound	Local Public Works Departments	DWR	2 - Mitigation
8	New	Not Started	Karst	Investigate the development and implementation of a karst terrain ordinance in the county.	Wise County	Wise County Zoning and Development	Local Building & Zoning Officers	3 - Polices & Plans
9	New	In Progress	Karst	Secure funding to repair the sinkhole on Knowledge Drive in partnership with Town of Pound.	Wise County Town of Pound	Public Works	VDOT	2 – Mitigation
10	New	Not Started	Landslide	Initiate a geotechnical impact assessment of the Big Stone Gap Water Treatment Plan from the 2019 Big Cherry Landslide.	Wise County Town of Big Stone Gap	Public Works	Wise County Public Service Authority	2 - Mitigation
11	New	Not Started	Landslide	Investigate the development and implementation of a landslide ordinance to prevent further development/construction in landslide areas of the county.	Wise County	Wise County Zoning and Development	Local Building & Zoning Officers	3 - Polices & Plans
12	New	Not Started	Winter Storm	Secure additional heavy equipment for snow removal operations.	Wise County, Norton, and Big Stone Gap	Wise County Public Works	Norton and Big Stone Gap Public Works	1 – Protection



TABLE: Wise County New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	HMA, USACE	Medium	Medium	Medium	Short-Term	Develop an inventory of un-reinforced masonry buildings to target for mitigation; Develop an inventory of commercial and public buildings in need of flood, windstorm, and earthquake mitigation; Identify at-risk bridges for flood and earthquake hazards, identify enhancements, and implement projects needed to reduce the risks; and Review and improve utility operations and services to mitigate for natural hazards.	20
2	VDEM, Local funds	Medium	Medium	Medium	Ongoing	Identify priority populations for outreach and appropriate platforms and communication tools. Work with state agencies to seek funding and best practice public awareness campaigns. Implement best practice programs through awarded grant support, when available.	23
3	FEMA BRIC, HMA, HMGP, EPA, VA DEQ	Medium	Low	Low	Short-Term	Create an updated map and identify potential outflow risks, including abandoned mine shafts, karst areas, and underground water sources. Identify downstream vulnerabilities and risks associated with slurry contaminates.	14
4	FEMA	Medium	Medium	High	Short-Term	Identify priority locations and water service vulnerabilities. Secure funding for storage tanks. Identify potential contractors for emergency water supply.	27



5	FEMA, local funds	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	28
6	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
7	FEMA, local funds, VDEM, VPH	High	Medium	Low	Long-Term	Review best practices in code and ordinances for development in karst terrain. Prioritize and recommend changes.	14
8	Local funds	Low	Low	Low	Short-Term	Determine where karst areas and future development may intersect; study the feasibility and impacts of ordinances.	12
9	VDOT	High	High	High	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	24
10	Virginia DCR, FEMA	Medium	High	High	Short-Term	Identify project scope and cost. Identify and recruit technical experts. Secure funding and assistance.	25
11	Local funds	Low	Low	Low	Short-Term	Review best practices in code and ordinances for development in highly susceptible landside areas. Prioritize and recommend changes.	14
12	FEMA, VDOT	High	Medium	Medium	Short-Term	Scope equipment needs and cost. Identify and secure funding.	22

Wise County does not have any completed or removed mitigation actions



4.7 Wise County Jurisdictions

The towns of Big Stone Gap, Coeburn, Pound, St. Paul, and Wise participated in the 2021 plan update. The Town of Appalachia did not participate. The City of Norton is an independent city in Virginia and is included as a stand-alone appendix (Section 5) of this plan.

4.7.1 Town of Big Stone Gap

4.7.1.1 Community Profile

Big Stone Gap is in southwestern Wise County in the Powell Valley. The Powell and South Fork Powell rivers converge within town limits. The town is in the Appalachian Plateau province, bordered by Stone Mountain, Little Stone Mountain, Powell Mountain, Wallens Bridge, and Morris Mountain. Surrounded by ridges and valleys, most development in Big Stone Gap is in hollows and along rivers and streams. The town is bordered by Jefferson National Forest.

Big Stone Gap comprises 5.14 square miles, home to a population of 5,326 as of 2018 ([American Community Survey 5-Year Estimates](#)). This is a slight decrease from the 2010 Census estimate, and Wise County as a whole has experienced modest declines in population over several decades. Big Stone Gap, unlike the rest of Wise County, is projected to see population growth, with the construction of Wallens Ridge State Prison contributing to recent growth, as well as the town's role as an employment center with sufficient public water and sewer service availability ([Big Stone Gap Comprehensive Plan, p. 10-11](#)).

Since its incorporation in 1888, Big Stone Gap has transitioned from small family farms to a commercial center serving timber and coal operations. With the decline of mining in the area, Big Stone Gap remains a commercial and employment center for the county and surrounding areas. The largest employers in the community are health, education, and social services providers, as well as Wallens Ridge State Prison. As of 2018, the median household income in Big Stone Gap was \$44,013, higher than Wise County and the LENOWISCO Planning District as a whole ([American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

Public services and facilities in Big Stone Gap include the water system centered on the Big Cherry Reservoir, wastewater treatment and sewer, solid waste collection and disposal, local police department, volunteer fire department, rescue squad, library services through Lonesome Pine Regional Library System, and a parks and recreation system inclusive of nine facilities, two cemeteries, and open space adjacent to the Big Cherry Reservoir.

Source: [Big Stone Gap Comprehensive Plan, p. 26-35](#)



4.7.1.2 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of Big Stone Gap Natural Hazard Events <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/16/2015	
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production heavy snow with up to 19 inches reported.		02/21/2015	
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanked with snow.		02/26/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/04/2015	
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. Lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer lead to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.		11/18/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.		02/08/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.		03/14/2016	



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.		05/12/2016	
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.		06/22/2016	
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.		06/23/2016	
Flash Flood	Summer convection produced flash flooding in Wise County.		07/27/2016	
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.		01/06/2017	
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.		04/22/2017	
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.		05/19/2017	
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.		03/17/2018	
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid South.		04/23/2018	
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.		05/26/2018	
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.		05/29/2019	



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.		08/20/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of Big Stone Gap Community Resilience Profile* Source: American Community Survey 2018 Five-Year Estimates	
Factors	Number in Community
Members of the community over 65 years old	774
Members of the community under 18 years old	887
Members of the community that identify as having disability status	937
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	926
The number of mobile homes in the community	203
Members of the community without health insurance	360
Occupied housing units with tenants without a vehicle	149
Housing units without heating fuel	33

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2021 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Big Stone Gap, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities and nursing homes are some of the most vulnerable to communicable disease, including one nursing home and two assisted living facilities in Big Stone Gap. The Town has worked closely with the LENOWISCO Health District throughout the pandemic on key planning needs including mass fatality services and securing adequate personal protective equipment.



Dam Failure: Big Cherry Dam is operated by the Town of Big Stone Gap and supports the municipal water supply along the South Fork of the Powell River. The dam is considered a "high hazard" dam, is state-regulated, and has an Emergency Action Plan according to the [National Inventory of Dams](#). After a recent landslide near the Dam, Big Stone Gap and Wise County are concerned about future sliding that could block the valley below the dam and impact municipal water supply or cause a flooding event. Total failure would be catastrophic to homes downstream.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Big Stone Gap relies on the Big Cherry Lake as its municipal water source. A prolonged drought event could impact water supply and quality for the municipality. Big Stone Gap has established interconnections with neighboring Lee County Public Service Authority, City of Norton, and Town of Appalachia to ensure a more resilient municipal water supply. This process was motivated by a water shortage in 2005 during the construction of the Big Cherry Lake Dam.

Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. There are some parts of Wise County with a concentration of older buildings that do not meet more modern seismic building codes, including the downtown district of Big Stone Gap which falls into Seismic Design Category C in the Virginia Statewide Building Code. There are significant seismic retrofit needs for many of the commercial buildings downtown.

Flooding: Flooding occurs frequently in Big Stone Gap, especially along Wallens Ridge Blvd. Downtown Big Stone Gap experiences regular flooding, but because of historic planning and zoning efforts with flood mitigation in mind, streets and park areas are the most impacted. Heritage Hall, an assisted living facility in Big Stone Gap, is located in the flood zone (Zone X). Other essential facilities, including City Hall, the local health authority, prison, and another assisted living facility, are located on a ridge above the town. Big Stone Gap does have a floodplain ordinance in place. Several residential areas are impacted by regular flooding, including a residential area that is isolated when the access bridge (Stone Bridge on Proctor Street) floods, and a mobile home park that is below the base flood elevation.

The Town of Big Stone Gap participates in the National Flood Insurance Program (CID #515521) and the last FIRM map for the area was issued on 12/08/2011 ([FEMA, 2019](#)). Big Stone Gap has a total of eight repetitive loss (RL) properties with 18 total losses. None of the losses were insured, and payments totaled \$158,725.95.

TABLE: NFIP Statistics for Big Stone Gap				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
28	\$4,513,000	67	\$351,410.48	3



Karst/Subsidence: There are several areas in Big Stone Gap that are susceptible to sinkholes, including along Quillen Road. No structures have been damaged from karst sinkholes to date.

Landslide: In 2019, Wise County experienced the Big Cherry Landslide. This area is now monitored during heavy rainfall for additional movement, as there is a stream at the base of this landslide area. If there was a total failure that would occur it would impact access to the Town of Big Stone Gap Water Treatment Plant. Big Stone Gap was recently awarded funding by the Virginia Department of Transportation to mitigate sliding on US 23 North/Country Hill.

Non-Rotational Winds: Thunderstorm wind events occur annually in Wise County. The County is at moderate risk of non-rotational wind events and uses CodeRED as a warning service to notify residents of incoming severe weather events. There is a need for a more localized warning system outside of social media updates. While Big Stone Gap has a number of mobile homes, they are not required to have tie-downs or anchors in the building code, leaving them vulnerable to significant damage from severe wind and weather events.

Tornado: Wise County has experienced several tornados in recent years, including an EF-1 storm in 2008 that caused over \$1 million in damage to homes and infrastructure in Big Stone Gap. Homes and other buildings located in the valleys are most at-risk to tornadoes. There are six mobile home parks in Big Stone Gap, and Wise County is responsible for opening shelters in town during emergency events.

Wildfire: Wise County has thousands of acreage of forest land, with many homes located on or near the boundaries. These homes would be at greater risk of a wildfire event. Wise County does not have a Community Wildfire Protection Plan and does not participate in the Virginia FireWise program. The County partners with the U.S. Forest Service and Virginia Department of Forestry, who both manage land in Wise County. Most residential areas in Big Stone Gap are in valleys and are more protected from wildfire events, but some are located along the wildland-urban interface. Evacuation in response to a wildfire event is a concern, especially in conjunction with a flooding event.

Winter Storm: Heavy snow, ice, and blizzard events occur regularly in Wise County. US-58 and US-23 are critical roadways that, if closed due to heavy snow, can cripple the County. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. Both residents and businesses are vulnerable to damage from heavy snow and critical roadways are often impacted by winter storm events. Isolation or limited access to individuals experiencing medical emergencies due to blocked roadways is of significant concern. The housing complexes located along Wallens Ridge and Dogwood Drive are of particular concern due to the steep slope of the access roads. Big Stone Gaps experiences occasional road salt storage and supply issues. Additionally, overhead power lines serve most residences and businesses, which may be damaged or downed in a heavy snowfall event.



4.7.1.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Big Stone Gap.

TABLE: Population Exposed Ranking for Big Stone Gap			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	High	3	9
Karst/Subsidence	Low	1	3
Landslide	Medium	2	6
Non-Rotational Winds	High	3	9
Tornado	High	3	9
Wildfire	Low	1	3
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Big Stone Gap		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	High	3
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Low	1
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Big Stone Gap			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	High	3	6
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Medium	2	4
Tornado	Medium	2	4
Wildfire	Low	1	2
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Big Stone Gap		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Big Stone Gap			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	High	3	9
Karst/Subsidence	Unlikely	0	0
Landslide	Medium	2	6
Non-Rotational Winds	Low	1	3
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Medium	2	6

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)



Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Big Stone Gap.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	24	72	1	High
Non-Rotational Winds	3	20	60	2	High
Flooding	3	17	51	3	High
Tornado	2	24	48	4	Medium
Communicable Disease	2	21	42	5	Medium
Landslide	2	19	38	6	Medium
Dam Failure	1	29	29	7	Medium
Earthquake	1	24	24	8	Low
Karst/Subsidence	2	7	14	9 (tie)	Low
Drought	1	14	14	9 (tie)	Low
Wildfire	1	10	10	11	Low



4.7.1.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	Yes	-	-	Big Stone Gap Building Department enforces the Virginia Uniform Statewide Building Code.
Zonings	Yes	-	-	Big Stone Gap adopted a zoning ordinance in 1991.
Subdivisions	Yes	-	-	Big Stone Gap adopted a subdivision ordinance in 1986.
Stormwater Management	-	Yes	-	This ordinance is administered by the Wise County Building Official. Wise County's Floodplain Ordinance was adopted in August 1980 and is administered by the Building and Zoning Office.
Post Disaster Recovery	-	Yes	-	
Growth Management	Yes	-	-	Big Stone Gap adopted a Master Plan in 2009 that outlines economic development and physical improvement efforts.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	Big Stone Gap Planning Commission adopted a new comprehensive plan in 2017.
Environmental Protection	-	Yes	-	Wise County has an Erosion and Sediment Control Plan and a Stormwater Protection Plan.
Transportation Plan	Yes	-	Yes	Transportation planning is included in the 2017 Comprehensive Plan. Additionally, Big Stone Gap relies on the support of the LENOWISCO Planning District and the Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Big Stone Gap is supported by the Wise County Critical Incident Command Team. Wise County's Emergency Operations Plan was last updated in May 2017.
Community Wildfire Protection Plan	-		-	



Post-Disaster Recovery Plan	-	Yes (as needed)	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	Big Stone Gap does not have a formal COOP, but has made some efforts to ensure continuity, including local back-ups, off-site storage, and insurance for facilities, equipment, and vehicles.

TABLE: Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract and Building Official, IT, Fire Official, Zoning and Planning Admin
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract and Building Official, IT, Fire Official, Zoning and Planning Admin
Planners or engineers with an understanding of natural hazards	Yes	Under Contract and Building Official, IT, Fire Official, Zoning and Planning Admin
Surveyors	Yes	Under Contract
Personnel skilled or trained in GIS applications	Yes, County	Wise County Geographic Information Officer
Emergency manager	Yes, County	Wise County Emergency Operations Coordinator
Grant writers	Yes	Town Manager, Town Clerk, and Building Official

TABLE: National Flood Insurance Program (NFIP) Compliance

What department is responsible for floodplain management in your jurisdiction?	Building Official
Are any certified floodplain managers on staff in your jurisdiction?	No; Building Official has taken Certified Floodplain Manager courses
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Substantial damage and floodplain administration course
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications

	Participating?	Classification	Date Classified
NFIP	Yes	515521	12/11/1970
Community Rating System	No		
Building Code Effectiveness Grading Schedule	Yes	4/4	08/14/2018
Public Protection/ISO	Yes	4/4x	06/01/2021
StormReady	No		
Tree City USA	No		



4.7.1.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Big Stone Gap New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Ensure an effective mass notification system for residents for events within town limits.	Town of Big Stone Gap	Emergency Management	Police and Fire departments	4 - Whole Community
2	New	In Progress	Drought	Ensure adequate back-up potable water supplies to supplement municipal water sources through 1) purchase of portable storage tanks for potable water; and 2) securing a microfiltration system for potable water.	Town of Big Stone Gap	Public Works	Emergency Management	1 - Protection
3	New	In Progress	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Purchase generators for emergency shelters at JW Adams Elementary School (Town of Pound), Union Elementary (Big Stone Gap), Wise Elementary School, and other locations as identified. Ensure all shelters are wired for portable generators.	Wise County Town of Pound Town of Big Stone Gap Town of Wise	Wise County Emergency Management	Wise County Public Schools	1 - Protection
4	New	Not Started	Flooding	Conduct an assessment to mitigate flooding at Stone Bridge (Proctor Street).	Town of Big Stone Gap	Public Works	Floodplain Coordinator	2 - Mitigation



5	New	Not Started	Flooding	Assess base flood elevation at the mobile home park and relocation or elevation needs for residents.	Town of Big Stone Gap	Building & Zoning	Floodplain Coordinator	2 - Mitigation
6	New	Not Started	Flooding	Secure funding for debris removal and stream clean-outs in the identified problem areas, including the North Fork of the Pound River, near Big Stone Gap, and near Coeburn.	Wise County Big Stone Gap Coeburn Pound	Local Public Works Departments	DWR	2 - Mitigation
7	New	Not Started	Karst	Initiate a geotechnical study for karst terrain.	Town of Big Stone Gap	Building & Zoning	Virginia DMME	2 - Mitigation
8	New	Not Started	Landslide	Initiate a geotechnical impact assessment of the Big Stone Gap Water Treatment Plan from the 2019 Big Cherry Landslide.	Wise County Town of Big Stone Gap	Public Works	Wise County Public Service Authority	2 - Mitigation
9	New	Not Started	Landslide	Secure funding to install riprap to limit rockfall and further erosion along the Big Cherry Lake Dam.	Town of Big Stone Gap	Public Works	DCR	2 - Mitigation
10	New	Not Started	Non-Rotational Winds Tornado	Investigate the development and implementation of a tie-down ordinance for mobile homes.	Town of Big Stone Gap	Building & Zoning	Town Planning Department	2 - Mitigation 3 - Plans & Policies
11	New	Not Started	Winter Storm	Secure additional heavy equipment for snow removal operations and salt storage.	Town of Big Stone Gap	Public Works	Wise County and City of Norton Public Works	1 - Protection



TABLE: Big Stone Gap New Mitigation Strategies

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	VDEM, FEMA	Medium	Medium	Medium	Short-Term	Investigate the use of the FEMA Integrated Public Alert and Warning System (IPAWS) for Alerting Authorities; Deploy a public awareness campaign to encourage the use of existing systems.	26
2	FEMA	Medium	Medium	High	Short-Term	Identify priority locations and water service vulnerabilities. Secure funding for storage tanks. Identify potential contractors for emergency water supply.	27
3	FEMA, local funds	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	28
4	FEMA, VDOT	Medium	Medium	Medium	Short-Term	Secure funding for an assessment. Prioritize needed mitigation actions identified. Scope project costs and design. Secure funding to complete projects.	24
5	FEMA	Medium	Medium	Medium	Short-Term	Identify project scope and cost. Develop communications and educational materials for residents. Secure funding and assistance.	22
6	Virginia DMME, VDEM, EPA	Medium	Low	Low	Long-Term	Identify technical experts as project partners. Secure funding and assistance.	13
7	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23



8	Virginia DCR, FEMA	Medium	High	High	Short-Term	Identify project scope and cost. Identify and recruit technical experts. Secure funding and assistance.	27
9	Virginia DCR, FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Secure funding for project execution.	19
10	Local funds	Low	Medium	Medium	Short-Term	Review best practices in code and ordinances, as well as enforcement and compliance strategies. Prioritize and recommend changes.	17
11	FEMA, VDOT	High	Low	Low	Long-Term	Scope equipment needs and cost. Identify and secure funding.	14

Big Stone Gap does not have any completed or removed mitigation actions.



