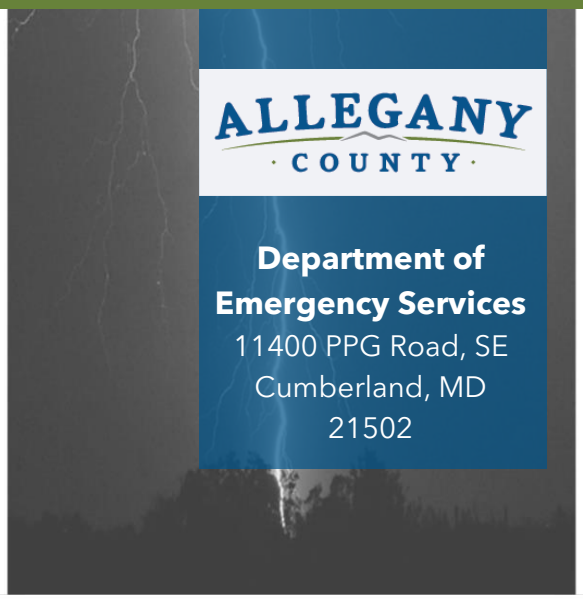
Allegany County, Maryland
2024 Hazard Mitigation Plan Update



ALLEGANY COUNTY

Department of Emergency Services
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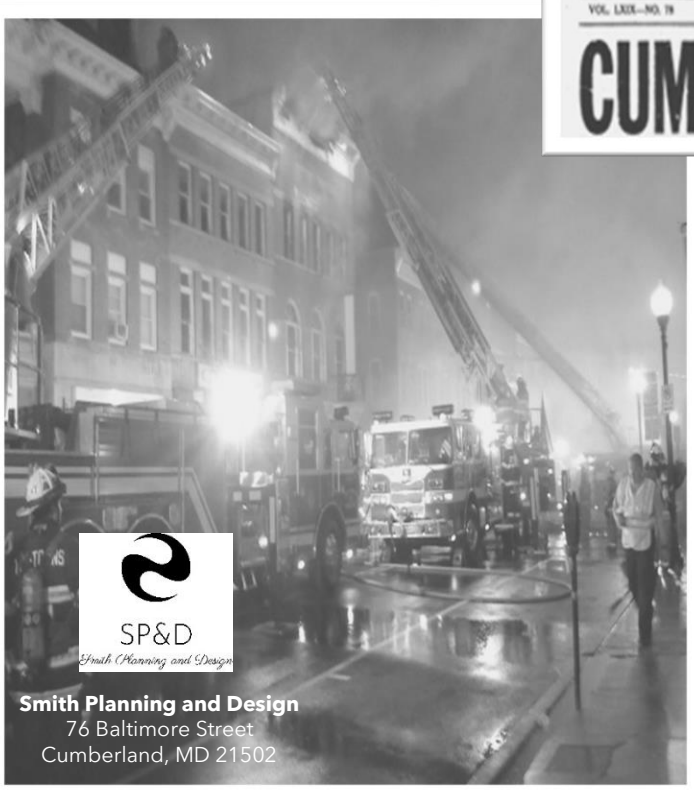
The Weather

Cumberland Evening Times.

VOL. LXIX—NO. 78 City Edition 4 Pages CUMBERLAND, MARYLAND, WEDNESDAY, MARCH 18, 1936 PRICE TWO CENTS

CUMBERLAND'S WORST FLOOD



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Chapter 1 Introduction

1.1 Hazard Mitigation

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards (2022 Local Mitigation Planning Policy Guide, page 71). Participating in hazard mitigation planning will afford Allegany County the opportunity to recognize its vulnerabilities before a disaster occurs. This recognition and consideration will provide the community with the foresight to plan ahead and take actions to reduce its hazard vulnerabilities.

Although a disaster is something that no community ever wants to experience, it can be an opportunity to re-think where we live, play, and work – and rebuild safer, stronger, and more sustainable communities. Effective hazard mitigation planning is a critical first step in making the community more disaster resistant. Through this hazard mitigation planning process Allegany County has identified their hazards, assessed their vulnerabilities to the identified hazards, and built consensus for approaches to mitigating them.

1.2 The Plan Update

Allegany County, along with its municipalities and partners, has developed this Hazard Mitigation Plan Update to update the previous plan adopted in 2018. The purpose of this plan update is to review and revise the existing hazard information, vulnerability assessment, mitigation goals, objectives, and actions based on the current conditions and needs of the county and its jurisdictions. The plan update also incorporates new data, best practices, and feedback from stakeholders and the public. This plan update complies with the requirements of the Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency (FEMA) guidance for local hazard mitigation planning. By updating and maintaining this plan, Allegany County and its jurisdictions aim to enhance their capabilities to protect life, property, the economy, and the environment from hazard events.

Local hazard mitigation planning requirements come from a number of sources, including:

Laws:
- Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended.
- National Flood Insurance Act of 1968, as amended.
- National Dam Safety Program Act (Pub. L. 92-367), as amended.

Regulations:
- 44 CFR Part 201 Mitigation Planning.
- 44 CFR, Part 60, Subpart A, including § 60.3 Flood plain management criteria for flood-prone areas.
- 44 CFR Part 77 Flood Mitigation Grants.
- 44 CFR Part 206 Subpart N. Hazard Mitigation Grant Program.

Source: Local Mitigation Planning Policy Guide, Effective April 19, 2023.

1.3 Planning Requirements

Allegany County developed its 2024 Plan Update in accordance with the Federal Disaster Mitigation Act of 2000, Section 322 planning requirements and guidelines for implementing local hazard mitigation efforts. Section 322 of this Act requires that all states and local jurisdictions develop and submit mitigation plans designed to meet the criteria set forth in 44 CFR Parts 201 and 206. The rationale for these plans is to prevent and/or reduce the loss of life and injury, as well as limiting future damage costs by developing methods to mitigate or eliminate damage from various hazards. The 2024 Plan Update meets all requirements as included in Federal Emergency Management Agency's (FEMA) Local Mitigation Planning Policy Guide (FP 206-21-0002), effective April 19, 2023.

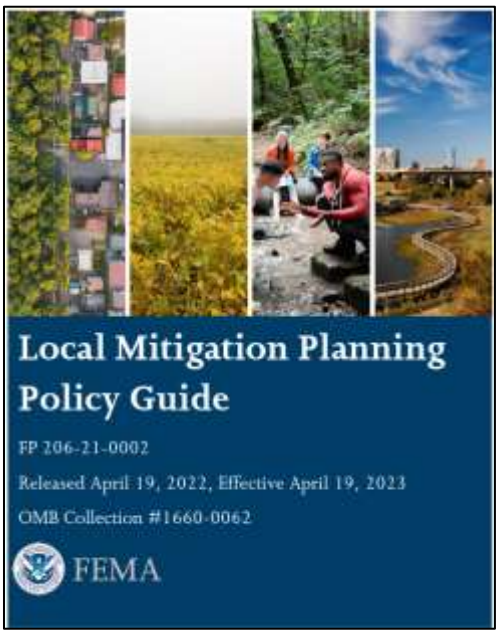


Figure 1-1: Local Mitigation Planning Policy Guide, Effective April 19, 2023, FEMA.

In 2002, the federal government began to provide funding under this act to states for this planning process. Additional funding has been made available to local jurisdictions to develop a Hazard Mitigation Plan for local communities. Municipalities located within the local jurisdiction have the option to join its county government in the preparation of this plan.

Furthermore, an incentive for State and local governments to develop hazard mitigation plans, the federal government requires mitigation planning as a condition of eligibility for hazard mitigation project funding. This requirement reinforces the importance of proactive mitigation planning and emphasizes planning for disasters before they occur. FEMA's *Local Mitigation Planning Guide* (Figure 1-1) states that mitigation plans are the foundation for effective hazard mitigation. As such, local jurisdictions must have a FEMA-approved local hazard mitigation plan at the time of obligation of grant funds in order to be eligible for grant funding under the unified Hazard Mitigation Assistance (HMA) Program (i.e., Hazard Mitigation Grant Program, Hazard Mitigation Grant Program Post Fire, Building Resilient Infrastructure and Communities, and Flood Mitigation Assistance).