4.7.2 Town of Coeburn

4.7.2.1 Community Profile

Coeburn is located in southeastern Wise County, comprising 1.9 square miles and home to 1,669 residents as of [2018 American Community Survey 5-Year Estimates](#). This is a fairly significant decline since the 2010 Census estimate of 2,139 residents.

The climate of Coeburn is mild, with a consistent annual average of 40 inches of precipitation. Heavy rainfall and flooding typically occur in the summer months but can also occur due to winter storms. Due to its high elevation, Coeburn also sees high snowfall rates of about 19 inches annually ([Coeburn Comprehensive Plan, p. 5](#)).

Since its incorporation in 1894, Coeburn developed around coal mining and the railroad. The population of the town has fluctuated with the mining industry, with significant out-migration during the Great Depression era, the 1950s, and the 1980s ([Coeburn Comprehensive Plan, p. 4](#)). Coeburn is generally subject to the trends of Wise and nearby counties and has not yet replaced the loss of the mining industry in the region. As of 2018, the median household income in Coeburn was \$31,677, significantly lower than Wise County as a whole ([2018 American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

Public services in Coeburn include public water service from Tom's Creek Impoundment, wastewater service through Coeburn-Norton-Wise Regional Wastewater Treatment Plant, a system of three public schools, library services through Lonesome Pine Regional Library, local police department, volunteer fire department, three public parks, and several recreational and cultural facilities. Coeburn is also served by a privately-owned EMT service ([Coeburn Comprehensive Plan, p. 22-29](#)).



4.7.2.2 Coeburn Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of Coeburn Natural Hazard Events <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.	--	02/16/2015	--
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.	--	02/17/2015	--
Heavy Snow	For the second time this month, the atmosphere was favorable in the production heavy snow with up to 19 inches reported.	--	02/21/2015	--
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanketed with snow.	--	02/26/2015	--
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.	--	03/04/2015	\$20,000
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. Lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer lead to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.	--	03/04/2015	--
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.	--	06/21/2015	--



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.	--	07/13/2015	--
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.	--	11/18/2015	--
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.	--	01/20/2016	--
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.	--	01/22/2016	--
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.	--	02/08/2016	--
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.	--	02/14/2016	--
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.	--	03/14/2016	--



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.	--	05/12/2016	--
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.	--	06/22/2016	--
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.	--	06/23/2016	--
Flash Flood	Summer convection produced flash flooding in Wise County.	--	07/27/2016	\$6,000
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.	--	01/06/2017	--
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.	--	04/22/2017	--
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.	--	05/19/2017	--
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.	--	05/27/2017	--



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.	--	02/10/2018	\$7,000
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.	--	03/12/2018	--
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.	--	03/17/2018	--
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid-South.	--	04/23/2018	--
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.	--	05/26/2018	--
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.	--	06/26/2018	--
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.	--	06/26/2018	--
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.	--	12/09/2018	--
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.	--	05/29/2019	--



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.	--	08/20/2019	--
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.	--	10/31/2019	--

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of Coeburn Community Resilience Profile* <i>Source: American Community Survey 2018 Five-Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	274
Members of the community under 18 years old	396
Members of the community that identify as having disability status	488
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	570
Number of mobile homes in the community	203
Members of the community without health insurance	163
Occupied housing units with tenants without a vehicle	55
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Coeburn, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Assisted living facilities and congregate living or care settings are some of the most vulnerable to a communicable disease, including one assisted living facility and several group homes in Coeburn. People over the age of 65 make up about 16% of the population of Coeburn and have been found to be more at-risk to severe illness from COVID-19. Additionally, nearly 12% of the population is uninsured. These factors make the population more likely to experience significant impacts, either physically or financially, to COVID-19 or another communicable disease outbreak.



Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Wise County relies on a network of reservoirs that serve as the municipal water source for several jurisdictions, including the Town of Coeburn Water Source which is supplied through Toms Creek Dam. A prolonged drought event could impact water supply and quality for the municipality and region. There is some concern about water quality due to sediment levels.

Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. Wise County is at a low-risk of earthquake events, and residents of Coeburn have felt tremors but not recorded structural damage. The Main Street area of Coeburn is made up of older, historic buildings and may not meet current seismic standards.

Flooding: Flooding occurs frequently in Coeburn, specifically Tacoma, Wallens Ridge Blvd, and Toms Creek. Flooding over the past several years has caused debris and silt buildup in numerous creeks and rivers in Wise County. Emergency management and building officials have received several requests for creek/stream cleanouts. Little Tom's Creek runs the length of the town and has been dredged in the past to support the riverbanks. Flooding over the compromised banks into town has led to overflowing drainage and sewer systems. The Town of Coeburn is working to upgrade these systems. Flooding in the downtown area has also deteriorated brick sidewalks which shift and soften in flooding conditions.

The Town of Coeburn participates in the National Flood Insurance Program (CID #510176) and the last FIRM map for the area was issued on 02/18/2011 ([FEMA, 2019](#)). Coeburn has five total repetitive loss (RL) properties with 10 total RL losses, which totaled \$288,561.99. Three of the RL losses were insured, which totaled \$150,069.91 in payments. Coeburn has one target RL building with 2-3 losses that are greater than the building's value.

TABLE: NFIP Statistics for Coeburn				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
15	\$1,581,200	31	\$453,182.42	3

Dam Failure: There is one "significant" hazard dam in Coeburn, located at Toms Creek, according to the [National Dams Inventory](#). The dam is managed by the Town of Coeburn, is state-regulated, and has an Emergency Action Plan. The last dam inspection discovered some widening of the dam with deteriorating banks. This situation is being monitored by the Town. Additionally, numerous coal slurry ponds remain in Wise County, including above the Town of Coeburn. The Tom's Creek Mine is positioned above Coeburn and near its drinking water source. These ponds may pose a risk to the Town during heavy rainfall events.

Karst/Subsidence: Coeburn is not located in an area with karst terrain susceptible to sinkholes, but Wise County has numerous abandoned deep mines that pose a risk to land subsidence. Coeburn has seen a few small sinkholes that may be related to deteriorating water and drainage lines, but none have caused structural damage.



Landslide: The majority of Wise County, including the Coeburn area, has high-susceptibility and a high incidence of landslide events. Virginia Department of Transportation has documented landslides along major roadways, including U.S. 58 which runs through Coeburn. Slide areas tend to be to the west or east of town but could impact travel for residents. Any sliding near the Tom's Creek Dam or coal slurry ponds could result in significant damage to critical infrastructure or contaminated water.

Non-Rotational Winds: Thunderstorm wind events occur annually in Wise County, but Coeburn is positioned in a valley that makes it less susceptible to wind events. There are a few mobile home parks in Coeburn whose residents are more vulnerable to severe weather events. Mobile homes are required to be anchored and have tie-downs.

Tornado: Wise County has experienced several tornados in recent years, causing significant damage to homes and infrastructure. Coeburn has not experienced any historic tornado events. It is imperative that residents have multiple mediums to receive weather warnings.

Wildfire: The Town of Coeburn is considered to have a medium-density wildland-urban interface. With residential areas located on the boundaries of forest land, homes may be at greater risk of a wildfire event. The Town of Coeburn experiences wildfire events annually, with the last significant event in 2015. The local fire department has standard operating procedures to respond to wildfires and members have some wildland training.

Winter Storm: Heavy snow, ice, and blizzard events occur regularly in Wise County. The last significant snowstorm in Coeburn in 2017 resulted in structural damages and a roof collapse at a commercial building. US-58 is a critical roadway that, if closed due to heavy snow, can cripple the Town of Coeburn. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. This primary must remain clear and open during weather events or disasters. Wise County opens the Coeburn Middle School as an emergency shelter location. Utilities can be offline for several days after significant snow events.



4.7.2.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Coeburn.

TABLE: Population Exposed Ranking for Coeburn			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	Medium	2	6
Karst/Subsidence	Low	1	3
Landslide	Medium	2	6
Non-Rotational Winds	Medium	2	6
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Coeburn		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	Low	1
Landslide	Low	1
Non-Rotational Winds	Medium	2
Tornado	High	3
Wildfire	Medium	2
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Coeburn			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Coeburn		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Coeburn			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	High	3	9
Karst/Subsidence	Unlikely	0	0
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event is likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)



TABLE: Probability Ranking for Coeburn		
Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

TABLE: Overall Risk Ranking Scores	
Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Coeburn.

TABLE: Overall Hazard Risk Ranking for Coeburn					
Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	17	51	2	High
Communicable Disease	2	21	42	4	Medium
Non-Rotational Winds	3	11	33	4	Medium
Landslide	2	15	30	5 (tie)	Medium
Earthquake	1	24	24	6	Low
Dam Failure	1	22	22	7	Low
Tornado	1	21	21	8	Low
Wildfire	1	16	16	9	Low
Drought	1	14	14	10	Low
Karst/Subsidence	1	6	6	11	Low



4.7.2.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Wise County has adopted a building code and established an Inspections Office to carry out its building functions.
Zonings	Yes	-	-	Coeburn adopted a zoning ordinance in 1986 which was amended in 2009.
Subdivisions	Yes	-	-	Coeburn adopted a subdivision ordinance in 1986 which was amended in 2009.
Stormwater Management	Yes	-	-	Coeburn adopted a floodplain ordinance in 1986 as a part of the comprehensive zoning, subdivision, and floodplain ordinance.
Post Disaster Recovery	-	Yes	-	
Growth Management	Yes	Yes	-	Wise County Economic and Industrial Development provides growth management and economic development planning for the County. Coeburn also manages a local Economic Development Authority.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	Coeburn Planning Commission adopted its most recent comprehensive plan in 2014.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Coeburn relies on the support of the LENOWISCO Planning District and the Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Coeburn is supported by the Wise County Critical Incident Command Team. Wise County's Emergency Operations Plan was last updated in May 2017.



Community Wildfire Protection Plan	-	-	-	
Post-Disaster Recovery Plan	-	Yes (as needed)	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	

TABLE: Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract, Lane Group
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract, Lane Group
Planners or engineers with an understanding of natural hazards	No	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes, County	Wise County Geographic Information Officer
Emergency manager	Yes, County	Wise County Emergency Operations Coordinator
Grant writers	Yes	Town Manager

TABLE: National Flood Insurance Program (NFIP) Compliance

What department is responsible for floodplain management in your jurisdiction?	N/A
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	No, a bit confusing
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, open to ones that would help with zoning especially
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications

	Participating?	Classification	Date Classified
NFIP	Yes	510176	07/02/1980
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection/ISO	Yes		
StormReady	No		
Tree City USA	No		



4.7.2.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Coeburn New Mitigation Actions							
Action #	New/ Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Lead Agency	Support Agencies	Goal
1	New	Not Started	Drought	Address water quality concerns at Toms Creek Reservoir (Municipal Water Source).	Public Works	DWR	1 - Protection 3 - Plans & Policies
2	New	Not Started	Drought	Secure funding to make necessary upgrades to the water treatment facility and/or replacement of water lines between the facility and town.	Public Works	VDH	1 - Protection
3	New	Not Started	Flooding	Conduct a water study or survey to determine the need for future dredging of the Clinch River / Little Tom's Creek.	Public Works	DWR	2 - Mitigation 3 - Plans & Policies
4	New	Not Started	Flooding	Secure funding for an infiltration and inflow project to upgrade the wastewater system.	Public Works	VDH	1 - Protection 4 - Whole Community
5	New	Not Started	Flooding	Secure funding for debris removal and stream clean-outs in the identified problem areas, including the North Fork of the Pound River, near Big Stone Gap, and near Coeburn.	"Wise County	5	New
6	New	Not Started	Dam Failure	Secure coal slurry above the town at Tom's Creek Mine.	Virginia DMME	Public Works	1 - Protection 2 - Mitigation
7	New	Not Started	Dam Failure	Commission an engineering study of deteriorating banks of the Tom's Creek Reservoir.	Public Works	DWR, USACE	2 - Mitigation
8	New	Not Started	Karst	Identify and replace deteriorating water and drainage lines that can lead to sinkholes.	Public Works	VDH	2 - Mitigation
9	New	Not Started	Non-Rotational Wind Tornado Winter Storm	Conduct a survey to estimate the costs of burying utility lines.	Public Works	VDOT	1 - Protection



TABLE: Coeburn New Mitigation Actions							
Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	Virginia DCR; FEMA	Medium	High	Medium	Short-Term	Assess water quality threats from environmental and physical factors at the reservoir. Identify potential mitigation actions based on assessment. Seek funding to make necessary improvements.	26
2	FEMA	High	Medium	Medium	Long-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
3	Virginia DCR; FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	18
4	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
5	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
6	Virginia DMME	High	High	Medium	Short-Term	Work with Virginia DMME to understand project scope and mitigation options. Scope extent and cost. Seek funding as needed.	24
7	Virginia DCR; FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	24
8	Virginia DMME	High	Medium	Medium	Ongoing	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
9	FEMA	Medium	Low	Low	Short-Term	Secure funding and a contractor for survey estimate. Conduct survey and identify priority areas for project investment. Consider a Benefit-Cost Analysis of burying powerlines. Securing project funding and assistance as needed.	14

Coeburn does not have any completed or removed action items.



4.7.3 Town of Pound

4.7.3.1 Community Profile

Pound is located in northwestern Wise County just miles from the Kentucky state border, comprising 2.6 square miles. Pound is located in the Appalachian Plateau province with a mild climate and average elevation of 1,546 feet. The Pound River winds through the town, diverging into its north and south forks near the town center. North Fork Pound Reservoir is located just outside the town limits and serves as the municipal water source.

Pound is home to 928 residents according to the [2018 American Community Survey 5-Year Estimates](#). While all of Wise County has seen population declines in recent years, Pound recently recorded the largest shift of any incorporated town in the county, from 1,037 in 2010 to 954 in 2016, an approximately 8% decline ([Wise County Comprehensive Plan, p. 97](#)). Nearby Red Onion State Prison is one of the largest employers in the county. Public administration, education, healthcare, and social services, as well as accommodation and food services, serve as the largest employment industries for Pound residents ([2018 American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

The Town of Pound operates both the public sewer and municipal water service. The high school in Pound was closed in 2011 through a county-wide consolidation effort. J.W. Adams is a combined school (K-8) located in Pound. There is a local police department, rescue squad, and volunteer fire department that provide public safety services for the town.



4.7.3.2 Pound Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of Pound Natural Hazard Events <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/16/2015	
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production of heavy snow with up to 19 inches reported.		02/21/2015	
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanked with snow.		02/26/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/04/2015	
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region on March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. The lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer leads to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.		11/18/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.		02/08/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.		03/14/2016	



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.		05/12/2016	
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.		06/22/2016	
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.		06/23/2016	
Flash Flood	Summer convection produced flash flooding in Wise County.		07/27/2016	
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.		01/06/2017	
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.		04/22/2017	
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.		05/19/2017	
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.		03/17/2018	
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid-South.		04/23/2018	
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.		05/26/2018	
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.		05/29/2019	



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.		08/20/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of Pound Community Resilience Profile* <i>Source: American Community Survey 2018 Five-Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	175
Members of the community under 18 years old	223
Members of the community that identify as having disability status	242
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	307
Number of mobile homes in the community	131
Members of the community without health insurance	97
Occupied housing units with tenants without a vehicle	51
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: The Town of Pound, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. There are no nursing homes or assisted living facilities in Pound, but about 19% of the population is 65 years or older. This population has been found to be more at-risk to severe illness from COVID-19. Pound has experienced a need for improved food distribution to residents during the pandemic.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency



results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. The Town of Pound relies on the Pound Reservoir for its municipal water source. A prolonged drought event could impact water supply and quality for the municipality. A regional or county-wide drought event could lead to secondary impacts including wildfire events and water shortages.

Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. Wise County is at a low risk of earthquake events. Some tremors have recently been felt across the region, but not significant enough to damage water lines or structures. There is some concern that condemned buildings that have not been demolished may pose an increased risk during an earthquake event.

Flooding: Flooding is one of the higher risks in the Town of Pound. There are streams and rivers with downed trees that impede water flow on the North Fork of the Pound River. Kudzu, an invasive species, is also of concern in the deteriorating health of the riverbanks. The Town also lacks storm drains, or existing stormwater drainage is not kept adequately clean, leading to flooding. Most flooding in Pound takes place on River Road and Route 23. Wise County is responsible for opening shelters, but there is not a shelter in Pound with a back-up generator.

The Town of Pound participates in the National Flood Insurance Program (CID #510177) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). Pound has three total repetitive loss (RL) properties with a total of three RL losses. None of these losses were insured, with total RL payments of \$16,740.41.

TABLE: NFIP Statistics for Pound				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
43	\$5,578,500	64	\$261,232.24	4

Dam Failure: There is a dam located on the North Fork of the Pound River just outside of town. This is a federally owned, high-hazard dam according to the [National Dams Inventory](#). The dam has an Emergency Action Plan and was last inspected in 2016.

Karst/Subsidence: There is a sinkhole in the Town of Pound on Knowledge Drive, which the Town is currently working to address. The Virginia Department of Transportation maintains all roads in the Town but has not addressed the sinkhole at this point. Wise County and the Town of Pound plan to address the sinkhole damage through a joint effort. Many areas throughout Wise County are susceptible to karst sinkhole events.

Landslide: There have been three recent landslides in the Town of Pound, including one behind a condemned, former bank building. If the building were to be demolished, it may result in further sliding and roadway damage. VDEM is aware of the immediate need to address the landslide and risk to residential areas, but funding has not yet been made available to address the issue. There is another small slide along U.S. Route 23 North. Additionally, there is erosion along roadways on Highway 83/Clintwood Highway (at Magnolia Street) and in Shockey Hollow.



Non-Rotational Winds: Thunderstorm wind and straight-line wind events occur occasionally in Pound. There are a few mobile home parks whose residents are more vulnerable to severe weather events. Mobile homes are required to be anchored and have tie-downs, but older homes are likely not in compliance. Residents are concerned about increasing wind impacts as mountain-top removal progresses due to timber operations.

Tornado: Wise County has experienced several tornados in recent years, causing significant damage to homes and infrastructure. Pound has not experienced any historic tornado events. It is imperative that residents have multiple mediums to receive weather warnings. Pound currently uses the Red Alert system to send text message updates and reverse 911.

Wildfire: The Town of Pound includes areas that are susceptible to wildfires, due to the nearby Jefferson National Forest and wildland-urban interface. The Pound Fire Department has members trained to fight wildland and forest fires.

Winter Storm: Winter storms commonly impact the Town of Pound and Wise County. US-23 is a critical roadway for the Town of Pound that, if closed due to heavy snow, can be crippling. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. A significant winter storm event in 2010 paralyzed Wise County for several weeks, resulting in a local emergency declaration, mobilization of the Virginia National Guard, and emergency sheltering.



4.7.3.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Pound.

TABLE: Population Exposed Ranking for Pound			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	Medium	2	6
Karst/Subsidence	Medium	2	6
Landslide	Medium	2	6
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Pound		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	High	3
Dam Failure	Medium	2
Karst/Subsidence	Medium	2
Landslide	Low	1
Non-Rotational Winds	High	3
Tornado	Medium	2
Wildfire	Medium	2
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Pound			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Medium	2	4
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Pound		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Pound			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	Medium	2	6
Karst/Subsidence	Unlikely	0	0
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)



TABLE: Probability Ranking for Pound		
Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	High	3
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

TABLE: Overall Risk Ranking Scores	
Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Pound.

TABLE: Overall Hazard Risk Ranking for Pound					
Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	18	54	2	High
Non-Rotational Winds	3	15	45	3 (tie)	Medium
Landslide	3	15	45	3 (tie)	Medium
Communicable Disease	2	21	42	5	Medium
Earthquake	1	24	24	6 (tie)	Low
Karst/Subsidence	2	12	24	6 (tie)	Low
Dam Failure	1	19	19	8	Low
Wildfire	1	16	16	10	Low
Drought	1	14	14	11	Low



4.7.3.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	Yes	Yes	-	The Wise County Building and Zoning Department supports local officials in enforcing building code and zoning ordinances.
Zonings	Yes		-	Pound has a part-time zoning officer who enforces local zoning ordinances.
Subdivisions	Yes		-	
Stormwater Management	-	-	-	
Post Disaster Recovery	-	Yes	-	This ordinance is administered by the Wise County Building Official. Wise County's Floodplain Ordinance was adopted in August 1980 and is administered by the Building and Zoning Office.
Growth Management	Yes	Yes	-	Wise County Economic and Industrial Development provides growth management and economic development planning for the County. Pound also manages a local Economic Development Authority.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	Pound Planning Commission updated the comprehensive plan in 2019 with support from LENOWISCO Planning District. The Plan is was adopted by the Town Council.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Pound relies on the support of the LENOWISCO Planning District and the Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Pound is supported by the Wise County Critical Incident Command Team. Wise County's Emergency Operations Plan was last updated in May 2017.
Community Wildfire Protection Plan	-	-	-	



Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	In Progress	-	-	Pound leadership is working on a plan in response to COVID-19 operational changes.

TABLE: Administrative and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract
Planners or engineers with an understanding of natural hazards	Yes	Under Contract; Public Works staff experience
Surveyors	No	Town Councilor is a surveyor
Personnel skilled or trained in GIS applications	Yes, County	Geographic Information Officer
Emergency manager	Yes, County	Emergency Operations Coordinator
Grant writers	Yes	Town Manager; Town Councilor

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	County support
Are any certified floodplain managers on staff in your jurisdiction?	Under contract
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, any training
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	510177	03/02/1981
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection/ISO	Yes		
StormReady	Yes		2010
Tree City USA	No		



4.7.3.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Pound New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Develop an MOU to use the Job Corps facility as an emergency shelter or respite housing during disaster events, including public health emergencies.	Town of Pound	Wise County Emergency Management	US Dept of Labor	1 - Protection 3 - Plans & Policies 4 - Whole Community
2	New	In Progress	Earthquake Flooding Non-Rotational Wind Tornado Winter Storm	Secure funding to demolish condemned structures in hazard-prone areas. Priority will be given to qualifying RL/SRL structures.	Town of Pound	Public Works	Building, Zoning, and Code Enforcement	2 - Mitigation
3	New	In Progress	Earthquake Flooding Non-Rotational Winds Tornado Winter Storm	Purchase generators for emergency shelters at JW Adams Elementary School (Town of Pound), Union Elementary (Big Stone Gap), Wise Elementary School, and other locations as identified. Ensure all shelters are wired for portable generators.	Wise County Pound; Big Stone Gap; Wise	Wise County Emergency Management	Wise County Public Schools	1 - Protection 4 - Whole Community
4	New	Not Started	Flooding	Conduct a water study to document the need for improved storm drain infrastructure.	Town of Pound	Public Works	Floodplain Coordinator	2 - Mitigation



5	New	Not Started	Flooding	Secure funding for debris removal and stream clean-outs in the identified problem areas, including the North Fork of the Pound River, near Big Stone Gap, and near Coeburn.	Wise County Town of Big Stone Gap Town of Coeburn Town of Pound	Local Public Works Departments	DWR	2 - Mitigation
6	New	Not Started	Flooding	Identify and partner with an environmental protection organization to begin removal of invasive species along riverbanks.	Town of Pound	Public Works	DWR	2 - Mitigation
7	New	In Progress	Karst	Secure funding to repair the sinkhole on Knowledge Drive in partnership with Wise County.	Wise County Town of Pound	Public Works	VDOT	2 - Mitigation
8	New	In Progress	Landslide	Secure funding to repair damage from the landslide behind the bank building and mitigate further damage and sliding.	Town of Pound	Public Works	VDEM	2 - Mitigation
9	New	Not Started	Landslide	Identify and mitigate potential landslide areas on critical roadways in/out of Pound.	Town of Pound	VDOT	Public Works	2 - Mitigation 3 - Plans & Policies
10	New	Not Started	Wildfire	Secure funding for additional protective equipment, including turn-out gear for volunteer firefighters.	Town of Pound	Pound Fire Department	Emergency Management	1 - Protection



TABLE: Pound New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	Local funds, DHHS, VDOH	Low	Medium	Medium	Short-Term	Identify service population needs and managing organization capacity (CBO, faith-based org, city-operated, etc.) Scope project design and cost. Secure funding for construction and operations.	23
2	FEMA, VDEM	High	High	Medium	Ongoing	Provide information to owners of identified properties on acquisition/buy-out program options. Secure funding for property acquisition/demolition/relocation efforts. Secure funding for improvements for individual properties.	21
3	FEMA, local funds	High	Medium	High	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	29
4	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
5	FEMA	Medium	Medium	Medium	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	23
6	Local funds	Low	Low	Medium	Short-Term	Scope project extent and costs. Identify potential partner organizations. Secure funding for project execution.	21
7	VDOT	High	High	High	Short-Term	Scope project extent and costs. Identify potential contractors. Secure funding for project execution.	27



8	VDEM, FEMA	High	High	High	Short-Term	Secure grant funding for the project.	27
9	VDOT, USDOT, FHWA, USFS, VA DOF	High	Medium	Medium	Ongoing	Review historic data on landslide events affecting roadways in partnership with VDOT. Determine priority mitigation actions. Determine authority responsible for improvements. Secure funding for projects as needed.	22
10	U.S. Fire Administration, USFS, VA Department of Forestry	Medium	Medium	Medium	Short-Term	Complete an assessment of equipment costs. Secure funding for purchase.	19

Pound does not have any completed or removed action items.



4.7.4 Town of St. Paul

4.7.3.1 Community Profile

The Town of St. Paul is located along the southeastern border of Wise County and stretching into Russell County. The Clinch River passes through the center of St. Paul at an elevation of 1,450 feet. Like the rest of Wise County, St. Paul has mild winters and warm summers with consistent annual precipitation of 45-50 inches. St. Paul receives less snowfall than neighboring mountainous areas.

St. Paul is home to 914 people according to [2018 American Community Survey 5-Year Estimates](#). The population of St. Paul is steadily aging, with the median age shifting from 41.6 in 2000 to 44.8 in 2010 and an estimated 50.4 in 2018. The median household income in 2018 was estimated at \$32,833, lower than the Wise County average ([American Community Survey 5-Year Estimates](#)).

Community Facilities and Services

The Town of St. Paul operates both the public sewer and municipal water service, relying on the Clinch River for surface water. The high school in St. Paul was closed in 2011 through a county-wide consolidation effort. St. Paul Elementary (K-8) is the town's only public school. Lonesome Pine Regional Library provides library services through its St. Paul branch. There is a local police department and volunteer fire department that provide public safety services for the town. St. Paul is served by the Castlewood Rescue Squad.

Sources: [St. Paul Comprehensive Plan](#), [Wise County Comprehensive Plan](#)



4.7.3.2 St. Paul Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of St. Paul Natural Hazard Events <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/16/2015	
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production heavy snow with up to 19 inches reported.		02/21/2015	
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanked with snow.		02/26/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/04/2015	
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. Lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer led to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.		11/18/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.		02/08/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.		03/14/2016	



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.		05/12/2016	
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.		06/22/2016	
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.		06/23/2016	
Flash Flood	Summer convection produced flash flooding in Wise County.		07/27/2016	
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.		01/06/2017	
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.		04/22/2017	
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.		05/19/2017	
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.		03/17/2018	
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid South.		04/23/2018	
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.		05/26/2018	
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.		05/29/2019	



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.		08/20/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of St. Paul Community Resilience Profile* Source: <i>American Community Survey 2018 Five-Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	226
Members of the community under 18 years old	133
Members of the community that identify as having disability status	250
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	221
The number of mobile homes in the community	30
Members of the community without health insurance	96
Occupied housing units with tenants without a vehicle	98
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: The Town of St. Paul, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. Older adults and those with existing respiratory issues have been found to be more susceptible to serious illness from COVID-19. Nearly 25% of St. Paul's residents are 65 years or older, and many have pre-existing respiratory illnesses such as COPD and Black Lung from the local coal mining industry. Additionally, Town residents have limited access to adequate healthcare services due to a reliance on volunteer emergency medical services (EMS) with expansive service areas. St. Paul often relies on neighboring counties, including across the border in Tennessee, for EMS



response. COVID-19 has stressed the local EMS system due to increased call volume and cost per call due to increased personal protective measures. COVID-19 has also impacted tourism to the community, limiting tax and business revenues.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. The Town of St. Paul relies on a surface water source to provide drinking water to residents, and a drought event could limit critical water supply. The Russell County Public Service Authority provides a backup water source. St. Paul also holds a contract to provide raw water to Dominion Virginia City Energy Center for power production. This is a critical resource for the operation of the power plant and could financially impact St. Paul if drought conditions limited the supply of raw water, which occurred in Fall 2020. St. Paul addressed the water shortage by purchasing a portable, diesel pump to support potable water intake. Additionally, drought conditions could impact local tourism businesses along the Clinch River.

Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. US Highway 58 is a critical transportation corridor for St. Paul and the region. An earthquake event could lead to the collapse of any of the four bridges on the roadway. Specifically, the Third Avenue Bridge crossing Fourth Avenue, serving as the primary access to Gray Hill, which has experienced landslides in the past. Virginia Department of Transportation engineers are evaluating how to address this vulnerability in the future. Public works staff have looked to identify alternative routes in the case of an earthquake or other damage to the bridge, as St. Paul would be isolated if these routes were to close. Additionally, the railroad infrastructure for both Norfolk and Southern and CSX Railroads run through St. Paul, including above the underpass on Fourth Avenue between Russell Street and Riverside Drive. An earthquake of 6.0 could have serious impacts on critical infrastructure including the Dominion Virginia City Energy Center, St. Paul Elementary School, water and stormwater infrastructure, roadways, fiber optic communications that provide connectivity for cell phone towers, internet service, landline phones, and access to 911 services. Impacts to fiber communication lines or critical infrastructure including the Dominion Power Plant could have far-reaching impacts outside of the Town of St. Paul. Downtown St. Paul also has a significant number of historic buildings that are not seismically retrofitted.

Flooding: Within the Town of St. Paul, the re-routing of the Clinch River has reduced flooding vulnerability. There are two aging flood gates in place to help protect Morgan McClure Ford and an apartment building. Depending on the amount of flooding and the speed of the flooding, the flood gates may not be able to be manually closed. Many roads in the service area are not passable from a minor amount of flooding including Booty Road, River Road, Honey Branch Road, Bill Dean Drive, Russell Creek Road, Lower Russell Creek Road, Trout Farm Road, and Riverside Drive. The Clinch River State Park's River Trail, Oxbow Lake Trail, Blue Bell Island Trail, Downtown Trail, AR Matthews Memorial Park are prone to flooding. Several ponds and dams in the service area need monitoring to ensure the safety of downstream buildings and property. This includes the following ponds/lakes: near Hidden Acres Road, near Highland Avenue, near Booty Drive, Oxbow Lake, and two ponds for the Dominion Virginia City Energy Center. Depending on the amount of flooding, this can impact the discharge of the wastewater treatment plant resulting in the discharge needing to be pumped out of the treatment plant. The



raw water intake is inaccessible during heavy flooding and could affect service if it were to be damaged during a flood event. Flash flooding events in the warmer months including late spring, summer, and early fall would have the possibility of impacting individuals who are on the Clinch River for recreation or fishing. Several businesses cater dropping individuals off at designated points for floating, fishing, kayaking, etc.

The Town of St. Paul participates in the National Flood Insurance Program (CID #515530) and the last FIRM map for the area was issued on 02/18/2011 ([FEMA, 2019](#)). St. Paul has no repetitive loss properties.