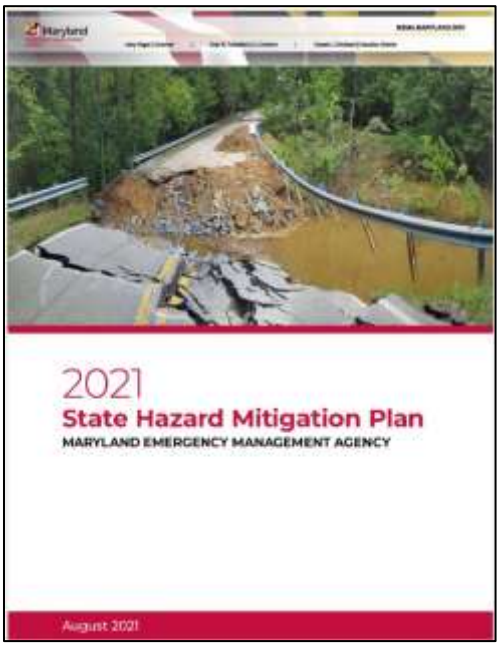


Figure 1-2: 2021 State Hazard Mitigation Plan, Maryland

In addition, the State of Maryland produced the *Local Hazard Mitigation Plan Guidance* (May of 2015) to advise local jurisdictions of available resources, coordination activities, and minimum elements that should be included within their local hazard mitigation plan update. These guidance documents were used in the update of the Allegany County Hazard Mitigation Plan. In addition, information from the *2021 State Hazard Mitigation Plan* was included in the Plan Update.

1.3.1 Updating the Plan

Local mitigation plans follow a planning methodology that includes public involvement, a risk assessment for various hazards, an inventory of critical facilities and at-risk residential areas, a mitigation strategy for high risk hazards, and a method to maintain and update the Plan.

In regard to updating the Plan, mitigation planning regulations mandate jurisdictions to update the Hazard Mitigation Plan every five (5) years from the date of FEMA approval. This is essential for determining the effectiveness of local mitigation capabilities and programs, identifying changes in land development (as discussed in Chapter 2), identifying vulnerable populations, and determining the effectiveness of mitigation strategies. By updating the Plan, local communities can also determine the strengths and weaknesses of the plan and what elements may need to be changed.

Therefore, the *2018 Allegany County Hazard Mitigation Plan* has been updated. The initial step taken in the update process was to review the existing plan. Next, data tables were updated with the most current available data. These data tables provided the necessary information to analyze the 2024 identified hazards. Critical and Public facilities were also reviewed to ensure the inclusion of new facilities and the removal of facilities no longer being utilized. Additionally, new figures and updated tables and mapping products have been incorporated into the appropriate sections of text. These modifications were made to enhance the understanding of the information being presented. The *Profile* for each identified hazard was revised and updated to include more defined information on the hazard and to include the updated data tables. Furthermore, the *County and Municipal Perspective* was altered to reflect the perspective of the 2024 Hazard Mitigation Planning Committee.

1.4 The Planning Process

The following process was completed during the hazard mitigation plan development work effort: (1) organized to prepare update plan; (2) coordinated with various agencies, municipalities and groups; (3) assessed hazards; (4) reviewed and modified goals and objectives as needed; (5) reviewed previous and developed new mitigation actions; (6) drafted new mitigation strategies; (7) refined implementation and evaluation process; and (8)

formally adopted plan. In order to coordinate and start the planning process, an initial meeting with the Department of Emergency Services was held on April 18, 2023.

The update to the *2018 Allegany County Hazard Mitigation Plan* also followed the required planning methodology, which included: inventorying critical facilities and other at-risk structures; conducting risk assessments for the identified hazards; providing mitigation strategies for high risk hazards; preparing a method to maintain and update the Plan; and ensuring public involvement throughout the process. Requirements for local hazard mitigation planning also include the development of a Hazard Identification and Risk Assessment (HIRA), which leads to the development of a comprehensive mitigation planning strategy for reducing risks to life and property. Furthermore, it is required that the mitigation strategy section identifies a range of specific mitigation actions and projects that reduce the risks to new and existing buildings and infrastructure. The mitigation strategy also includes an action plan describing how identified mitigation activities will be prioritized, implemented and administered.

In order to satisfy these plan requirements, the following steps were utilized during the Plan Update process: (1) *Organize Resources*, (2) *Assess Risks*, (3) *Develop Mitigation Strategies, and (4) Implement the Plan and Monitor Progress.*

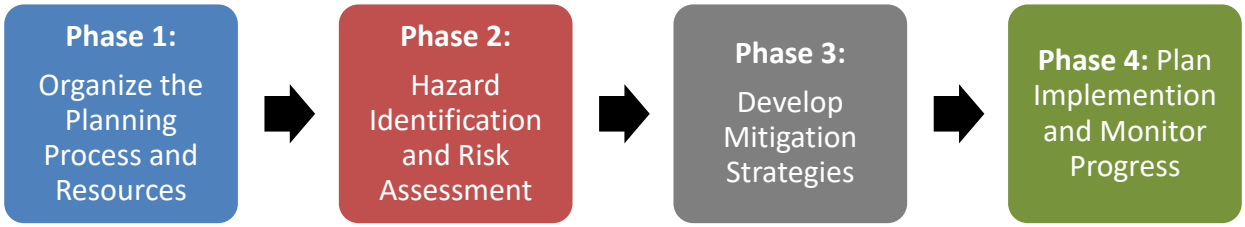


Figure 1-3: The Hazard Mitigation Planning Process. Source: FEMA.

1.4.1 Organizing Resources

The first step in organizing resources is to acquire adequate technical assistance and expertise to form a planning committee. Therefore, a Hazard Mitigation Planning Committee (HMPC) was formed. The 2024 HMPC was expanded and doubled in size compared to 2018 to include broader representatives from within Allegany County, the tri-state area, and outside planning organizations. In increasing the size of the HMPC, the County added representation from higher education and private organizations that serve socially vulnerable populations. Potential HMPC members identified by core planning staff were invited to join the in-person kick off meeting held on May 18th, 2023, at the Allegany Office Complex. Identified HMPC members received all planning materials for review and comment, regardless of meeting attendance.

Over the next five year planning period, the County will attempt to expand the HMPC to include representation from local businesses, non-profit, and community-based organizations.

The HMPC reviewed information concerning the hazards that are most likely to affect the County and provided public information to citizens concerning the planning process. Additionally, SP&D was contracted to provide technical support to the lead agency, which was the Allegany County Department of Emergency Services, in the Plan update process. The full 2024 HMPC, including names, departments/organizations, and position is included in Table 1-1, below.

Note: all members listed in Table 1-1 were invited to participate in stakeholder meetings, were provided with draft plan materials for review, and were provided opportunities in person and online to provide feedback related to local capabilities and new mitigation strategies. More information about meetings and HMPC participation at meetings is available in Appendix B.