TABLE: NFIP Statistics for St. Paul				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
0	\$0	2	\$17,398.11	0

Dam Failure: There are two dams at the Dominion Virginia City Energy Center that could have a downstream effect on the Clinch River past the Town of St. Paul. Lake Bonaventure on the Clinch River is a freshwater dam that could experience flooding. Additionally, there are coal slurry ponds and other impoundments related to mining and coal preparation upstream from St. Paul. Should any of these impoundments fail, it could cause water contamination, flooding, or other damage in town. There is a power plant upstream with a drainage pond that failed in the 1970s, leading to the closure of the municipal water plan for several days. While that specific issue has been mitigated, similar problem areas exist outside of St. Paul.

Karst/Subsidence: Some areas of Wise County are susceptible to karst sinkholes, but this is a low-risk event for the Town of St. Paul. Sinkhole events have been small and infrequent in St. Paul.

Landslide: Most St. Paul residents live either on or below a steep slope, mountain, or hillside. This geography leaves much of the town at risk to direct or indirect impacts of landslide events, especially from impacted roadways. The most significant landslide risk is at the Third Avenue Bridge above Wise Street / Route 63. This area is prone to rockslides and has left the Virginia Department of Transportation cleaning up multiple slides and evaluating/reevaluating actions that they need to take to protect the bridge. A landslide or rockslide in this area has the potential to take out this bridge impacting access to multiple homes and the Spearhead Trail system. Individuals would need to take Longview Drive which is steep, has multiple switchbacks, and includes a 13" height restriction.

Non-Rotational Winds: Thunderstorm wind events occur occasionally in the Town of St. Paul with minimal structural damage. These events could significantly impact tourism and recreation near St. Paul, including visitors to Clinch River State Park and various users on the Clinch River. There is an RV Park in town that does not require tie-downs and anchors like a traditional mobile home park. Wise County is responsible for opening emergency shelters in town.

Tornado: Due to the infrequent nature of a tornado event, many commercial and residential structures are not adequately prepared for the impact of an event. Mobile homes are required to have tie-downs and anchors, although older homes may not be in compliance. In the case of a significant tornado event, St. Paul residents have limited access to trauma centers, and first responders may be overwhelmed until mutual aid resources could arrive. Limited EMS resources across the region result in significant wait and travel times to access emergency care



services. There is one tornado siren in town to warn residents, and St. Paul participates in the Wise County CodeRed weather warning system. St. Paul is exploring using a new fire department building as an emergency tornado shelter with emergency generator capability, with the design phase underway.

Wildfire: The Town of St. Paul includes residential areas located on or near the wildland-urban interface (WUI). These homes would be at greater risk of a wildfire event, including subdivision at Gray Hill, West Hills, and surrounding areas. Additionally, Clinch River State Park and other trail areas are in mountainous and remote locations where wildfires could begin. Wildfire evacuation from the Town could be complex due to dead-end streets that are surrounded by forest on both sides. The St. Paul Fire Department does not currently have a wildland fire apparatus to access and respond to fires in these remote locations. St. Paul worked with the U.S. Forest Service to create a WUI Plan in 2015 but did not qualify for funding at that time. St. Paul and Wise County recently updated the zoning ordinance to include cut-back requirements.

Winter Storm: Winter storms commonly impact the Town of St. Paul and Wise County. US-58 is a critical roadway that, if closed due to heavy snow, can cripple the Town. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. Additionally, the closest hospitals (Norton or Lebanon, VA) could be less accessible due to impacted roadways for EMS responders during winter storm events. The closest Level 1 Trauma Center is in Johnson City, TN, requiring a round-trip of four hours during normal conditions, which would be significantly increased during a winter storm event. A regional winter storm event could overwhelm regional resources and limit faster response options such as medical air transport, leaving St. Paul with limited emergency care options. St. Paul has back-up generators for its water plant and wastewater plant, but not for outlying pump stations that may be impacted during a storm.



4.7.3.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact—Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in St. Paul.

TABLE: Population Exposed Ranking for St. Paul			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	Medium	2	6
Karst/Subsidence	Low	1	3
Landslide	Medium	2	6
Non-Rotational Winds	High	3	9
Tornado	High	3	9
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for St. Paul		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	Medium	2
Tornado	High	3
Wildfire	Medium	2
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for St. Paul			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	Medium	2	4
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for St. Paul		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Low	1
Dam Failure	Low	1
Karst/Subsidence	No Impact	0
Landslide	Medium	2
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for St. Paul			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	Medium	2	6
Karst/Subsidence	Unlikely	0	0
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Low	1	3

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event is likely to occur within 100 years (Probability Factor = 1)
- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)



Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Low	1
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Medium	2
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in St. Paul.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	16	48	2	Medium
Non-Rotational Winds	3	14	42	3 (tie)	Medium
Communicable Disease	2	21	42	3 (tie)	Medium
Landslide	2	17	34	5	Medium
Wildfire	2	16	32	6	Medium
Earthquake	1	24	24	7 (tie)	Low
Tornado	1	24	24	7 (tie)	Low
Dam Failure	1	19	19	9	Low
Drought	1	14	14	10	Low
Karst/Subsidence	1	6	6	11	Low



4.7.3.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Wise County has adopted a building code and established an Inspections Office to carry out its building functions.
Zoning Ordinance	Yes	-	-	The combined Zoning, Subdivision, and Floodplain Ordinance was adopted in 2011 and is administered and enforced by a part-time Building & Zoning Officer.
Subdivisions	Yes	-	-	
Stormwater Management	Yes	-	-	St. Paul adopted a Floodplain Ordinance in 2011, and the Public Works Department manages stormwater infrastructure.
Post Disaster Recovery	-	Yes	-	
Growth Management	Yes	Yes	-	Wise County Economic and Industrial Development provides growth management and economic development planning for the County. St. Paul also manages a local Economic Development Authority.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	St. Paul Planning Commission adopted its most recent comprehensive plan in 2017.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	St. Paul relies on the support of the LENOWISCO Planning District and the Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	St. Paul is supported by the Wise County Critical Incident Command Team. Wise County's Emergency Operations Plan was last updated in May 2017.
Community Wildfire Protection Plan	Yes	-	-	St. Paul developed a Wildland-Urban Interface Plan in 2015 in coordination with the U.S. Forest Service.



Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	

TABLE: Administrative and Technical Capability		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Under Contract
Engineers or professionals trained in building or infrastructure construction practices	Yes	Under Contract
Planners or engineers with an understanding of natural hazards	Yes	Under Contract
Surveyors	Yes	Under Contract
Personnel skilled or trained in GIS applications	Yes, County	Wise County Geographic Information Officer
Emergency manager	Yes	Public Works, Fire
Grant writers	Yes	Under Contract, including with LENOWISCO Planning District

TABLE: National Flood Insurance Program (NFIP) Compliance	
What department is responsible for floodplain management in your jurisdiction?	Public Works and County (building inspectors)
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: Community Classifications			
	Participating?	Classification	Date Classified
NFIP	Yes	515530	12/04/1970
Community Rating System	No		
Building Code Effectiveness Grading Schedule	No		
Public Protection/ISO	Yes	5	2020
StormReady	No		
Tree City USA	No		



THIS PAGE IS INTENTIONALLY LEFT BLANK



4.7.3.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: St. Paul New Mitigation Strategies								
Actions #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	All-Hazard	Initiate the licensing of the Town of St. Paul Fire Department as an EMS agency to reduce the reliance on neighboring jurisdictions.	Town of St. Paul	St. Paul Fire Department	VDH	1 - Protection 3 - Plans & Policies 4 - Whole Community
2	New	In Progress	All-Hazard	Incorporate emergency shelter designation and back-up generator capacity into the design of the new St. Paul Fire Department.	Town of St. Paul	Fire Department	Emergency Management	1 - Protection 3 - Plans & Policies 4 - Whole Community
3	New	Not Started	Drought Dam Failure	Ensure adequate back-up potable water supplies to supplement municipal water sources and protect from potential coal slurry contamination through 1) the scope, cost estimate, and installation of a new water intake on the Clinch River, and 2) purchasing water hauling trucks.	Town of St. Paul	Public Works	Emergency Management	1 - Protection 4 - Whole Community



4	New	Not Started	Earthquake	Establish a contract for immediate replacement and/or repair of alternate parts for water and sewer systems in case of significant damage.	Town of St. Paul	Public Works	Emergency Management	2 - Mitigation 3 - Plans & Policies
5	New	Not Started	Earthquake Landslide	Determine structural and non-structural mitigation needs for ongoing and future damage to Third Avenue Bridge and nearby water line in partnership with VDOT.	Town of St. Paul	Public Works	VDOT	2 - Mitigation
6	New	Not Started	Flooding	Replace two aging flood gates (currently protecting Morgan McClure Ford and an apartment building) which no longer seal properly.	Town of St. Paul	Public Works	Floodplain Coordinator	2 - Mitigation
7	New	Not Started	Flooding	Replace the raw water intake on the Clinch River which is currently inaccessible and at-risk to service disruption during flooding events.	Town of St. Paul	Public Works	VDH, DWR	2 - Mitigation 4 - Whole Community
8	New	Not Started	Winter Storm	Ensure all outlying pump stations are equipped/wired for a portable generator; purchase a portable generator to ensure continued water service.	Town of St. Paul	Public Works	VDH	1 - Protection 4 - Whole Community



TABLE: St. Paul New Mitigation Actions							
Actions #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	Local funds	Medium	High	High	Short-Term	Research regulations and licensing requirements. Secure funding for improvements, training, and application process as needed.	27
2	Local funds	High	High	High	Short-Term	Research emergency shelter design requirements and applicable federal/state regulations. Incorporate findings into ongoing design phase. Seek funding for mitigation elements as needed. Apply for official shelter designation.	28
3	FEMA; Virginia DMME; Virginia DCR	Medium	Medium	Medium	Short-Term	Identify priority locations and water service vulnerabilities. Secure funding for storage tanks. Identify potential contractors for emergency water supply.	20
4	Local funds	Low	Medium	Low	Short-Term	Identify potential contractors for alternate parts. Develop and establish a contract. Seek funding as needed.	14
5	VDOT, USDOT, FHWA	High	High	High	Ongoing	Review historic data on landslide events affecting the bridge in partnership with VDOT. Determine priority mitigation actions. Determine authority responsible for improvements. Secure funding for projects as needed.	29
6	FEMA	Medium	Medium	Medium	Short-Term	Scope the project cost and design. Identify and secure funding.	25
7	FEMA	High	Medium	Medium	Short-Term	Scope the project cost and design. Identify and secure funding.	22
8	FEMA	High	Medium	Medium	Short-Term	Scope the project cost and design. Identify priority sites for initial improvements. Identify and secure funding as needed.	21

St. Paul does not have any completed or removed action items.



THIS PAGE IS INTENTIONALLY LEFT BLANK



4.7.5 Town of Wise

4.7.5.1 Community Profile

Wise is the county seat of Wise County, located in the center of the county just north of the City of Norton. The town is located at 2,450 feet in elevation, the highest in the county, and falls within the Cumberland Mountain section of the Appalachian Plateau province. Wise is surrounded by Indian Mountain and Guest Mountain. The Yellow and Glade Creeks converge in the center of town, contributing to a 100-year floodplain affecting many properties in both downtown and residential areas.

Wise is home to an estimated 3,047 as of [2018 American Community Survey 5-Year Estimates](#). This is a slight decline from the 2010 Census population estimate of 3,286. Population growth and decline in Wise tends to follow the growth and retraction of the coal mining industry, as with the rest of the county. The town's industry has shifted to professional services in recent decades, owing to the concentration of public and educational services for the county.

Wise, along with the county, experienced a population and economic "boom" after the emergence of the railroad to transport timber and coal products. The population grew rapidly into the early 20th century, and then followed a regular boom and bust cycle following the coal industry's growth and decline ([Wise Comprehensive Plan, p. 5](#)).

Community Facilities and Services

Public services in the Town of Wise includes wastewater services provided by the Coeburn-Norton-Wise Regional Wastewater Authority, a public water system centered on the Bear Creek Reservoir and Water Treatment Plant, a network of recreational facilities and parks, library services provided by Lonesome Pine Regional Library, and a network of public schools including Wise Primary School, L.F. Addington Middle School, and Wise County Career Technical Center. Wise is also home to the University of Virginia's College at Wise, the only four-year university in southwestern Virginia. A local police department, rescue squad, and volunteer fire department provide public safety services for Wise.

Sources: [Town of Wise Comprehensive Plan](#), [Wise County Comprehensive Plan](#)



4.7.5.2 Wise Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: Town of Wise Natural Hazard Events <i>Source: NOAA National Centers for Environmental Information Storm Events Database</i>				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Ice Storm, Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/16/2015	
Heavy Snow	A winter storm tracked through the area on the 16-17th with the atmosphere favorable for both heavy snow and thick ice. The highest peaks had up to 17 inches of snow while ice accumulations have up to an inch.		02/17/2015	
Heavy Snow	For the second time this month, the atmosphere was favorable in the production heavy snow with up to 19 inches reported.		02/21/2015	
Heavy Snow	An area of low pressured tracked through the region producing heavy snow across southwest Virginia. Even the lower elevations were blanked with snow.		02/26/2015	
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/04/2015	
Blizzard, Ice Storm	A deep moist southerly flow aloft continued for an extended period across the Southern Appalachian region March 4th and 5th. Problems ensued as this warm and humid air mass was undercut by an arctic intrusion throughout the day on March 5th. Lift was enhanced by a wave of low pressure riding northeast from the Deep South across the Southern Atlantic Coastal Plain. Considerable melting in the warm layer lead to a lengthy period of sleet and freezing rain until later in the day when the cold air was deep enough for the precipitation to fall entirely in the form of snow. Ice accumulation was greatest across the Cumberland Plateau and Southwest Virginia. Several inches of snow fell in the higher terrain across Southwest Virginia and Northeast Tennessee following the ice storm.		03/04/2015	
Thunderstorm Wind	A moderately unstable atmosphere developed across the region during the afternoon. Severe convection resulting in wind damage with limited hail production occurred just ahead of an outflow boundary that formed across the Ohio Valley earlier in the day.		06/21/2015	



Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	
High Wind	The main low-pressure system moved along a northeast path from the Central Plains through the Central Great Lakes with a lead frontal system moving across the Appalachians. A southeast 45 to 55-knot low-level jet crossed the higher terrain generating mountain waves along the foothills.		11/18/2015	
Heavy Snow	An arctic air mass moved over the Southern Appalachian region earlier in the week and a northerly flow maintained a rather frigid low-level atmosphere through the middle part of the week. Moderate to heavy snowfall occurred in an area along Interstate 40 and points north across the Cumberland Plateau, Northeast Tennessee, and Southwest Virginia during the afternoon through early evening hours. Snowfall amounts were generally in the 3 to 5-inch range, although some higher totals were seen on the Cumberland Plateau and across parts of Northeast Tennessee.		01/20/2016	
Heavy Snow	A strengthening low-pressure system moved northeast from the Lower Mississippi Valley across the Southern Appalachians with a modified Arctic air mass in place prior to the system's arrival. Temperatures were cold enough in this air mass that much of the precipitation that fell across southwest Virginia was in the form of snow. Winter storm warning criteria were easily met with around 8 to 12 inches of snow across Southwest Virginia. In some higher terrain areas, amounts topped out around 15 to 16 inches across the southwest corner of the state with about two feet in the High Knob region.		01/22/2016	
Heavy Snow	Sub-freezing air spilled south through the Eastern United States for a two day period of mainly orographic snowfall as several shorter wavelength systems dropped southeast out of the Northern Plains and Great Lakes. The snow accumulated to a depth of three to five inches on average, however, some greater snowfall totals occurred primarily in the highest terrain across Southwest Virginia and in the Smoky Mountains.		02/08/2016	
Heavy Snow	A moderate to strong upper-level system moved into the region generating heavy snowfall amounts averaging 3 to 5 inches.		02/14/2016	
Hail	An upper trough with associated moderate instability moved across the Southern Appalachian Region generating thunderstorms that dropped mostly small hail in a few spots across Tennessee and Southwest Virginia.		03/14/2016	



Thunderstorm Wind	A few showers and thunderstorms developed in the unstable air mass ahead of a cold front during the afternoon. The convection became severe producing damaging wind across Central East Tennessee as well as a small part of Southwest Virginia.		05/12/2016	
Thunderstorm Wind	A few severe thunderstorms developed across Southwest Virginia in the vicinity of a weak stationary front. Strong convective gusts downed a few trees and there was one report of quarter-sized hail.		06/22/2016	
Thunderstorm Wind	Severe thunderstorms formed along an outflow boundary during the early afternoon across the Ohio Valley and this boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon into the evening hours. The storms moved into a weak to moderately unstable environment generating mostly wind damage.		06/23/2016	
Flash Flood	Summer convection produced flash flooding in Wise County.		07/27/2016	
Heavy Snow	Deep and moist air was lifted over a chilly air mass in place across the Southeastern United States as a low-pressure system moved northeast from the Central Gulf of Mexico through the Middle Atlantic Coast. Heavy snowfall occurred across the Southern Appalachian region northwest of the pressure system's path.		01/06/2017	
Flood	A 500 MB trough of low pressure moved into the central plains on the 20th and 21st and was associated with a surface front moving southeastward from the Ohio Valley into eastern Kentucky and middle Tennessee. This placed the upper Tennessee Valley in a warm and humid air mass, which aided in the generation of heavy rainfall and some severe storms on those days. The 500 MB trough then deepened into a closed low, while low pressure formed along the surface front and tracked from southern Arkansas on the 22nd to northern Georgia on the 23rd, by which time a surface trough extended from Chattanooga to southwestern Virginia. Upper-level divergence on the northeast side of the closed low and these surface boundaries contributed to additional heavy rains on the 22nd and 23rd.		04/22/2017	
Thunderstorm Wind	A lone thunderstorm produced some wind damage near Wise.		05/19/2017	
Thunderstorm Wind	A widespread convective event developed across the entire region ahead of an outflow boundary that shifted southeast out of the Ohio Valley. An unstable air mass and more than sufficient wind shear helped the storms strengthen generating damaging winds.		05/27/2017	



Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	
Heavy Snow	An area of low pressure moved across the Southern Appalachian Region producing higher elevation snowfall; mainly across Southwest Virginia and Extreme Northeast Tennessee. The snow began late Sunday night and tapered off to flurries on Tuesday in these higher terrain areas. Amounts were generally one to three inches however, at elevations around four to five thousand feet, highs were between four to six inches.		03/12/2018	
Hail	Thunderstorms developed ahead of an upper-level system and surface cold front during the evening hours. Several of these storms produced large hail and wind damage. Funnel clouds were reported as a discrete supercell thunderstorm that developed over Southeast Tennessee and moved into Southwest North Carolina. As this supercell moved into Monroe County, Tennessee, a weak tornado developed downing several trees and producing minor structural damage.		03/17/2018	
High Wind	Strong winds were generated across the higher terrain due to a strong pressure gradient between higher pressure east of the Appalachian crest and a deep low-pressure system over the Mid South.		04/23/2018	
Flash Flood	Deep moisture encroached upon the area from the Gulf of Mexico, where subtropical storm Alberto was developing. Scattered mainly diurnal convection produced isolated flooding.		05/26/2018	
Thunderstorm Wind	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Flash Flood	A few thunderstorms developed over the higher terrain producing some flooding and minor wind damage in an unstable atmosphere ahead of a squall line.		06/26/2018	
Heavy Snow	A strong low-pressure system moved eastward across the Gulf Coast on its way through the Carolinas. Deep moisture was lifted in the colder resident air mass across the Southern Appalachian region. This pattern resulted in heavy snowfall amounts in the range of five to ten inches with locally greater totals across Southwest Virginia and Northeast Tennessee.		12/09/2018	
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.		05/29/2019	



Thunderstorm Wind	An upper-level disturbance over the Ohio Valley moved over eastern Kentucky and southwest Virginia during the late afternoon producing a couple of severe thunderstorms.		08/20/2019	
Thunderstorm Wind	A strong cold front moved through the Southern Appalachians around midday impacting much of East Tennessee and Southwest Virginia resulting in widespread wind damage. The air mass in advance of the front was associated with only weak instability. However, the wind field was very strong with favorable directional shear in a small part of Northeast Tennessee and Southwest Virginia.		10/31/2019	

Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: Town of Wise Community Resilience Profile* <i>Source: American Community Survey 2018 Five-Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	502
Members of the community under 18 years old	442
Members of the community that identify as having disability status	756
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	338
Number of mobile homes in the community	397
Members of the community without health insurance	334
Occupied housing units with tenants without a vehicle	135
Housing units without heating fuel	--

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: Wise County, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Wise County were detected in April 2020, with positive case rates rising in the winter of 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. The local public health department has so far focused on vaccinating Emergency Medical Services personnel and other first responders. Assisted living facilities and nursing homes are some of the most vulnerable to communicable disease, including Heritage Hall of Wise, located just outside of the town limits. The Town of Wise has a significant and growing elderly population, with people over the age of 65 making up more than 16.5% of the population. Additionally, three prisons in Wise County (Camp 19, Wallens Ridge State Prison, and Red Onion State Prison), housing authority



complexes, and UVA College at Wise have all seen outbreaks of COVID-19 in 2020. Other local concerns include other strains of influenza, HIV, TB, and Hepatitis. The local health department offers annual flu vaccinations for all Town personnel. As the county seat, the Wise County Courthouse and Wise County Health Department are both located in the Town of Wise. Both facilities see more vulnerable populations, including individuals struggling with substance misuse. Local stakeholders note that needles are found more often and frequently in public spaces/restrooms and parks where children play and people gather. These facilities have been closed during the COVID-19 pandemic, and limited staffing resources prevent the Town from conducting increased sanitizing of public facilities.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. The Town of Wise relies on the Wise Reservoir for its municipal water source. A prolonged drought event could impact water supply and quality for the municipality and would require a new pump and control equipment. Historically, regional drought events have not had a significant local impact, and there is a back-up well in place.

Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. Wise County is at low risk to earthquake events. Several buildings in the historic part of Wise are over 100-years old, and may not meet current seismic standards. Wise County opens local school buildings and the fire department as emergency shelters. The shelter in Wise does not currently have a generator or the capacity for a portable generator to meet heating and A/C needs.

Flooding: The Town of Wise has two creeks, the Yellow Creek and Dotson Creek, that flow through town and converge at the middle and primary schools. Flash flooding is more frequent during the summer and fall months, and both creeks flow through residential neighborhoods, mobile home parks, school campuses, and business districts. During heavy rain events, the stormwater system cannot meet capacity, leading to flooding impacts at critical locations in town. Wise has also experienced flooding impacts to critical roadways, including damage to Yellow Creek Road/Railroad Avenue at School Avenue. The culvert infrastructure in this area is undersized for high-flow events. Wise has partnered with the Virginia Department of Emergency Management on property acquisition and demolition projects and has indicated some additional public interest in the program.

The Town of Wise participates in the National Flood Insurance Program (CID #510179) and the last FIRM map for the area was issued on 02/19/2011 ([FEMA, 2019](#)). Wise has a total of 11 repetitive loss (RL) properties with 17 losses that totaled \$286,456.71 in payments. Two of the losses were insured, with a total \$79,031.29 in payments.

TABLE: NFIP Statistics for Wise				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
23	\$4,015,200	47	\$385,207.37	4



Dam Failure: The Town of Wise manages the Bear Creek Dam at Wise Reservoir. This high hazard dam has an Emergency Action Plan and is state-regulated, according to the [National Dams Inventory](#). The potential dam inundation area is significant, and Wise completes a table-top exercise every six years and a drill once a year.

Karst/Subsidence: All of the Town of Wise is vulnerable to sinkholes, flooding, and settling due to both underground mining and surface mining (fill areas without proper compaction). Underground mines can also fill with water creating ground instability and swampy areas. Mines that fill with water can create flooding or drainage issues. To address such vulnerabilities, the Virginia Department of Mines, Minerals, and Energy (VMME) can install drainage systems, which require easements and local government maintenance. These projects increase the volume of water in the drainage system and subsequently increases creek volume. Runoff and drainage from mines are high in iron and can lead to environmental and agricultural impacts.

Landslide: Areas that have been surface-mined and improperly filled or cut are subject to landslide events, in addition to logging areas near the Town of Wise. The jurisdiction has identified two potential slide areas – both along frequently traveled roads (Birchfield Road and Lake Street). There has been some movement at Lake Street, which is maintained by the Town of Wise, and the high wall is beginning to degrade.

Non-Rotational Winds: The Town of Wise is most subject to occasional non-rotational wind damage along Main Street from October to mid-December, sometimes stretching into February. Historically these impacts included non-structural damages and blown over light poles. Wind events affect business districts, some residential areas, and several public gathering spaces. Wise has buried power lines along Main Street, but not in other impacted areas.

Tornado: There is no history of tornado events in the Town of Wise, but there have been impacts in other parts of Wise County. Residents do not have access to multiple mediums to receive weather warnings, such as an outdoor warning system. There are nearly 400 mobile homes in Wise, which would experience significant damages in a tornado event.

Wildfire: The Town of Wise has its own fire department and Forestry Commission but is not fully equipped to respond to complex or widespread fire events locally.

Winter Storm: The Town of Wise receives an average of more than 52 inches of snow annually, the highest of any place in Virginia. Both residents and businesses are vulnerable to damage from heavy snow and critical roadways are often impacted by winter storm events. Isolation or limited access to individuals experiencing medical emergencies due to blocked roadways is of significant concern, as Wise has a large elderly and disabled population. A reliance on VDOT has led to occasional road salt storage and supply issues. Additionally, overhead power lines serve the majority of residences and businesses, which may be damaged or downed in a heavy snowfall event.



4.7.5.3 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in the Town of Wise.

TABLE: Population Exposed Ranking for Wise			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	High	3	9
Dam Failure	Medium	2	6
Karst/Subsidence	Medium	2	6
Landslide	Low	1	3
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Wise		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	High	3
Dam Failure	High	3
Karst/Subsidence	High	3
Landslide	Low	1
Non-Rotational Winds	High	3
Tornado	Medium	2
Wildfire	Medium	2
Winter Storm	High	3

TABLE: Property Damages from Major Event Ranking for Wise	
---	--



Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	High	3	6
Flooding	Medium	2	4
Dam Failure	High	3	6
Karst/Subsidence	Low	1	2
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Wise		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	High	3
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	No Impact	0
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Wise			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Unlikely	0	0
Earthquake	High	3	9
Flooding	Low	1	3
Dam Failure	High	3	9
Karst/Subsidence	Unlikely	0	0
Landslide	Unlikely	0	0
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Medium	2	6

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)



- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Low	1
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	Medium	2
Landslide	Medium	2
Non-Rotational Winds	High	3
Tornado	Low	1
Wildfire	Low	1
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in the Town of Wise.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	24	72	1	High
Flooding	3	21	63	2	High
Non-Rotational Winds	3	15	45	3	Medium
Communicable Disease	2	21	42	4	Medium
Earthquake	1	30	30	5	Medium
Dam Failure	1	26	26	6	Medium
Karst/Subsidence	2	11	22	7	Low
Tornado	1	20	20	8	Low
Landslide	2	9	18	9	Low
Wildfire	1	16	16	10	Low
Drought	1	11	11	11	Low



4.7.5.4 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	-	Yes	-	Wise County has adopted a building code and established an Inspections Office to carry out its building functions.
Zonings	Yes	-	-	Wise adopted a zoning, subdivision, and floodplain ordinance in 1987 which was amended in 2009. Ordinances are administered by a full-time planner.
Subdivisions	Yes	-	-	
Stormwater Management	Yes	-	-	
Post Disaster Recovery	-	Yes	-	
Growth Management	-	Yes	-	Wise County Economic and Industrial Development provides growth management and economic development planning for the County.
Public Health and Safety	-	Yes	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	The Comprehensive Plan is reviewed every five years, and an updated version was under review during HMP development.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Wise relies on the support of the LENOWISCO Planning District and the Virginia Department of Transportation for transportation planning.
Response/Recovery Planning				
Comprehensive Emergency Management Plan	-	Yes	-	Wise is supported by the Wise County Critical Incident Command Team. Wise County's Emergency Operations Plan was last updated in May 2017.
Community Wildfire Protection Plan	-	-	-	
Post-Disaster Recovery Plan	-	Yes, as needed	-	In the event of a Federally declared disaster, the County will develop a recovery plan.
Continuity of Operations Plan	-	-	-	



TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Town Planner
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering firm under contract; Town Planner
Planners or engineers with an understanding of natural hazards	Yes	Town Planner
Surveyors	No	Town Planner
Personnel skilled or trained in GIS applications	Yes	Town Planner
Emergency manager	Yes	Town Manager; County Emergency Operations Coordinator
Grant writers	Yes	Town Planner

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE	
What department is responsible for floodplain management in your jurisdiction?	Planning and Zoning
Are any certified floodplain managers on staff in your jurisdiction?	No
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	No, outdated
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, floodplain management training and staff
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	Classification	Date Classified
NFIP	Yes	510179	04/15/1981
Community Rating System	No		
Building Code Effectiveness Grading Schedule	County	3 Residential; 3 Commercial	2018
Public Protection/ISO	Yes		
StormReady	No		
Tree City USA	No		



4.7.5.5 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: Wise New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	Not Started	Communicable Disease	Establish a mutual support agreement for contracted services (increased sanitation, etc.) during a declared pandemic.	Town of Wise	Wise County Health Department	VDH	1 - Protection
2	New	Not Started	Dam Failure	Install an outdoor warning system for residents within the Bear Creek Dam / Wise Reservoir inundation area.	Town of Wise	Emergency Management	DCR, USACE	1 - Protection
3	New	Not Started	Dam Failure Drought	Conduct a project scope to purchase and install a new pump and control equipment for the back-up well to the Wise Municipal Water Source.	Town of Wise	Wise County Public Service Authority	VDH, DWR	2 - Mitigation



4	New	Not Started	Flooding	Initiate improvements and repairs to culvert, road damages, and storm drainage infrastructure at Yellow Creek/Railroad Avenue and School Avenue.	Town of Wise	Public Works	VDOT, VDEM, Army Corps, BCR	2 - Mitigation
5	New	Not Started	Landslide	Repair the high wall on Lake Street and enhance structural protections to prevent damages to the roadway from future landslides.	Town of Wise	Public Works	VDOT	3 - Policies & Plans
6	New	Not Started	Wildfire	Secure a new apparatus for the local fire department that can respond to wildfire/grassfire events, as well as additional protective equipment.	Town of Wise	Wise Fire Department	Town Administrator/Clerk	1 - Protection
7	New	Not Started	Winter Storm	Construct a salt storage facility to improve critical roadway access and reduce supply issues.	Town of Wise	Public Works	VDOT	1 - Protection



TABLE: Wise New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	Local funds	Low	Low	Medium	Short-Term	Wise County and the Town of Wise will establish a mutual support agreement and grant funding to support contracted services such as increased sanitation and cleaning of buildings and other facilities. This will require identifying potential contractors, securing funding, and identifying priority needs for services based on lessons learned from the COVID-19 pandemic.	19
2	Virginia DCR, FEMA	Medium	High	Medium	Short-Term	Develop a project scope based on the inundation area that includes the number and type of signals/structures. Secure funding. Install warning system. Conduct an outreach and awareness campaign to notify residents of the new system.	23
3	FEMA	Low	Medium	Medium	Short-Term	Seek funding and assistance.	22
4	FEMA, VDOT	High	High	Medium	Short-Term	Conduct a project scope, cost and design assessment. Seek funding and assistance.	23
5	VDOT, USDOT, FHWA, USFS, VA DOF	High	High	Medium	Short-Term	Review historic data on landslide events affecting the roadway in partnership with VDOT. Determine possible mitigation actions. Determine authority responsible for improvements. Secure funding for projects as needed.	24



6	U.S. Fire Administration, USFS, VA Department of Forestry	High	Medium	Medium	Short-Term	Complete an assessment of equipment costs. Secure funding for the purchase.	26
7	VDOT, USDOT, FHWA	High	Medium	Low	Long-Term	Assess capacity and design needs. Scope alternatives and costs. Secure funding for purchase.	14

TABLE: Wise Completed or Removed Mitigation Actions

Status	Mitigation Action/Strategy	Applicable Jurisdiction	Reasoning
Completed	Potential residential acquisition project(s) in flood-prone areas.	Town of Wise	Since the 2013 plan, several acquisition projects occurred. Exact dates of acquisition were not recorded and a past mitigation action under the District was updated to include better tracking of acquisition projects. The town identifies the need for better drainage and improved culverts as the primary mitigation actions necessary to continue to enhance the town's resilience from flooding.



4.7.6 Town of Appalachia

Appalachia is an incorporated town in Wise County, with an estimated population of 1,469 according to the [2018 American Community Survey \(ACS\) 5-Year Estimates](#). The town encompasses 02.3 square miles and is surrounded by coal camp communities. Appalachia is located just north of Big Stone Gap and near the Kentucky-Virginia border.

Appalachia participates in the National Flood Insurance Program (CID #510319) and the last FIRM map for the area was issued on 02/18/11 ([FEMA, 2019](#)). Appalachia has one total repetitive loss (RL) structure with two total losses. Neither loss was insured, and payments totaled \$6,030.

TABLE: NFIP Statistics for Appalachia				
No. Policies	Total Coverage	Total Claims Since 1978	Total Paid Since 1978	Substantial Damaged Claims Since 1978
14	\$884,200	12	\$22,935.44	0

The Town of Appalachia did not participate in the 2021 plan update, as discussed in Section 1.4.2 of the HMP. Appalachia representatives did not participate in the 2013 plan update.