Table 1-1. Allegany County Hazard Mitigation Planning Committee Members

Name	Organization	Position
James Pyles	Allegany County Department of Emergency Services	Director
Roger Bennett	Allegany County Department of Emergency Services	Deputy Director
Carrie Hughes	Allegany County Department of Emergency Services	Emergency Management Chief
Steve Shipley	Allegany County Department of Emergency Services	Chief of Communications
Kati Kenney	Office of the County Administrator	Public Information Officer
Jim Squires	Allegany County Department of Planning and Zoning	Director
Jerrod Cook	Allegany County Department of Planning and Zoning	Planner/GIS
Alison Robinson	Maryland Department of Health – Office of Preparedness and Response	HPP Region I & II Coordinator
Adam Patterson	Allegany County Department of Public Works	Director
Daniel DeWitt	Allegany County Department of Public Works	County Engineer
Bridget Forbes	Allegany County Human Resources Development Commission	Director of Human Resources
Ken Johnson	Allegany County Human Resources Development Commission	Section 8/WAP Housing Inspector
Ken Rafferty	Allegany County Human Resources Development Commission	Facilities Manager

Table 1-1. Allegany County Hazard Mitigation Planning Committee Members		
Name	**Organization**	**Position**
Elizabeth Robinson-Harper	Allegany County Transit	Transit Division Superintendent
Beth Thomas Tanner	Allegany County Information Technology Division	Director
Roy S. Cool	Allegany County Planning and Zoning	Transportation Planner
Shannon Adams	Cumberland Fire Department	Fire Chief
Julie Davis	Cumberland Fire Department	Fire Administrative Officer
John "Chuck" Ternent	Cumberland Police Department	Chief of Police
Nick Costello	City of Frostburg Police	Chief of Police
Craig Robertson	Allegany County Sheriff's Office	Sheriff
Robert Cuthbertson	Allegany College of Maryland	Director of Security
John Brewer	Frostburg State University	Director of Facilities
MJ Parsons	Frostburg State University	Safety Officer
Robert Ketterman	Frostburg State University	Facilities Planner
Municipal Points of Contact		
Daniel A. Colmer	Town of Barton	Mayor
Raymond M. Morriss	City of Cumberland	Mayor
Raquel Ketterman	City of Cumberland	Environmental Specialist
W. Robert Flanigan	City of Frostburg	Mayor
Elizabeth Stahlman	City of Frostburg	City Administrator
Bethany Fife	City of Frostburg	Planner/Interim Community Development Director
John W. (Jack) Coburn, Jr	Town of Lonaconing	Mayor
Edward E. Clemons, Jr.	Town of Luke	Mayor
Cindy Weisenmiller	Town of Luke	Office Manager
Craig Alexander	Town of Midland	Administrator
Ted Baker	Town of Midland	Clerk
Judy S. Hamilton	Town of Westernport	Mayor
Laura Freeman Legge	Town of Westernport	Town Clerk
Regional/External Partners		
Virginia Smith	Smith Planning & Design	Principal
Eric Messick	Smith Planning & Design	Planner
Joe Rogers	Maryland Department of Planning	Regional Planner
Marcia Barben	MDEM	Hazard Mitigation Project Officer
Jesse Delph	MDEM	Lead Hazard Mitigation Specialist
Luke McKenzie	Mineral County WV Emergency Services	County Administrator/ Director, DES
Eileen Sindledecker	Mineral County Emergency Services	Assistant Director
Rachael Duncan	Mineral County WV Office of Emergency Services	Mission Support Coordinator/Emergency Planner

Table 1-1. Allegany County Hazard Mitigation Planning Committee Members		
Name	**Organization**	**Position**
Neka Chrin	Mineral County WV Office of Emergency Services	Cambodia Mangrove Tenure Project
Joel Landis	Somerset County PA Emergency Management	Director, EM
Kevin Broadwater	Somerset County PA Emergency Management	Local Emergency Management Coordinator
David Hays	Washington County MD Emergency Services	Director, EM
Source: 2024 Hazard Mitigation Planning Committee		

In addition, in order to complete the update, a data collection effort was conducted to ensure that the most up-to-date information was utilized. During the initial review, various data sources were identified. Collected data included: comprehensive plans, including water resources elements and municipal growth elements; zoning ordinances; development ordinances; building codes; and other relevant documents.

Additional information was collected from Public Works, Land Development Services, Emergency Services, and GIS departments. Each municipality was asked to complete a hazard risk survey and a municipal survey which included components related to municipal-hazard perspective and municipal-capabilities. Moreover, data and information from several State and Federal agencies was obtained including the Maryland Department of Emergency Management, Maryland Department of Natural Resources, the Federal Emergency Management Agency, Maryland Department of the Environment, Maryland Department of Planning, and the U.S. Army Corps of Engineers. A listing of resources gathered and utilized throughout the Plan can be found in *Appendix I: Sources*. Additionally, chapters include direct hyperlinks to source documents and endnotes for sources.

1.4.2 Hazard Identification and Risk Assessment

One of the first steps in updating the plan and preparing new hazard mitigation strategies for Allegany County involved the identification of various hazards and their associated risks. As part of the plan update process, a Hazard Identification Risk Assessment (HIRA) was completed. During the kick-off meeting held on May 18, 2023, members of the HMPC were asked to complete a survey as part of the hazard identification and risk assessment process. Committee members were also able to add, remove, and/or modify any of the existing hazards at this time. Members who were not able to attend the kick-off meeting were provided with a link to the hazard risk survey in the meeting notes, which were sent to all HMPC members following the meeting.

The HMPC chose to keep all existing hazards from the 2018 plan and added Emerging Infectious Diseases and Dam Failure as new hazards. Several hazard risk rankings were updated from their 2018 ranking based on results of the hazard risk survey completed by stakeholders. These results have been integrated into the HIRA in Chapter 3.

Results of the risk assessment completed for Allegany County compared to the previous HIRA as well as the State risk assessment are represented in Table 1-2, following. Flood, Winter Storm, Wildfire, Soil Movement, and Emerging Infectious Diseases are all ranked as "high" risk. Most changes in hazard risk rating are small, only increasing or decreasing slightly; the largest change noticed between 2018 and 2024 is the change in the ranking for Wildfire (medium to high).

Table 1-2. Hazard Identification and Risk Assessment Ranking Results

Hazards	2018 Hazard Ranking	2021 State of Maryland Ranking	2024 Hazard Ranking
Flood (Riverine and Flash)	High	Medium	High
Winter Storm	High	High	High
Severe Weather (Thunderstorm, Lightning, Hail, Fog)	Medium-High	Medium	Medium-High
Tornado	Medium	Medium-High	Medium-High
Excessive Heat	Medium	Medium	Medium
Drought	Medium	Medium-Low	Medium
Wildfire	Medium	Medium-High	High
Soil Movement (Land Subsidence)	Medium	Medium	Medium
HazMat Transportation*	Medium-High	Medium-High	High
Railway Accidents	Medium	Medium-High	Medium
Emerging Infectious Diseases**	Medium-Low	Medium-High**	High
Dam Failure	-	Medium-Low	Medium

Note: Epidemic was ranked in the 2018 plan but was not profiled. It is now included under the Emerging Infectious Diseases hazard profile.
* The 2021 State Hazard Mitigation Plan includes HazMat Transportation under the Transportation Accidents hazard as part of the plan's "Human-Caused Hazards and Threats" category.
** This hazard is identified as "Public Health Emergencies" in the State Plan.

The increase in high risk hazards (i.e., wildfire, emerging infectious diseases, and hazmat transportation) represents changes in priorities and perspective at the County and municipal level within the last five years. As part of the plan update, HMPC members and members of the public were able to provide their individual local perspective of hazards via survey. The survey results provide the most up to date perspective from stakeholders regarding hazard impacts within Allegany County and municipalities. Additionally, feedback gathered during meetings and from review of draft materials was considered and integrated into the plan when provided. The change in hazard risk perspective led to the creation of new hazard

profiles (i.e., emerging infectious diseases) and new mitigation strategies. More mitigation action items, for both the county and municipalities, were developed for high risk hazards than others. The flood hazard has been the focus of mitigation measures in Allegany County for decades and remains a priority in this plan update; in total, there are 17 flood-specific action items.

The municipal changes in perspective are identified in Chapter 15: Municipal Synopsis. Table 15-4 identifies Municipal Hazard Rankings for each municipality as of this plan update. Hazard rankings from the previous plan are also included in this chapter.

1.4.3 Develop Mitigation Strategies

1.4.3.1 Mitigation Action Progress Report

The purpose of hazard mitigation action items and mitigation projects is to reduce or eliminate long-term risk to people and property from hazards and their effects. During the 2018 planning process mitigation projects were developed. As part of the 2024 Plan Update, a mitigation action progress report was created to provide an update of these action items/projects. Each mitigation action item/project included the following information:

- Action Item #/Project
- Project Background
- Responsible Entity

To gather updates, a fillable PDF was provided to responsible entities that were identified for each mitigation action. The responsible entities were tasked with providing the following information for each mitigation action item, to the best of their ability:

- Contact Name/Information
- Current Project Status (e.g., Completed, Canceled, Delayed, or Ongoing)

Additionally, HMPC members were asked the following four questions for each project:

1. What was accomplished for this project during this reporting period?
2. What obstacles, problems, or delays did the project encounter?
3. If incomplete, is the project still relevant? Should the project be changed or revised?
4. Other Comments?

The mitigation action items identified as "completed" are listed below. Two (2) of the high priority mitigation action items were designated as "completed"; these mitigation action

items are identified in red.

- Action Item #1 – Project A: Floodplain Ordinance Revision
- Action Item #8
- Action Item #25 - Project H: Mobile Message Signs

Findings that the fourteen (14) mitigation action items designated as "delayed" in addition to the eight (8) action items that were identified as being "on schedule" are to be carried forward into the 2024 Plan Update. Various action items were reviewed, and revisions made for inclusion in the Allegany County Hazard Mitigation Plan Update.

Full results of the Mitigation Action Progress Report, including an example for the form utilized to gather updates, are available in *Appendix F: 2024 Mitigation Action Progress Report*.

1.4.3.2 Development of New Mitigation Strategies

New mitigation action items were developed as the plan was updated and as stakeholders reviewed the hazard chapters. Stakeholders had the opportunity to suggest mitigation actions while submitting review comments for the plan update. Additionally, members of the public were provided the means to comment on draft chapters and propose mitigation actions via the project website or public survey. Importantly, all mitigation projects included in this plan were either proposed by local stakeholders or were identified from risk and vulnerability assessments conducted within the hazard profiles.

To review the proposed mitigation action items developed for this plan update, stakeholders were invited to the Mitigation Workshop held on August 31, 2023, at Allegany County's Emergency Operations Center from 9:00 AM to 12:00 PM. The workshop agenda included introductions, a plan update status regarding draft hazard chapters and outreach activities completed up until that point, an overview of public survey results, followed by the workshop.

Attendees were split into three small groups to work in throughout the workshop. These groups were based on four broad mitigation categories: Local Planning and Regulations (LPR), Structure and Infrastructure Projects (SIP), Education and Awareness Programs (EAP), and Natural Systems Protection (NSP). *Note: SIP and NSP were combined into one group for this workshop.* The goals and objectives from the 2018 hazard mitigation plan were reviewed by stakeholders during the Mitigation Workshop. HMPC members in attendance at the meeting revised the goals and objectives as necessary (having the option to "keep," "remove," or "modify" each) and created additional goals and objectives for inclusion in the

2024 Plan Update. Goals and objectives, including updates, are included in *Chapter 17 Mitigation Strategies*.

Next, attendees reviewed 37 proposed mitigation action items by utilizing their local knowledge and combined expertise. On average, each group reviewed about twelve (12) proposed mitigation action items. Each group was provided with reference material to aid in reviewing action items. Reference handouts included: directions, goals and objectives, hazards identified within the plan, mitigation categories, and potential funding sources. Additionally, reading material specific to some proposed action items was made available to each group. The 2018 plan and a working draft of the hazard mitigation plan update were also provided at the workshop for reference. The goal of the various reference materials was to empower each group to further refine action items to the greatest extent possible.

When finished, each group reported their findings to the larger group, including (at minimum) their group's top three action items and whether or not they added any new mitigation actions. In total, thirty-nine (39) action items were developed during the workshop, two of which were new, and twelve of which were selected by HMPC members as being most important. Action items identified as being most important were further developed into mitigation projects based on the information gathered during the workshop. Results of the Mitigation Workshop are included in *Chapter 17: Mitigation Strategies*. Workshop meeting notes are also available on the project website and in *Appendix B: HMPC Meeting Notes*.

Mitigation projects were developed based on the action items identified as top priority by each group during the mitigation workshop. Groups were asked to identify at least three action items as top priority. Twelve (12) mitigation action times were selected by HMPC members to be developed further into mitigation projects. Each mitigation project sheet includes the following information:

- Project Title
- Applicable Hazards
- Mitigation Category
- Location(s)
- Associated Action Items
- Project Discussion
- Responsible Entity
- Partners
- Cost Estimate
- Potential Funding
- Benefits (Loss Avoided)
- Ideas for Integration
- Timeline
- Associated Goals and Objectives

Following the workshop, a prioritization survey was provided to HMPC members to determine "high", "medium", and "low" priority projects. Results of this survey indicated five "high" priority mitigation projects. High priority projects include the following:

- Project F: Pump Station Generators

- Project G: Conduct Updated Commodity Flow Study
- Project I: County-Municipal Workshop: Roles and Resources in Emergency Management
- Project J: Enhance Mobile Message Boards for Deployment in All-Hazards
- Project K: Update the County's Vulnerable Population Plan

Prioritization results and completed project sheets are available in *Chapter 17: Mitigation Strategies,* beginning on page 17-19.

1.5 Public Outreach

Public outreach is important to the hazard mitigation planning process in the following ways: (1) describe issues of concern, (2) narrate hazard history, (3) prioritize proposed mitigation actions, and (4) provide ideas for ongoing public involvement. More than simply informing the public of the plan's development, a good public outreach strategy seeks to educate the public as well as motivate them to act. During this Plan Update, Allegany County created a project website, www.alleganymdhazards.org, which enabled the public to learn about hazard mitigation, view the 2018 hazard mitigation plan, stay up to date with the planning process, and provide important feedback. In addition, the website created an opportunity for members of the public to provide their contact information and be added to the project stakeholder list, as well as an area to submit questions and/or provide feedback on draft plan elements.

A full record of important meetings, training, and public outreach efforts is included at the end of this chapter in Table 1-4. This table includes dates, intended audience, type of outreach, and a summary of the purpose of the outreach. This table is also available in *Appendix D: Public Outreach Documentation*. Complete notes for HMPC meetings are included in *Appendix B: HMPC Meeting Notes*.

According to the Social Vulnerability Index, Allegany is considered "relatively moderately" socially vulnerable compared to other jurisdictions in the State. The primary categories of social vulnerability in the County are related to low socioeconomic status and an aging population. Other groups traditionally associated with targeted outreach efforts, such as a high percentage of households with less English language proficiency, are not a major contributing factor to social vulnerability in Allegany County. Therefore, public outreach efforts during this next planning cycle should specifically include populations aged 65 or older and those of lower socioeconomic status. Information gathered during this plan update, which includes social vulnerability, will inform future planning, activities, and outreach efforts.

In Allegany County, 88.9% of households have access to broadband speeds of 25 MB/s or greater. Therefore, Allegany County relied on the project website and public survey to gather public feedback during the plan development process. Sharing across departments and organizations within and around the County was highly encouraged to increase public awareness and involvement from groups of all types. This started by creating an HMPC with broad representation and promoting public survey materials at all HMPC meetings or via email. Ready-made digital outreach materials were provided to all HMPC members to increase the likelihood of sharing information related to the project website and/or the public survey. The Allegany County Human Resources Development Commission (HRDC), a private nonprofit organization which advocates and provides services for many vulnerable populations in the community, particularly those aged 65 years or older, participated in the plan update by attending meetings, having representatives attend the public meeting, and sharing survey materials on their social media, which includes a diverse audience of thousands from all over the County and its municipalities.