THIS PAGE IS INTENTIONALLY LEFT BLANK



City of Norton

Hazard Mitigation Annex

LENOWISCO Planning District
2021 Hazard Mitigation Plan Update





Section 5 City of Norton Hazard Mitigation Annex

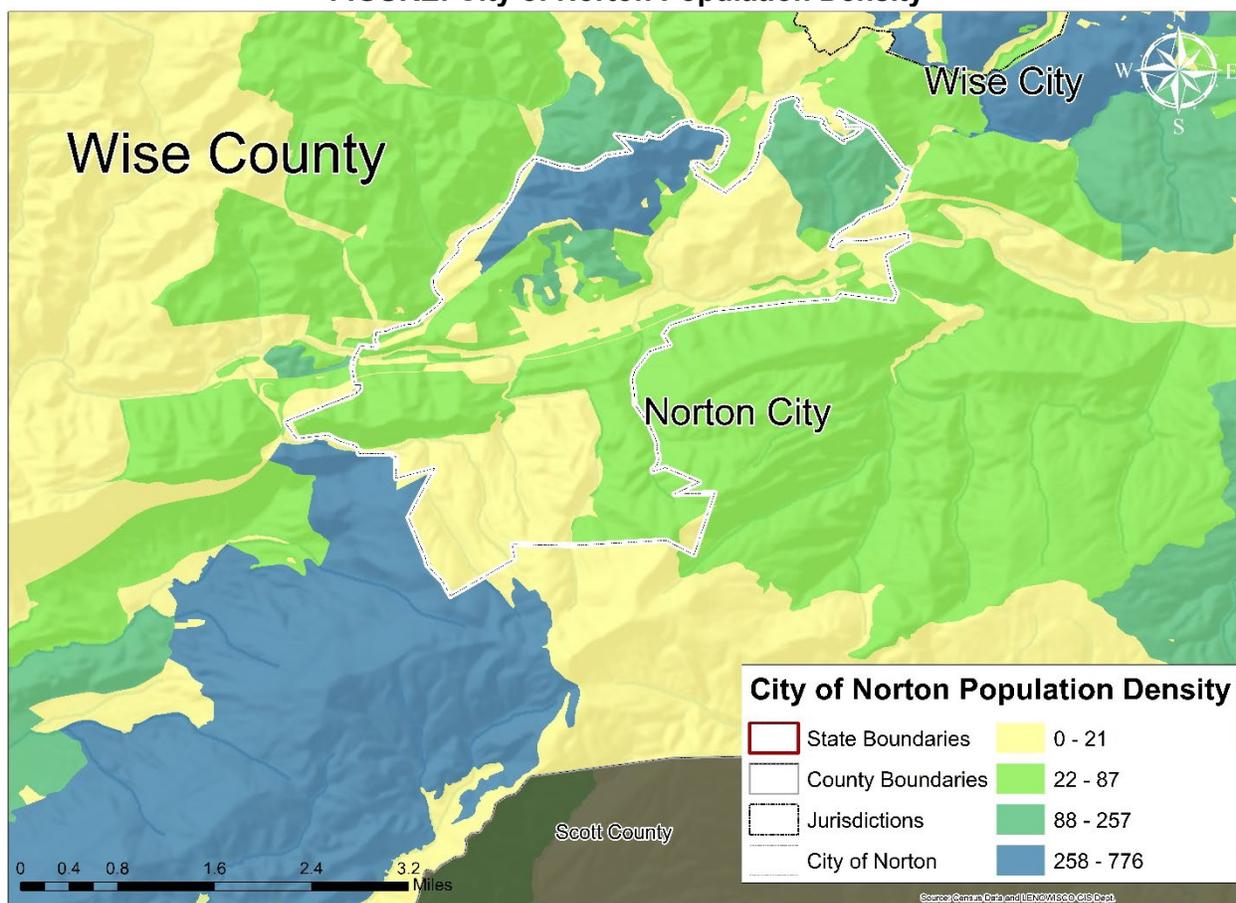
5.1 Community Profile

The City of Norton is the only independent city located within the LENOWISCO Planning District, as well as the smallest city in Virginia. Norton sits within the Cumberland Mountain section of the Appalachian Plateau, located at 2,135 feet in elevation. U.S. Alternative Route 58 / Route 23 crosses through Norton, serving as the primary transportation corridor. Both the Guest River and Powell River pass through the city.

Population

The estimated population of Norton is 3,990 and is generally younger than the LENOWISCO Planning District as a whole, with a median age of 37.3 years according to the [2018 American Community Survey 5-Year Estimates](#). The population is projected to modestly decline through 2040 ([Demographics Research Group, UVA Weldon Cooper Center](#)). Since it was chartered in 1954, the peak population for Norton was 5,013 according to the 1960 Census estimate. Since then, the population has followed the boom and bust cycles associated with the regional coal mining industry and steadily declining through 2020. The following map illustrates population densities across Norton.

FIGURE: City of Norton Population Density





Land Use

The 2020 Norton Comprehensive Plan update was underway during the development of this Hazard Mitigation Plan. The [2003 City of Norton Comprehensive Plan](#) does not include a thorough analysis of development trends and restrictions, but many topographic elements mirror the conditions of Wise County as a whole. The elements are important to understand for hazard mitigation and include:

- Excessive slopes of more than 20% are unsuitable for development
- Incorporated areas have limited land with soil suitable for development that is currently served by public sewer services
- No future development is allowed within identified floodways
- Significant areas are not available for development due to underlying mineral ownership by coal and resource development companies
- Any previously mined or disturbed land can be at risk of subsidence

Given these land use trends and development restrictions, Norton has very little developable land available. A full description of development and land use patterns in Norton is included in section 1.5.7.

Climate

Norton has mild winters and warm summers, with temperatures ranging between mountains and valleys. The county receives an annual average of 45-50 inches of precipitation, making it one of the wettest regions in the country. Snow depths typically reach 30 inches annually, but severe winter storms can produce snowfall from 41-68 inches. Flooding occurs annually in streams across the county, with roughly 50% of rain falling during the growing season each year and 75% of flooding between December and March.

Economy

Coal mining was the central industry of Norton and Wise County for much of the 20th century. Like much of the region, the local industry has shifted from mining and manufacturing to government (27.1% of employment), health care and social assistance (17.7%), and retail trade (17.2%) ([Virginia Economic Development Partnership, 2018](#)). Norton residents had a median household income of \$28,071, significantly lower than Wise County or the LENOWISCO Planning District as a whole ([2018 American Community Survey 5-Year Estimates](#)). Norton's Industrial Development Authority leads local economic development projects, including the conversion of the historic Norton Hotel and efforts to boost the local outdoor tourism and recreation industry. Norton serves as the commercial, healthcare, and services center for the county.

Community Facilities and Services

Public services in Norton include solid waste collection and disposal, municipal water service, wastewater service through the Coeburn-Norton-Wise Regional Wastewater Authority, a network of public parks and recreational facilities including Norton Community Center, and an independent high school and elementary school. The City of Norton has a police department, fire department, and rescue squad that provide public safety services.



Healthcare Facilities

Major healthcare and hospital facilities in Norton include Norton Community Hospital with 129 patient beds, and Southwest Virginia Regional Cancer Treatment Center. Mountain View Regional Medical Center was converted into a long-term care facility with plans for in-patient rehabilitation services. Fresenius Kidney Care Dialysis Center is a regional dialysis facility located in Norton.

Fiscal Capability

Norton has limited fiscal capability to implement hazard mitigation strategies. The Fiscal Year 2020-2021 budget proposes a total general fund of just over \$10 million. Of this, approximately 26% is allocated to public safety and 20% to public works. Just 1% (about \$111,000) is allocated to planning and development. The City of Norton receives most of its revenues through general property taxes and local taxes, with some categorical aid through restricted intergovernmental contributions (federal and state pass-through dollars). The City has limited funding streams to provide the local match for existing hazard mitigation grant programs ([2020-21 Approved Budget](#)).

Staff and Organizational Capability

The City of Norton has limited staff and organizational capability to implement hazard mitigation strategies. The City is administered by a council-manager form of government with a five-person City Council. The Council is elected to staggered four-year terms. The City Manager oversees the day to-day operations of the city government.

The City Manager, who is hired by the Council, acts on their behalf, and manages the various City departments. More specifically, the City Manager directs and supervises the administration of all city offices, boards, commissions, and agencies under the general direction and control of the Board. Responsibilities include:

- Development of the annual budget
- Coordination of public relations programs
- Provision of administrative services to the City
- Administration of equal employment opportunity and affirmative action policies and programs
- Human Resource Management and Payroll
- Risk Management
- Facilities Management
- Several delegated programs

The City has several professional staff departments to serve the residents of the community and to carry out day-to-day administrative activities. These include the following:

- Building Inspection and Zoning
- General Government and Administration (Finance, Registrar, City Manager's Office, etc.)
- Emergency Management
- Parks and Recreation
- Public Safety (Emergency Management, Fire Department, Police Department, and City Sheriff's Office)



- Public Works
- Public Utilities (CNW Sewer Authority, Water Treatment Plant)
- Social Services

There are also 14 local boards and commissions which provide administrative support to the city departments and City Council.

Of the above departments and offices, the Public Works Department and Building Inspection and Zoning Department have responsibilities to carry out mitigation activities or hazard control tasks.

- The Public Works Department is responsible for the engineering, mapping of drainage issues and natural hazards.
- The Building Inspection and Zoning Department enforces the National Flood Insurance Program requirements and other applicable local ordinances. It also houses the City's geographic information systems (GIS). The department is also responsible for addressing land use planning, as well as, developing mitigation strategies.

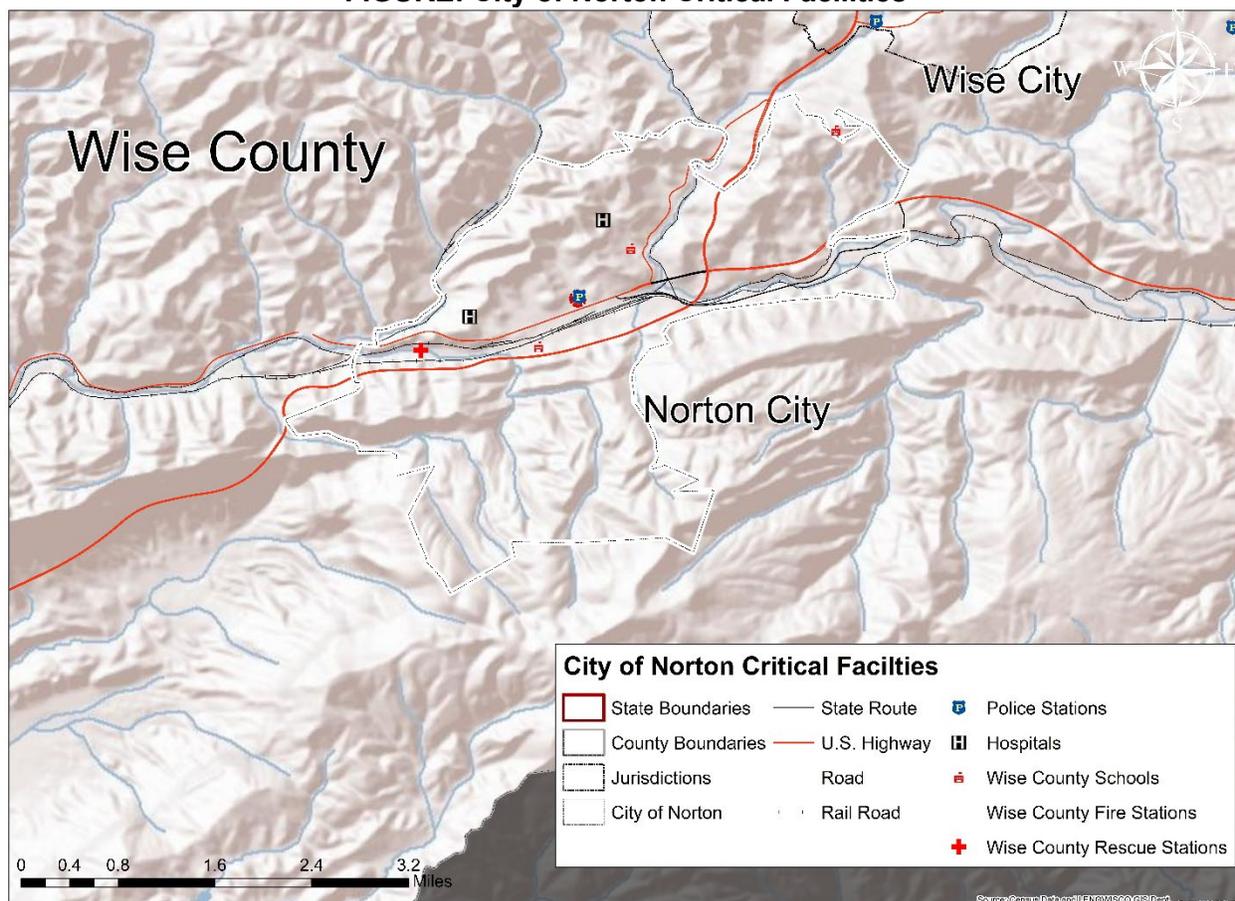


5.2 Critical Facilities

The table and map below include critical facilities in Norton as defined by the LENOWISCO Planning District, including roadways, school buildings, fire rescue stations, healthcare facilities, and police stations. Two healthcare facilities, Fresenius Kidney Care Dialysis Center and Southwest Virginia Regional Cancer Treatment Center, were added as critical facilities at the end of plan development. Those facilities are not depicted in the map below or in the following hazard analysis. Neither facility is in the 100-year or 500-year floodplain, and both experience consistent seismic and landslide risk to the rest of the City of Norton, as depicted in later maps.

TABLE: Critical Facilities in Norton		
Type	Name	Address
School	J.I. Burton High School	109 11th St, Norton, VA 24273
School	Norton Elementary School	205 Park Avenue Northeast, Norton, VA 24273
Fire Station	Norton Fire District	618 Virginia Avenue NW, Norton, VA 24273
Rescue Squad	Norton Rescue Squad	1710 Main Ave. SW, Norton, VA 24273
Police Department	Norton City Police Department	618 Virginia Ave. NW, Norton, VA 24273
Healthcare	Norton Community Hospital	100 15th St. NW, Norton, VA 24273
Healthcare	Mountain View Regional Medical Center	310 3rd St. NE, Norton, VA 24273
Healthcare	Fresenius Kidney Care Dialysis Center	340 Anderson Hollow Road, Suite 100, Norton, VA 24273
Healthcare	Southwest Virginia Regional Cancer Treatment Center	671 US-58 Alt., Norton, VA 24273

FIGURE: City of Norton Critical Facilities





THIS PAGE IS INTENTIONALLY LEFT BLANK



5.3 Natural Hazard Event History

The Natural Hazard Events Table lists all past occurrences of natural hazards within the jurisdiction.

TABLE: City of Norton Natural Hazard Events				
Source: NOAA National Centers for Environmental Information Storm Events Database				
Type of Event	Description	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.	-	03/04/2015	\$8,000
Flood	An unusually deep snowpack across southwest Virginia underwent melting from warming temperatures and from liquid rain falling upon it. Flooding in low-lying areas, streams, and rivers resulted and became widespread.		03/05/2015	\$30,000
Thunderstorm Wind	A bowing line of severe convection in association with an outflow boundary moved southeast across Southwest Virginia and Northeast Tennessee during the late afternoon through early evening hours. Atmospheric shear was more than adequate along with moderate to high instability. Widespread wind damage occurred during this event.		07/13/2015	
Flash Flood	Slow-moving summertime afternoon thunderstorms produced two inches or more of rainfall, resulting in flash flooding.		08/08/2016	\$3,000
Flood	At 500 MB, a strong western Atlantic high-pressure ridge and a deep low-pressure trough over the High Plains were denoted at the surface by a slow-moving cold front over the Mississippi and Ohio River valleys. This resulted in unseasonably warm and humid conditions across east Tennessee and southwest Virginia, and widespread heavy rains.		02/10/2018	\$5,000
Thunderstorm Wind	A few severe thunderstorms formed across Southwest Virginia as the tail end of a convective complex drifted southeast across the Southern Appalachian Region. Sufficient shear and a moderately unstable environment aided the development of the storms.		05/29/2019	



Community Data to Utilize to Enhance Whole Community Resilience

To prepare mitigation efforts that consider the whole community, jurisdiction-specific nuances must be understood, and key factors are highlighted below:

TABLE: City of Norton Community Resilience Profile*	
Source: <i>American Community Survey 2018 Five Year Estimates</i>	
Factors	Number in Community
Members of the community over 65 years old	689
Members of the community under 18 years old	923
Members of the community that identify as having disability status	929
Members of the community that speak English less than "very well"	--
Members of the community living below the poverty line	1,155
Number of mobile homes in the community	309
Members of the community without health insurance	397
Occupied housing units with tenants without a vehicle	224
Housing units without heating fuel	24

** It is important to note that American Community Survey (ACS) estimates have a significant margin of error for smaller jurisdictions due to survey sample size limitations. This is especially true for very narrow community groups (i.e. housing units without heating fuel, etc.). ACS data was confirmed with local stakeholders to reach the best possible population estimates.*

Jurisdiction-Specific Hazards and Impacts

Hazards that represent a Planning District risk are addressed in the 2020 LENOWISCO Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are relevant and unique to the municipality. Hazard rankings for each jurisdiction were determined in **Section 1.6.2** of this plan and are noted where relevant in the summary below.