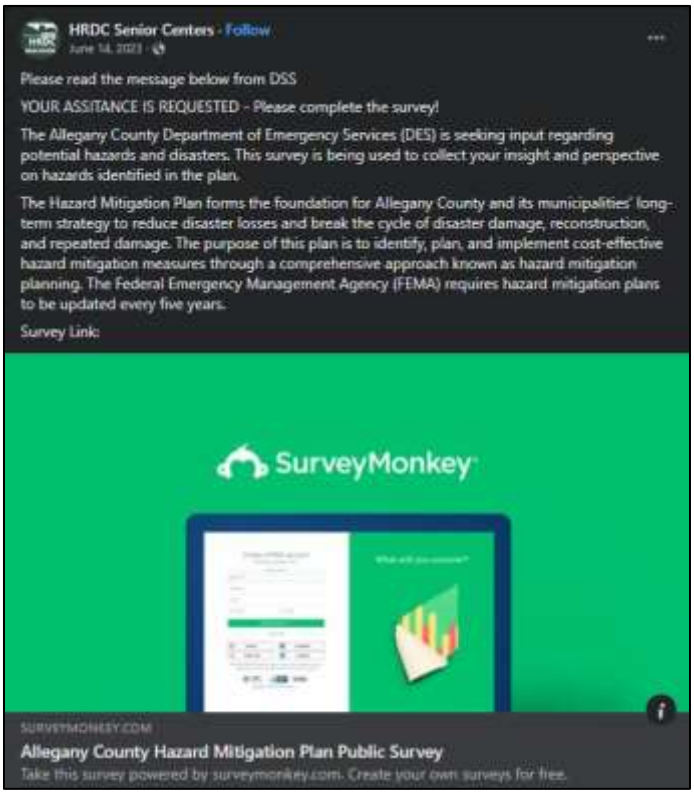


Figure 1-4: Example of social media post from the HRDC, promoting the public survey, June 13, 2023.

1.5.1 Project Website

Allegany County developed a project website during the plan update process, which provided members of the public with the opportunity to review the 2018 plan, provide comments on the plan update, ask questions, stay up to date with meetings, and learn about hazard mitigation planning. The project website included a plan overview, public survey, meeting information, an overview of hazards included in the plan, hazard identification and risk assessment, and opportunities to provide feedback and comments.

The website was updated with meeting information, meeting notes, draft hazard chapters, and the draft plan update, including associated feedback mechanisms, as information became available. Public feedback was gathered in three ways: (1) via the project website's general contact form, (2) a public survey, and (3) a form created specifically to gather

comments regarding the draft plan update. The project website, the plan update process, and the public survey were announced via press release and further promoted via the County's Department of Emergency Services (DES) social media.

Figure 1-5: Homepage of the project website, www.alleganymdhazards.org.

1.5.2 Public Survey

As described in the previous section, a public survey was developed and linked on the project's website to make it easily accessible to all interested members of the public, as well as stakeholders.

The public survey was promoted throughout the Plan Update process to stakeholders and via the County's DES social media. The public survey was also shared on multiple organization's social media, as identified in Table 1-4. The survey consisted of 18 questions/prompts, touching on subjects such as: residency status, age, social vulnerability, level of concern for each hazard, flood insurance (yes or no), renters content insurance (yes or no), has your residence ever experienced damage from a hazard event, what actions have you taken to mitigate risk, and which mitigation project types do you support locally? To review all the questions included in the public survey, refer to *Appendix H: Public Survey Summarized Results*.

In total, 174 members of the public responded to the public survey (as of 8/31/2023, which is the date the survey was closed). Response breakdown included: Cumberland (66),

Unincorporated Areas (46), Frostburg (38), Westernport (6), Lonaconing (5), Barton (4), Midland (3), and Luke (1).

Results from the survey were utilized in two important ways: (1) to determine public perception regarding which hazards impact the county and its municipalities the most, and (2) aiding in the creation of mitigation action items that are appropriate for area and its residents. For example, results from Question 12 of the public survey informed several mitigation action items included in the Mitigation Strategies chapter of this plan update. Members of the public were asked *"Which of the following mitigation project types do you believe should be focused on to reduce disruptions of services and strengthen the community (check all that apply)?"* Respondents indicated that they believe local governments should focus on the following mitigation project types (in order):

1. Replace inadequate or vulnerable bridges
2. Work on improving the damage resistance of utilities (electricity, communications, water/sewer, etc.)
3. Retrofit and strengthen essential facilities such as police, fire, emergency medical services, hospitals, schools, etc.

In response to public survey results, several mitigation action items were developed with the goal of addressing the above public preferences. Mitigation projects included within the plan update that meet these preferences are as follows:

- Project A: Flood Acquisitions
- Project D: GIS Solutions for Damage Assessment and Mitigation Information
- Project E: Essential Facility Flood Mitigation
- Project F: Pump Station Generators
- Project H: Development of Small-scale Microgrid Projects for City of Frostburg

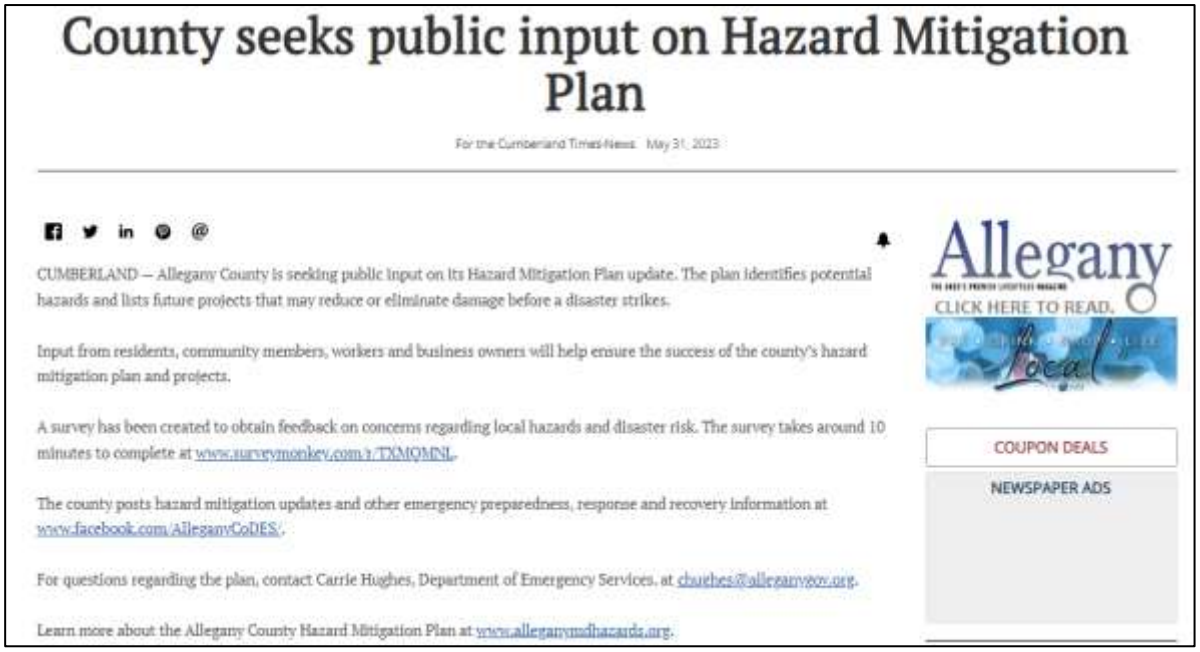
Additionally, many of the action items developed for this plan update take into consideration the public's preferences for local mitigation measures as identified via the public survey. Full results from the public survey are included in *Appendix H: Public Survey Summarized Results* of this plan update.

1.5.3 Public Media Announcements

The public was encouraged to provide information during the planning process, including levels of concerns for each hazard and preferred styles of hazard mitigation. Plan updates were posted on the project website as they were completed, and a full draft of the plan was made available on the website for public comment. Furthermore, an additional public meeting was held on _, 2024 for the Hazard Mitigation Plan Update. This meeting coincided

with the County's Public Hearing process for adoption. During the hearing, the planning process and the Plan's intent to identify steps the communities could take in order to become more disaster-resistant were presented to the stakeholders.