Communicable Disease: The City of Norton, like much of the United States, has been impacted by COVID-19. The first cases of COVID-19 in Norton were detected in April 2020 ([Virginia Department of Health](#)). Vaccination is underway and is expected to be available to the public in 2021. People over the age of 65 makeup about 17% of the population of Norton and have been found to be more at-risk to severe illness from COVID-19. Additionally, Norton residents have limited access to emergency healthcare services, with only one emergency facility in the community, with the next facility about 15 miles away. Those with limited transportation and access to healthcare may be more vulnerable to a communicable disease outbreak or public health emergency. There is one nursing home in Norton, operated by Mountain View Regional Hospital, as well as an assisted living facility and a homeless shelter. These congregate living facilities are more vulnerable to communicable disease outbreaks. Additionally, Norton is home to the regional dialysis center, Fresenius Kidney Care Mountain Empire, serving vulnerable residents who rely on ready and uninterrupted access to dialysis services. The City of Norton participates in the LENOWISCO Health District pandemic plan.

Dam Failure: There are two dams in the City of Norton which could cause catastrophic damage and loss of life should they fail, the Lower Norton Reservoir Dam and Upper Norton Reservoir Dam. According to the [National Dams Inventory](#), both dams have an Emergency Action Plan and inundation study (July 2015) and are state-regulated. Both dams are considered Class I High Hazard dams by the Commonwealth of Virginia in the 2018 Hazard Mitigation Plan, meaning that "failure will cause probable loss of life or serious economic damage (to buildings,



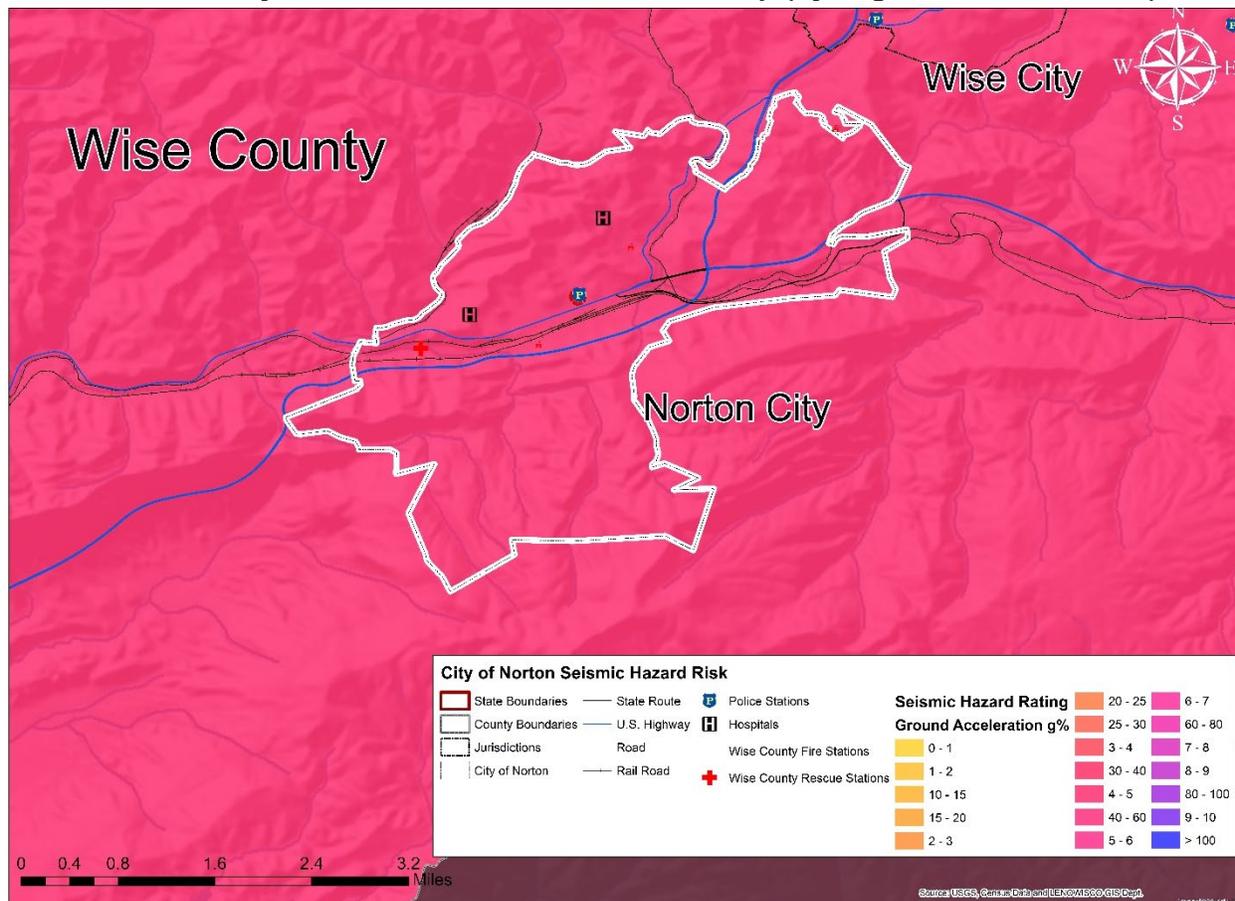
facilities, major roadways, etc.)" There are some leaks in the lower dam that have been approved for repair through an engineering study. The City currently uses CodeRed as its public warning system, including for residents living in the dam inundation area, in partnership with Wise County. Funding for this program is set to expire in 2021. Additionally, numerous coal slurry ponds remain on the Powell River and Guest River. Virginia Department of Conservation and Recreation (DCR) has issued permits for a number of ponds, but many remained unpermitted or unknown by DCR.

Drought: According to the [National Drought Mitigation Center](#), droughts originate from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought in each location is the result of a significant decrease in water supply relative to what is normal in that area. Wise County relies on a network of reservoirs that serve as the municipal water source for several jurisdictions, and Norton has a limited drinking water supply itself through the Norton Reservoir. The City is connected with the Wise County Public Service Authority (PSA) and the Town of Big Stone Gap to supplement the drinking water supply. Norton and Big Stone Gap regularly rely on their interconnect to support water needs in both communities. The Big Stone Gap water supply is also connected to Lee County and Scott County, allowing for regional water transfers. A prolonged drought event could impact water supply and quality for Norton as well as neighboring communities, especially those communities that rely on surface water from rivers. The Wise County PSA and City of Norton conduct an annual drought plan exercise. The Pepsi-Cola Bottling Company has operations in Norton, relying on Norton and Big Stone Gap water supplies.



Earthquake: The [U.S. Geological Survey \(USGS\)](#) defines earthquakes as ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth. Wise County is at low-risk to earthquake events, but due to its population density, the City of Norton has a low to moderate risk. There is a significant concern in Norton due to underground mining operations in and around the city. These mines regularly cause subsidence issues, but an earthquake event could exacerbate existing conditions. Damage to the local or regional transportation network from an earthquake event would significantly impact the supply chain. The figure below illustrates seismic risk for City of Norton by ground acceleration.

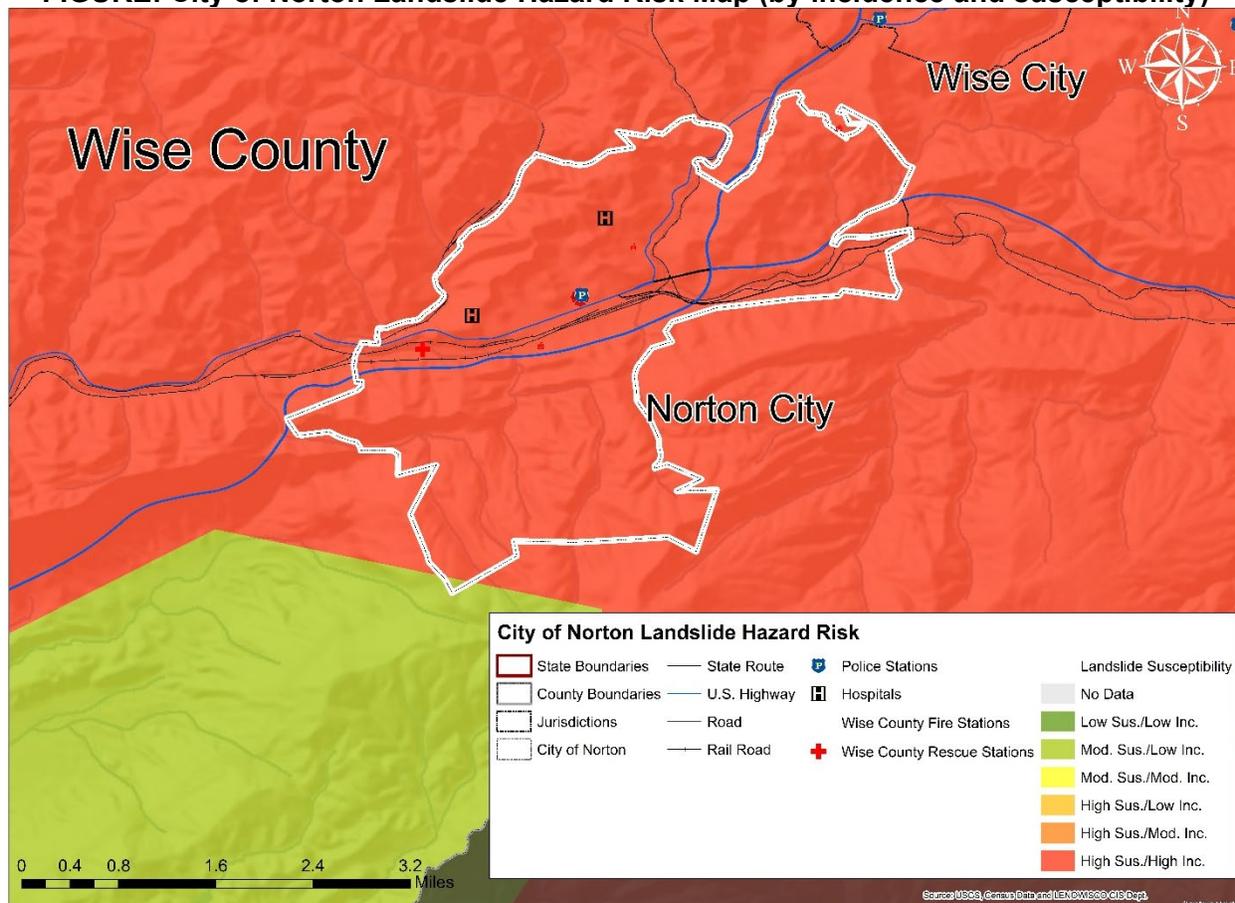
FIGURE: City of Norton Seismic Hazard Risk Map (by % ground acceleration)





Landslide: Landslides are a common occurrence in and around Norton, with most issues outside of the city in Wise County. Transportation routes in and out of the City are most vulnerable to landslide events, including Highway 23, Highway 58, and Business 58. The Virginia Department of Transportation is typically responsible for identifying and mitigating at-risk areas, including the recent mitigation of a slide on Highway 23 within Norton. Landslides and rockslides affect Norton on an annual basis, but many are in Wise County rather than within city limits. As illustrated in the map below, the entirety of the City of Norton is considered to have high susceptibility and high incidence of landslide events.

FIGURE: City of Norton Landslide Hazard Risk Map (by incidence and susceptibility)



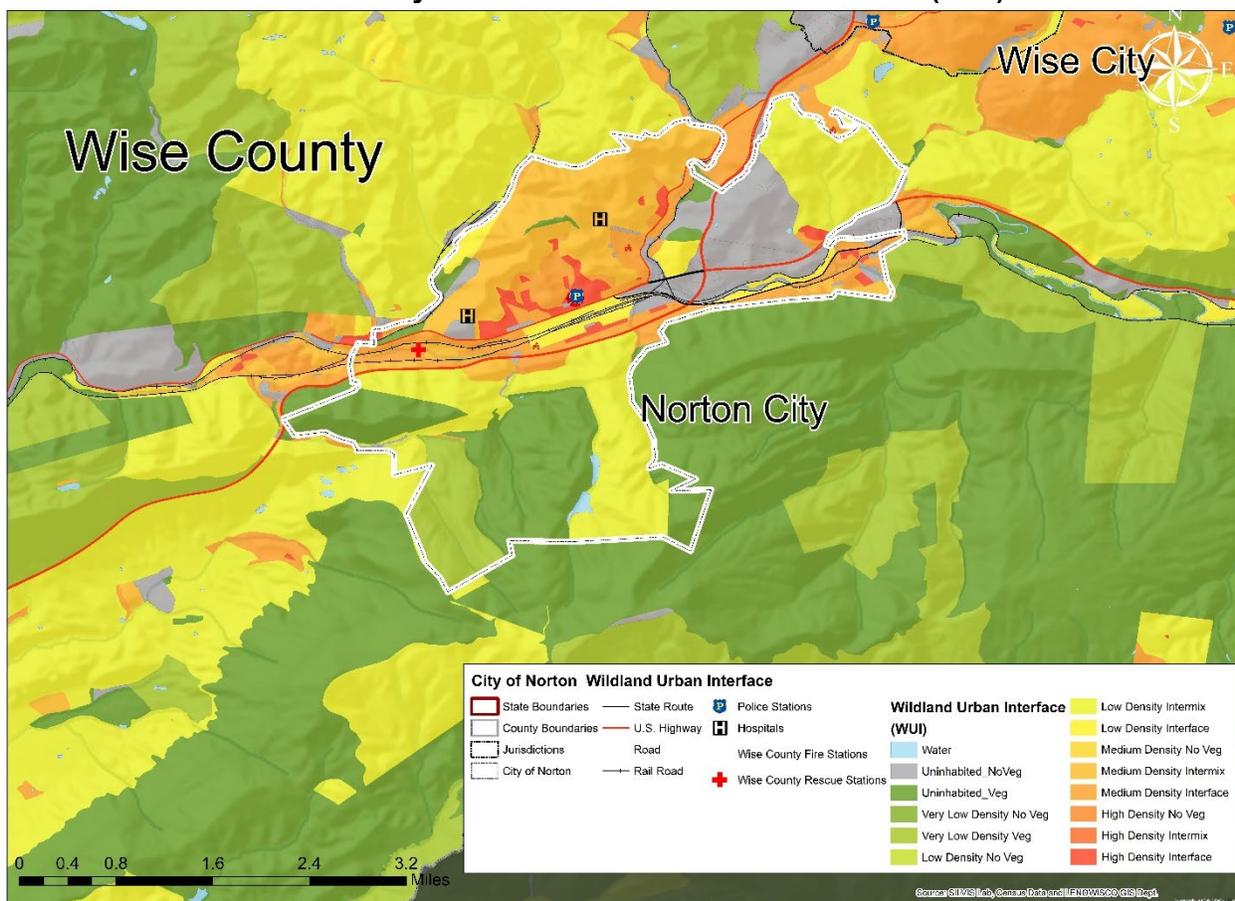
Non-Rotational Winds: Thunderstorm wind events occur occasionally in the City of Norton, and there has been some structural damage in the past. The city building code requires mobile homes to have tie-downs and anchors, but the mobile home parks do not currently have shelter buildings available.

Tornado: There is no history of tornado events in the City of Norton, but there have been impacts in other parts of Wise County. Norton historically relied on the high school to serve as a shelter facility during tornado events but discontinued the practice because the building is not officially designated as a tornado-safe facility. Residents rely on CodeRed or the National Weather Service for severe weather warnings.



Wildfire: The City of Norton includes residential areas located on or near the wildland-urban interface. These homes would be at greater risk of a wildfire event. Norton does participate in the FireWise program but has not yet generated significant resident interest. Neither Norton nor Wise County has a Community Wildfire Protection Plan. The City of Norton has its own fire department, which has some training or protective equipment for wildland fires. The map below illustrates the Wildland-Urban Interface density for City of Norton, with medium to high density interface in the northern part of the city, as well as along the highway.

FIGURE: City of Norton Wildland-Urban Interface (WUI)



Winter Storm: Winter storms commonly impact the City of Norton and Wise County. US-58 and US-23 are critical roadways that, if closed due to heavy snow, can cripple Norton. Road closures would limit the movement of emergency responders, utility repair, or supply delivery. These primary roadways must remain clear and open during weather events or disasters. Additionally, power disruptions from winter storm events have sometimes taken days or weeks to restore. Isolation or limited access to individuals experiencing medical emergencies due to blocked roadways is of significant concern. There has been some structural damage from winter storms in the past, including damage to residential buildings. The Norton Community Center serves as an emergency shelter during winter storm events, and the City is responsible for road clearing and salt operations. There are some concerns about salt storage and supply in an extended winter storm event, as well as fuel supply for emergency operations vehicles.



5.4 Hazard Ranking Analysis

Hazard Ranking Methodology

Each hazard was scored based on the following factors:

Population Exposed: Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people.

- High: 30% or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium: 15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- Low: 14% or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact: None of the population is exposed to a hazard (Impact Factor = 0)

Property Exposed: Values were assigned based on the percentage of the total property value exposed to the hazard event.