Media announcements advertising the plan update and the public meetings were provided via local newspapers, the Cumberland Times News, and the County website, www.alleganygov.org. The advertisements for the public hearings can be found within *Appendix D: Public Outreach Documentation*.



County seeks public input on Hazard Mitigation Plan

For the Cumberland Times-News May 31, 2023

CUMBERLAND — Allegany County is seeking public input on its Hazard Mitigation Plan update. The plan identifies potential hazards and lists future projects that may reduce or eliminate damage before a disaster strikes.

Input from residents, community members, workers and business owners will help ensure the success of the county's hazard mitigation plan and projects.

A survey has been created to obtain feedback on concerns regarding local hazards and disaster risk. The survey takes around 10 minutes to complete at www.surveymonkey.com/r/TXMQMNL.

The county posts hazard mitigation updates and other emergency preparedness, response and recovery information at www.facebook.com/AlleganyCoDES/.

For questions regarding the plan, contact Carrie Hughes, Department of Emergency Services, at chughes@alleganygov.org.

Learn more about the Allegany County Hazard Mitigation Plan at www.alleganymdhazards.org.

Figure 1-6: Press release soliciting public input for the hazard mitigation plan update. May 31, 2023.

1.5.4 Municipal Participation

The County's seven municipalities, which all participated in the 2018 planning process, were invited to participate in the 2024 plan update in order to ensure their mitigation concerns were made part of the County's plan. These municipalities include: the Cities of Cumberland and Frostburg and the Towns of Barton, Lonaconing, Luke, Midland, and Westernport. As identified in Table 1-1, municipal representatives (i.e., members of the HMPC) included the following people:

Table 1-3. Municipal Representatives		
Daniel A. Colmer	Town of Barton	Mayor
Raymond M. Morriss	City of Cumberland	Mayor
Raquel Ketterman	City of Cumberland	Environmental Specialist
W. Robert Flanigan	City of Frostburg	Mayor

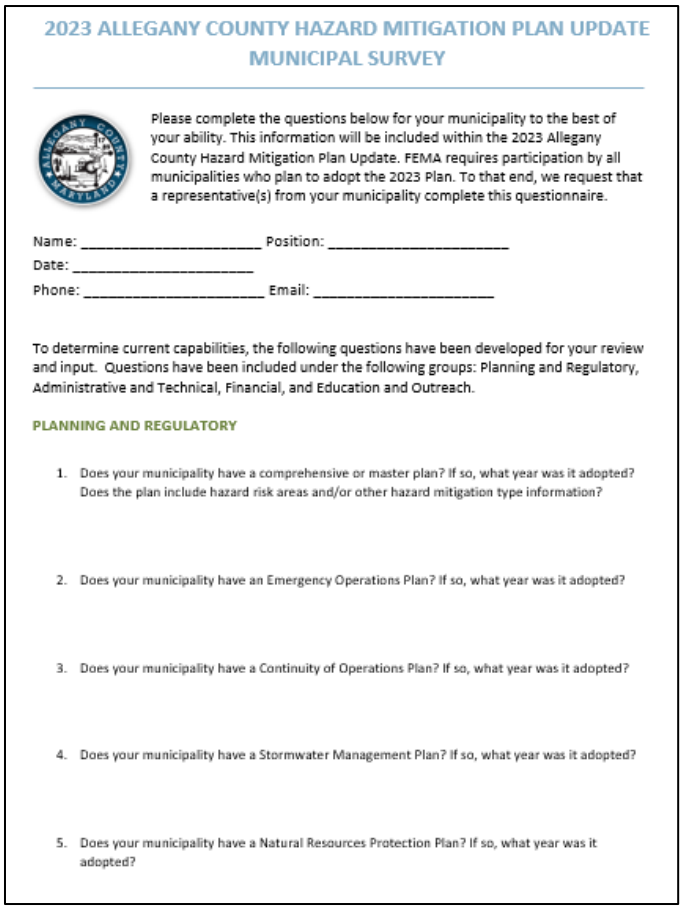
Table 1-3. Municipal Representatives		
Elizabeth Stahlman	City of Frostburg	City Administrator
Bethany Fife	City of Frostburg	Planner/Interim Community Development Director
John W. (Jack) Coburn, Jr	Town of Lonaconing	Mayor
Edward E. Clemons, Jr.	Town of Luke	Mayor
Cindy Weisenmiller	Town of Luke	Office Manager
Craig Alexander	Town of Midland	Administrator
Ted Baker	Town of Midland	Clerk
Judy S. Hamilton	Town of Westernport	Mayor
Laura Freeman Legge	Town of Westernport	Town Clerk

A letter was mailed to each municipality, informing them of the plan update process, providing them with the project website, and requesting their participation in completing a survey and capability assessment. Additionally, each municipal representative was invited to all HMPC meetings and was given the opportunity to review all draft plan materials as it was made available throughout the planning process.

Each municipality was asked to complete a municipal hazard survey and a capability assessment. The hazard portion of the survey included the following types of questions:

- Municipal Identification of Hazards
- Municipal Level of Concern for Hazards
- Identification of socially vulnerable groups in the municipality
- Preferred types of mitigation projects
- New mitigation action item ideas for the plan update

The capability assessment portion of the survey included questions related to



2023 ALLEGANY COUNTY HAZARD MITIGATION PLAN UPDATE
MUNICIPAL SURVEY

Please complete the questions below for your municipality to the best of your ability. This information will be included within the 2023 Allegany County Hazard Mitigation Plan Update. FEMA requires participation by all municipalities who plan to adopt the 2023 Plan. To that end, we request that a representative(s) from your municipality complete this questionnaire.

Name: _____ Position: _____
Date: _____
Phone: _____ Email: _____

To determine current capabilities, the following questions have been developed for your review and input. Questions have been included under the following groups: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach.

PLANNING AND REGULATORY

1. Does your municipality have a comprehensive or master plan? If so, what year was it adopted? Does the plan include hazard risk areas and/or other hazard mitigation type information?
2. Does your municipality have an Emergency Operations Plan? If so, what year was it adopted?
3. Does your municipality have a Continuity of Operations Plan? If so, what year was it adopted?
4. Does your municipality have a Stormwater Management Plan? If so, what year was it adopted?
5. Does your municipality have a Natural Resources Protection Plan? If so, what year was it adopted?

Figure 1-7: Example of the municipal survey – capability assessment. This survey was mailed to municipalities along with an introductory letter informing them of the hazard mitigation plan update process.

municipal-level capabilities, including the following categories: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach. The results of the surveys are integrated into *Chapter 15 Municipal Synopsis*.

All seven municipalities chose to participate once more in the update planning process with the County. All municipalities participated in the plan review process during the draft stage and municipal review comments were integrated into the plan document. The municipal synopsis chapter of the plan provides a section of the plan that is entirely devoted to the incorporated areas of the County. In addition, a municipal perspective was included in each hazard chapter.

1.5.5 Regional Collaboration

The County expanded its HMPC to include more representatives from adjacent jurisdictions and from state agencies. As shown in Table 1-1, the following counties were included as members of the HMPC: Allegany County, Washington County, Mineral County, and Somerset County. Additionally, representatives from Maryland Department of Planning and Maryland Department of Emergency Management were included in the HMPC. These representatives were invited to all meetings, received all draft planning materials, and were asked to provide feedback throughout the planning process, including the generation of new mitigation strategies.