- High: 25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
- Medium: 10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- Low: 9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- No impact: None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

Property Damages: Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard, based on historical data for each event or probabilistic models/studies.

- High: More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- Medium: More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- Low: Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- No impact: Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic Factor: An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).



- High: Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
- Medium: Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
- Low: Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
- No Impact: Virtually no significant economic impact (Impact Factor = 0)

Catastrophic Factor: The potential that an occurrence of this hazard could be catastrophic.

- High: High potential that this hazard could be catastrophic (Impact Factor = 3)
- Medium: Medium potential that this hazard could be catastrophic (Impact Factor = 2)
- Low: Low potential that this hazard could be catastrophic (Impact Factor = 1)
- Unlikely: Virtually no potential that this hazard could be catastrophic (Impact Factor = 0)

Each factor was weighted by importance, with Population Exposed and Potential for Catastrophe receiving a 3x weighting factor, and Property Damages from a Major Event receiving a 2x weighting factor.

Hazard Ranking Results by Factor

The following tables include the scoring and weighted factors for each hazard in Norton.

TABLE: Population Exposed Ranking for Norton			
Hazard Event	Population Exposed (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	High	3	9
Earthquake	High	3	9
Flooding	Medium	2	6
Dam Failure	High	3	9
Karst/Subsidence	High	3	9
Landslide	Low	1	3
Non-Rotational Winds	High	3	9
Tornado	Medium	2	6
Wildfire	Medium	2	6
Winter Storm	High	3	9

TABLE: Property Exposed Ranking for Norton		
Hazard Event	Property Exposed (High, Medium, Low)	Impact Factor
Communicable Disease	No Impact	0
Drought	No Impact	0
Earthquake	High	3
Flooding	High	3
Dam Failure	High	3
Karst/Subsidence	High	3
Landslide	Low	1
Non-Rotational Winds	High	3
Tornado	High	3
Wildfire	Medium	2
Winter Storm	High	3



TABLE: Property Damages from Major Event Ranking for Norton			
Hazard Event	Property Damages (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (2)
Communicable Disease	No Impact	0	0
Drought	No Impact	0	0
Earthquake	Medium	2	4
Flooding	Medium	2	4
Dam Failure	High	3	6
Karst/Subsidence	Medium	2	4
Landslide	Medium	2	4
Non-Rotational Winds	Low	1	2
Tornado	Medium	2	4
Wildfire	Medium	2	4
Winter Storm	Medium	2	4

TABLE: Impact on Economy Ranking for Norton		
Hazard Event	Economic Factor (High, Medium, Low)	Impact Factor
Communicable Disease	High	3
Drought	Medium	2
Earthquake	Medium	2
Flooding	Medium	2
Dam Failure	Medium	2
Karst/Subsidence	Low	1
Landslide	Low	1
Non-Rotational Winds	Low	1
Tornado	Medium	2
Wildfire	Low	1
Winter Storm	Medium	2

TABLE: Potential for Catastrophe Ranking for Norton			
Hazard Event	Catastrophic Factor (High, Medium, Low)	Impact Factor	Multiplied by Weighting Factor (3)
Communicable Disease	High	3	9
Drought	Low	1	3
Earthquake	Medium	2	6
Flooding	Low	1	3
Dam Failure	High	3	9
Karst/Subsidence	Low	1	3
Landslide	Low	1	3
Non-Rotational Winds	Unlikely	0	0
Tornado	Medium	2	6
Wildfire	Low	1	3
Winter Storm	Medium	2	6

Hazard Ranking Overall Results

Each of these factors, when considering their weighting factors, was added to find a total score, and then multiplied by the Probability Factor, given the likelihood that an event will occur. Probability values were assigned based on the following:

- High: Significant hazard event likely to occur annually (Probability Factor = 3)
- Medium: Significant hazard event likely to occur within 25 years (Probability Factor = 2)
- Low: Significant hazard event likely to occur within 100 years (Probability Factor = 1)



- Unlikely: There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

Hazard Event	Probability (High, Medium, Low)	Probability Factor
Communicable Disease	Medium	2
Drought	Medium	2
Earthquake	Low	1
Flooding	High	3
Dam Failure	Low	1
Karst/Subsidence	High	3
Landslide	High	3
Non-Rotational Winds	Medium	2
Tornado	Low	1
Wildfire	Low	1
Winter Storm	High	3

The eleven hazards were then assigned an overall risk ranking based on this total score. The overall risk ranking of Extreme, High, Medium, or Low, was assigned using the scale below.

Extreme Risk	Score: 75-100
High Risk	Score: 50-74
Medium Risk	Score: 25-49
Low Risk	Score: 0-24

The following table shows the overall risk ranking and scores for each hazard in Norton.

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)	Hazard Rank	Overall Risk Ranking
Winter Storm	3	21	63	1	High
Flooding	3	18	54	2	High
Communicable Disease	2	21	42	3	Medium
Karst/Subsidence	2	20	40	4	Medium
Landslide	3	12	36	5	Medium
Non-Rotational Winds	2	15	30	6	Medium
Dam Failure	1	29	29	7	Medium
Drought	2	14	28	8	Medium
Earthquake	1	24	24	9	Low
Tornado	1	21	21	10	Low
Wildfire	1	16	16	11	Low



5.5 Capability Assessment

The assessment of the jurisdiction’s legal and regulatory capabilities is presented in the *Legal and Regulatory Capability Table* below. The assessment of the jurisdiction’s fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction’s administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community’s National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: Legal and Regulatory Capability				
	Local Authority	County Run	Other Jurisdictional Authority	Comments
Codes, Ordinances & Requirements				
Building Code	Yes	-	-	The Building Official/Zoning Administrator enforces the Virginia Uniform Statewide Building Code for Norton.
Zonings	Yes	-	-	The Building Official/Zoning Administrator administers and enforces the Norton City Code, inclusive of erosion and sediment, floodplain, zoning, subdivision, and sign ordinances. The most recent zoning map was adopted in 2015.
Subdivisions	Yes	-	-	
Stormwater Management	Yes	-	-	The Norton City Code includes a stormwater management and soil and erosion control ordinance adopted in 2014.
Post Disaster Recovery	Yes	-	-	
Growth Management	Yes	-	-	Norton administers an Industrial Development Authority and a Redevelopment and Housing Authority.
Public Health and Safety	-	-	Yes	The LENOWISCO Health District provides public health programs across the three-county area, while the Norton-Wise County Health Department administers programs locally.
Planning Documents				
General or Comprehensive Plan	Yes	-	-	The Norton Comprehensive Plan was last updated in 2003, and the City is in the process of a complete update. The Norton Planning Commission Building and Zoning Administrator are responsible for plan updates and maintenance.
Environmental Protection	-	-	-	
Transportation Plan	-	-	Yes	Norton relies on the support of the LENOWISCO Planning District and Virginia Department of Transportation for transportation planning.



Response/Recovery Planning				
Comprehensive Emergency Management Plan	Yes	-	-	Norton has developed and adopted an Emergency Operations Plan. The City's Emergency Management Coordinator, who also serves as the Chief of Fire & Rescue, is responsible for developing and maintaining the plan. The plan is adopted by City Council.
Community Wildfire Protection Plan	-	-	-	
Post-Disaster Recovery Plan	Yes, as needed	-	-	In the event of a Federally declared disaster, Norton will develop a recovery plan.
Continuity of Operations Plan	-	-	-	

TABLE: Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	City Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	City Engineer
Planners or engineers with an understanding of natural hazards	Yes	City Engineer
Surveyors	Yes	Under Contract
Personnel skilled or trained in GIS applications	Yes	Building and Zoning Official
Emergency manager	Yes	Fire Chief/EM/Hazmat/Rescue Chief
Grant writers	Yes	Fire Chief/EM/Hazmat/Rescue Chief; City Engineer

TABLE: National Flood Insurance Program (NFIP) Compliance

What department is responsible for floodplain management in your jurisdiction?	Building and Zoning Official
Are any certified floodplain managers on staff or under contract with your jurisdiction?	Building and Zoning Official
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	For the most part, have done some mapping amendments
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes
If participating, is your jurisdiction seeking to improve its Community Rating System (CRS) Classification? If not, is your jurisdiction interested in joining the CRS program?	Not participating

TABLE: Community Classifications

	Participating?	Classification	Date Classified
NFIP	Yes	510174	02/16/1977
Community Rating System	No		
Building Code Effectiveness Grading Schedule	Yes	3 Residential, 3 Commercial	2018
Public Protection/ISO	Yes	5/5X	Sept 1, 2019
StormReady	In Progress		
Tree City USA	No		



Ordinances

The following ordinances apply to natural hazard mitigation in Norton.

TABLE: City of Norton Ordinances		
Ordinance	Adoption Date	Description/Purpose
Flood Damage Prevention Ordinance	May 1979	<p>The Ordinance is designed to minimize public and private losses due to flood conditions in specific areas. It requires a development permit to be submitted to the City prior to any construction or substantial improvement activities. Permits will only be approved if they meet the provisions of the ordinance, which include development standards that will minimize the potential for flood losses. Standards are established for construction materials, equipment, methods, practices, and uses. Most importantly, establishes the requirements for elevation and floodproofing (non-residential) to base flood elevation.</p> <p>The Ordinance requires the minimum standards of the National Flood Insurance Program (NFIP). The City's floodplain areas are currently being re-studied as part of the State's Floodplain Mapping Program. Potentially those floodplain areas will be delineated with updated topography, and base flood elevations will be recalculated.</p>
Subdivision Ordinance	December 1983	<p>Although not designed specifically for hazard mitigation purposes, this Ordinance will prevent flood losses in tandem with the Flood Damage Prevention Ordinance. It will also minimize the adverse effects that development can have on stormwater drainage through impervious surface requirements and through sedimentation and erosion control. Through its roadway requirements, the ordinance also provides for adequate ingress and egress to subdivisions by emergency vehicles for fires or severe weather events.</p>
State of Emergency Ordinance	Prior to 1975	<p>The Ordinance does not incorporate any long-term mitigation actions, such as temporary moratoria on the reconstruction of structures damaged or destroyed by a disaster event.</p>



THIS PAGE IS INTENTIONALLY LEFT BLANK



5.6 Mitigation Strategy

For each jurisdiction, the plan includes:

- New mitigation actions identified during the 2021 update.
- Ongoing actions identified in the 2013 plan with no definitive end or that are still in progress. During the 2021 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed or removed mitigation actions from the 2013 plan and this section serves as an archive of completed projects.

TABLE: City of Norton New Mitigation Actions								
Action #	New/Existing	Status	Hazard(s) Mitigated	Mitigation Action/Strategy	Applicable Jurisdiction	Lead Agency	Support Agencies	Goal
1	New	In Progress	All-Hazard	Secure funding to purchase a back-up generator for the Josephine Wastewater Pump Station and other critical infrastructure priority sites as identified.	City of Norton	Public Works	CNW Regional Wastewater Treatment Authority	1 - Protection 4 - Whole Community
2	New	Not Started	Drought	Ensure adequate back-up potable water supplies to supplement municipal water sources through 1) purchase of portable storage tanks for potable water, including a specific back-up water supply for the regional dialysis center in Norton; and 2) securing contracts with water suppliers.	City of Norton Wise County	Public Works	Norton Emergency Management, Fresenius Kidney Care	1 - Protection
3	New	In Progress	Flooding	Update the preliminary design and cost assessment and secure funding for a complete stormwater system replacement at three identified drainage basins experiencing significant localized flooding and damage (7th Street Basin, 10/11th Streets Drainage Basin, and Main Line Trunk) and others as identified.	City of Norton	Public Works	Emergency Management	2 - Mitigation



4	New	Update	Dam Failure	Update the inundation study for the Norton Reservoir Upper and Lower Dams.	City of Norton	Public Works	Emergency Management	1 - Protection
5	New	Not Started	Dam Failure	Conduct an annual tabletop exercise for a dam failure event.	City of Norton	Public Works	Emergency Management	1 - Protection 3 - Plans & Policies
6	New	Not Started	Earthquake Landslide	Initiate a benefit-cost and alternatives analysis for relocating/replacing gas chlorine storage at the Norton Water Treatment Plant.	City of Norton	Public Works	Wise County PSA	2 - Mitigation 4 - Whole Community
7	New	Not Started	Landslide	Identify and scope mitigation projects for potential landslide areas on critical roadways in/out of Norton.	City of Norton	VDOT	Public Works	2 - Mitigation
8	New	Not Started	Non-Rotational Wind Tornado Winter Storm	Initiate an assessment of necessary improvements to the Norton Community Center to serve as a designated tornado and severe weather shelter.	City of Norton	Emergency Management	Parks and Recreation, American Red Cross	1 - Protection
9	New	Not Started	Non-Rotational Wind Tornado Winter Storm	Secure sufficient sheltering supplies and a back-up generator for the Norton Community Center.	City of Norton	Emergency Management	Parks and Recreation, American Red Cross	1 - Protection 4 - Whole Community



10	New	Not Started	Non-Rotational Wind Tornado Winter Storm	Initiate a benefit-cost analysis of building storm shelters/safe rooms at various mobile home parks across Norton.	City of Norton	Emergency Management	Building and Zoning	1 - Protection
11	New	Not Started	Wildfire	Secure funding for increased wildland training and protective equipment.	City of Norton	Norton Fire Department	USFS, VA Department of Forestry	1 - Protection
12	New	Not Started	Winter Storm	Secure resources for transporting dialysis patients to/from the regional dialysis center (Fresenius Kidney Care) during severe weather events.	City of Norton	Emergency Management	Fresenius Kidney Care; Norton Fire Department, Kidney Community Emergency Response (KCER) Program	1 - Protection
13	New	Not Started	Winter Storm	Secure a back-up generator for at least one gas station in Norton, and other locations to be identified, to serve as a back-up fuel supply for essential government vehicles.	City of Norton	Public Works	Emergency Management, Police, and Fire Departments	1 - Protection
14	New	Not Started	Winter Storm	Initiate an alternatives analysis to address salt storage and supply needs, ideally in partnership with VDOT.	City of Norton	Public Works	VDOT	1 - Protection 3 - Plans & Policies



TABLE: City of Norton New Mitigation Actions

Action #	Funding Source	Estimated Cost	Benefits	Priority	Timeline	Action Planning & Implementation	STAPLEE Score
1	FEMA	Medium	Medium	Medium	Short-Term	Seek grant funding and assistance.	18
2	FEMA	Medium	High	High	Short-Term	Identify priority locations and water service vulnerabilities. Secure funding for storage tanks. Identify potential contractors for emergency water supply.	27
3	FEMA	High	High	High	Short-Term	Seek grant funding and assistance for the assessment update.	28
4	FEMA, USACE, VA DCR	Medium	High	High	Ongoing	Seek grant funding and assistance to update previous inundation studies.	30
5	Local funds	Low	Medium	Low	Ongoing	Identify and recruit priority participants that would be involved in resident notification and evacuation. Seek funding and technical assistance to coordinate and manage a table-top exercise. Develop an after-action report to identify and implement necessary improvements.	14
6	EPA, FEMA,	Medium	Medium	Medium	Short-Term	Seek funding for Benefit-Cost Analyses. Once funding is secure, conduct analyses on the design and scope of alternatives.	21
7	VDOT, USDOT, FHWA, USFS, VA DOF	High	Medium	Medium	Ongoing	Review historic data on landslide events affecting roadways in partnership with VDOT. Determine priority mitigation actions. Determine authority responsible for improvements. Secure funding for projects as needed.	21
8	FEMA, DHHS	Medium	Medium	High	Short-Term	Identify shelter capacity and safety features based on sheltering plan and federal, state, and local regulations.	28
9	FEMA, DHHS, VDOH	High	High	High	Short-Term	Review and update existing shelter plans to ensure they address new practices based on COVID-19. Secure funding for additional sheltering supplies as identified through plan updates.	28
10	FEMA, VDEM, Local funds	Medium	Medium	Medium	Short-Term	Seek funding for Benefit-Cost Analyses. Once funding is secure, conduct analyses on the design and scope of shelters/safe rooms.	21



11	FEMA AFG	High	Medium	Medium	Short-Term	Identify training and equipment needs. Secure funding for improvements.	22
12	DHHS, local funds	Medium	Medium	Medium	Ongoing	Identify vulnerable groups and geographic extent for transportation. Recruit a volunteer base and/or transportation options. Develop a plan and communication system.	19
13	FEMA	High	Medium	Medium	Short-Term	Scope the costs for purchase and installment. Prioritize sites based on community and resident vulnerability, site size, and secured resources. Identify and secure funding.	21
14	VDOT, USDOT, FHWA	Medium	Low	Low	Short-Term	Assess capacity and design needs. Scope alternatives and costs. Secure funding for purchase.	14

TABLE: City of Norton Completed or Removed Mitigation Actions

Status	Mitigation Action/Strategy	Applicable Jurisdiction	Reasoning
Completed	Stormwater mitigation and upgrades to the main interceptor in the central business district.	City of Norton	The City of Norton completed several stormwater mitigation projects since the 2013 plan. The City of Norton developed a new targeted mitigation action to continue enhancing the community's flooding resilience.