Additionally, HMPC members were regularly encouraged to spread the word of the plan update process by adding it as an agenda item to departmental meetings or sharing the project website or public survey link on their social media. The following meetings included the hazard mitigation plan update as an agenda item:

- Allegany County Health Department Emergency Preparedness meetings – July 7, 2023, and September 1, 2023.
- Allegany County Fire and EMS Chief's meeting – July 11, 2023
- Allegany County Emergency Services Board meeting – June 13, 2023, and August 8, 2023
- Allegany County Department of Emergency Services Division Chief's meetings – held bi-weekly.

1.6 Implement the Plan & Monitor Progress

The Allegany County Emergency Management Division will implement the Plan and continue to perform periodic reviews and revisions to the Plan through on-going Hazard Mitigation Planning Committee meetings. The Committee will be entrusted with the responsibility to meet annually to review the plan and also hold public meetings to solicit citizen input. Refer to *Chapter 18 Plan maintenance & Implementation* for further information.

Implement the Plan & Monitor Progress

The state, tribe, or community can bring the mitigation plan to life in a variety of ways, ranging from implementing specific mitigation projects to changing aspects of day-to-day organizational operations. To ensure success in ongoing implementation, it is critical that the plan remain relevant. Thus, the state, tribe, or community should conduct periodic evaluations to assess changing risks and priorities and make revisions as needed.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
4/18/2023	Core Team Meeting	Core Planning Team	N/A	A core team meeting was held to discuss project specifics prior to the kick-off meeting in May. In attendance was Roger Bennett and Carrie Hughes from the County DES. Items for discussion: expanding the HMPC, current and new HMPC members, the project website, plan design and colors, the surveys being developed for the project, regional planning, and the kick-off meeting date (May 18th, in person).
4/27/2023	Kick Off Meeting Save the Date	HMPC Members	2018 Plan (link), meeting invitation, agenda	The kick-off meeting intro email and save the date was provided to members of the ALCO HMPC. The members were provided with a link to the previous plan, a brief intro to HMP, and the meeting agenda. A follow up outlook email invitation will be sent to HMPC members.
4/27/2023	Expanded HMPC	Mineral County MD	N/A	Following the kick-off meeting invite, the POC for Mineral County WV was updated to include Rachel Duncan (Office of Emergency Services) as well as a fellowship student from Cambodia that is working in their office.
5/4/2023	Project Website Launch	Public	Website	The HMP Update project website design phase was completed, and the website was launched to the public. Alleganymdhazards.org.
5/18/2023	Kick Off Meeting	HMPC Members	Meeting presentation, hazard risk survey, project website link, public survey link.	The Kick-off meeting was held in person at the Allegany County Office Complex. Attendees were then provided with an overview of hazard mitigation, including FEMA requirements and the plan development process. Next, a project timeline was reviewed followed by an outline of HMPC and Public participation expectations. Attendees were then asked to complete a hazard risk survey as part of Chapter 3: Hazard Identification and Risk Assessment. Finally, the steps for development or new mitigation action items and projects were provided.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
5/22/2023	Meeting #1 Note Distribution	HMPC Members	Meeting Notes, project website link, HMPC survey link, municipal survey link	Meeting notes were distributed to HMPC members via email following the in-person kick-off meeting. Meeting notes were also uploaded to the project website for public review.
5/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
5/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany Communications News Facebook page.
5/31/2023	Press Release	Public	Website Link, Public Survey Link, Contact information	Allegany County advertised the plan update process in the May 31, 2023, edition of the Times News. The headline reads "County seeks public input on hazard mitigation plan".
6/6/2023	Draft Chapter 3 HIRA	HMPC Members	Draft Chapter 3	The draft HIRA chapter was sent to the HMPC for review. They were given one week to provide review comments before the draft is uploaded to the project website.
6/7/2023	Meeting # 2 Save The Date	HMPC Members	Meeting Info	A save the date email was sent to HMPC members for the Mid-Point Meeting, July 27 at 9:00 AM.
6/7/2023	Municipal Letter and Survey	All Municipalities	Municipal Packet including cover letter and paper survey plus link to digital survey and project website.	Packets were mailed to the County's seven municipalities, indicating their required participation in the plan update. Also included was a municipal survey for completion and return.
6/8/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany Department of Social Services Facebook page.
6/8/2023	Survey Material	HMPC, Public	Social Media Image	The HMPC was provided with a social media image and text, which promotes the public survey.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
6/8/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
6/12/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Visit Cumberland Maryland Facebook page.
6/12/2023	Municipal Survey Received	Luke	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/14/2023	Municipal Survey Received	Frostburg	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/14/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the HRDC Senior Centers Facebook page.
6/14/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County Health Department Facebook page.
6/14/2023	Website Update	Public	Chapter 3 Hira	Draft of Chapter 3 HIRA has been added to the "Plan Updates" tab of the website following HMPC review and comment.
6/14/2023	Municipal Survey Received	Frostburg	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/19/2023	Municipal Survey Received	Barton	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
6/20/2023	Draft Chapters 5 and 6	HMPC Members	PDFs - Chapter 5 Winter Storm & Chapter 6 Severe Weather	Drafts of Chapter 5 and 6 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by June 28, 2023. Drafts will be uploaded to the project website following review.
6/20/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany County Government - Maryland Facebook page.
6/20/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
6/26/2023	Draft Chapters 7 and 8	HMPC Members	PDFs - Chapter 7 HazMat Transportation & Chapter 8 Tornado	Drafts of Chapter 7 and 8 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by July 5, 2023. Drafts will be uploaded to the project website following review.
6/29/2023	Draft Chapters 5 and 6	Public	PDFs - Chapter 5 Winter Storm & Chapter 6 Severe Weather	These chapters were uploaded to the project website for public review and comment.
7/12/2023	Draft Chapters 9 and 10	HMPC Members	PDFs - Chapter 9 Wildfire & Chapter 10 Drought	Drafts of Chapter 9 and 10 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by July 19, 2023. Drafts will be uploaded to the project website following review.
7/13/2023	Midpoint Meeting Invite	HMPC Members	Webex Invitation and Meeting Info	HMPC members were invited to the midpoint meeting on July 27, 2023, at 9:00 AM. Members were sent a WebEx invitation and asked to RSVP.
7/13/2023	Draft Chapters 9 and 10	Public	PDFs - Chapter 9 Wildfire & Chapter 10 Drought	These chapters were uploaded to the project website for public review and comment.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
7/14/2023	Municipal Survey Received	Cumberland	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
7/19/2023	Draft Chapters 11 and 12	HMPC Members	PDFs - Chapter 11 Rail Accident & Chapter 12 Soil Movement	Drafts of Chapter 11 and 12 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by July 26, 2023. Drafts will be uploaded to the project website following review.
7/24/2023	Midpoint Meeting Reminder	HMPC Members	Meeting #2 Information and WebEx info	HMPC members were reminded of the upcoming midpoint meeting scheduled for July 27 at 9:00 AM. Invitees were asked to RSVP if they had not yet done so.
7/27/2023	Mid-Point Meeting	HMPC Members	PowerPoint presentation, capability assessment worksheet	HMPC members virtually attended the midpoint meeting via WebEx. HMP overview, plan update progress report, and preliminary public survey results were presented. Attendees were asked capability assessment questions to help identify gaps and complete Chapter 14: Community Capabilities. Participants ranked their level of capability in each of the four FEMA capability categories. Meeting notes were sent to all HMPC members and added to the project website.
7/27/2023	Draft Chapters 11 and 12	Public	PDFs - Chapter 11 Rail Accident & Chapter 12 Soil Movement	These chapters were uploaded to the project website for public review and comment.
8/9/2023	Meeting #2 Note Distribution	HMPC Members	Meeting Notes	Notes from this meeting were sent to all HMPC members and uploaded to the project website.
8/18/2023	Draft Chapter 4	HMPC Members	PDF - Chapter 4 Flood	Draft of Chapter 4 Flood was submitted to HMPC members for review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by August 25, 2023. Drafts will be uploaded to the project website following review.

Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
8/23/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the City of Frostburg Facebook page.
8/23/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
8/25/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany County Government - Maryland Facebook page.
8/28/2023	Draft Chapter 4	Public	PDFs - Chapter 4 Flood	This chapter was uploaded to the project website for public review and comment.
8/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
8/31/2023	Mitigation Workshop	HMPC	PowerPoint presentation, goals and objectives handout, action item hand out, project development	During the Mitigation Workshop, stakeholders were presented with a Plan Update report, and then worked in three small groups to complete proposed action items. The group also reviewed goals and objectives and made modifications to reflect 2023 conditions. The three groups reported to the larger group their findings, as well as their most important action items, which were further developed into mitigation projects by the groups. In total, 39 action items were reviewed, and 12 new mitigation projects were developed during this workshop. Results of the workshop were integrated into Chapter 17: Mitigation Strategies, and meeting notes and updated project sheets were provided to those who attended the meeting as well as the HMPC and the project website for the public.
8/31/2023	Public Survey Closes	Public	N/A	The public survey was closed to new responses.
8/31/2023	Municipal Survey - Email	Westernport and Lonaconing	Survey Link	The municipal survey was provided to a new POC with the Town of Westernport, to be completed. The survey link will also be provided to the Town of Lonaconing for completion.

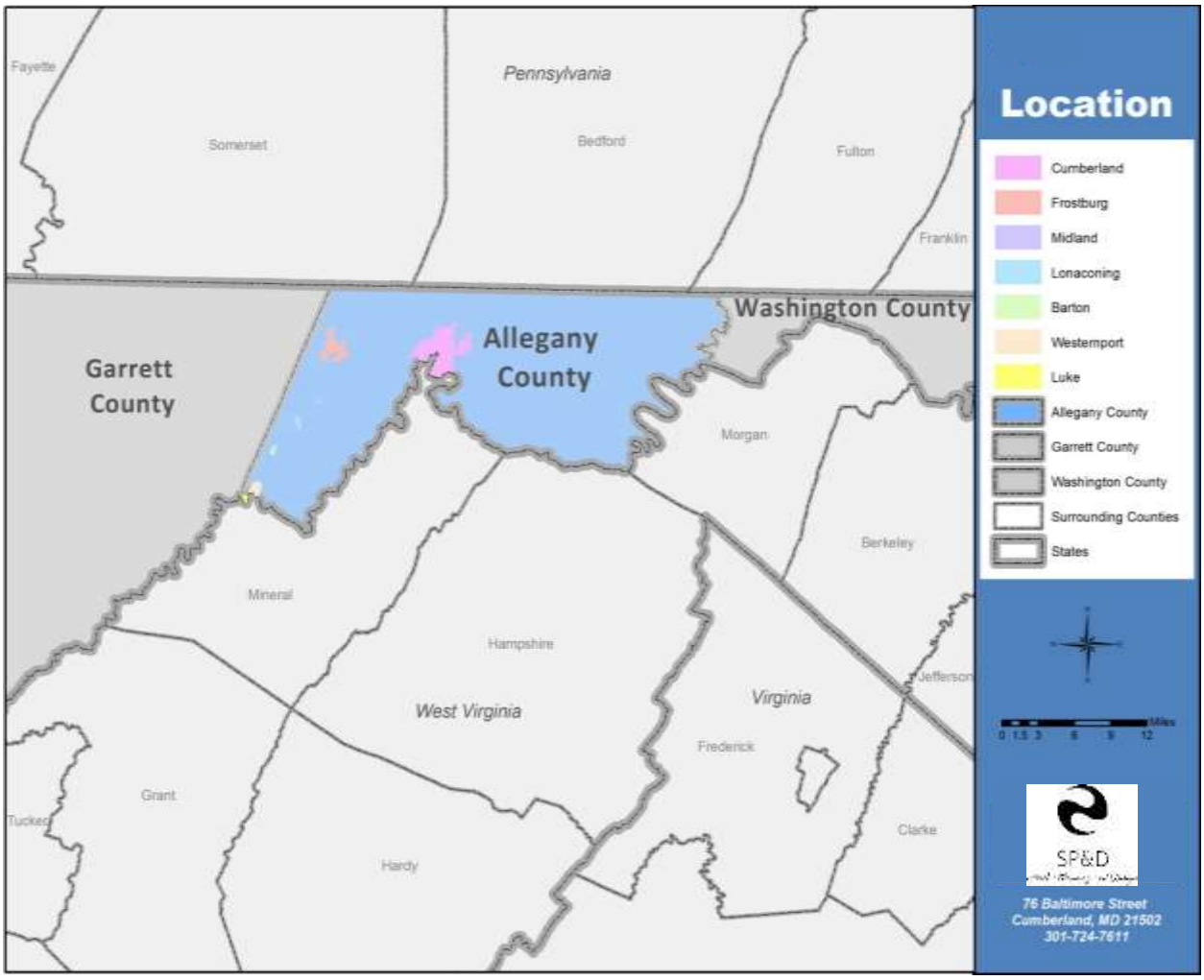
Table 1-4. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
9/2/2023	Mitigation Project Prioritization Survey	HMPC	Survey Monkey Link	The mitigation project prioritization survey link was provided to HMPC members. Respondents were asked to complete the prioritization process for 12 mitigation project sheets as identified within Chapter 17: Mitigation Strategies.
9/15/2023	Prioritization Survey	HMPC	Survey Results	HMPC members were requested to complete the Mitigation Project Prioritization Survey by this date. Results found 5 high priority, 6 medium priority, and 1 low priority mitigation projects. Results were integrated into Chapter 17.
9/22/2023	Draft Chapter 17 Mitigation Strategies	HMPC	PDF - Chapter 17	Draft Chapter 17 Mitigation Strategies was submitted to HMPC members for review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by September 29, 2023. Drafts will be uploaded to the project website following review.
9/29/2023	Draft Chapter 17 Mitigation Strategies	Public	PDF - Chapter 17	This chapter was uploaded to the project website for public review and comment.
-	Draft Plan Review	Public and HMPC	Draft Plan and Appendices	The Draft Plan Update was submitted to the HMPC for additional review and comments, and the Draft Plan was added to the project website to allow the public additional opportunity to review and comment.
-	MDEM Submittal	MDEM	Draft Plan and Appendices	The Draft 2023 Allegany County Hazard Mitigation Plan Update was submitted to MDEM for review.

CHAPTER 2: COMMUNITY PROFILE

2.1 Location

The physical characteristics of a community, including both the natural and built environment, will greatly affect its vulnerability to hazards. Therefore, a basic understanding of Allegany County's geography, climatology, and land use practices offers insight into its overall vulnerability. Furthermore, analysis of the County's economic situation and population patterns aids in determining areas that are highly vulnerable.

Allegany County is located in the western Maryland region, bordered on the east by Washington County, the north by Pennsylvania, the west by Garrett County, and the Potomac River and West Virginia on the South, as shown on Map 2-1, below. The County seat is the City of Cumberland. Other municipalities with planning and zoning authority include the City of Frostburg, Town of Lonaconing, and the Town of Westernport.



Map 2-1. Location Map – Allegany County and Municipalities

The County is about 40 miles long from east to west and varies from 5 to 20 miles wide from north to south, comprising an area of 426 square miles or 272,460 acres. The County is approximately 120 miles southeast of Pittsburgh, PA; 140 miles northwest of Baltimore, MD, and Washington, D.C.; and 320 miles southwest of New York City.

2.2 Physiological Provinces

The County has land in two physiological provinces, the Allegheny Plateau and the Ridge and Valley, both in the Appalachian Mountains, as shown on Figure 2-1. The summit of Dan's Mountain is the boundary between these two provinces and also serves as the eastern edge of the Georges Creek Coal Basin, which is located between Dan's Mountain and Big Savage Mountain.

The Ridge and Valley Province, located between South Mountain in Washington County and Dan's Mountain in western Allegany County contains strongly folded and faulted sedimentary rocks resulting in an undulating surface with steep sided mountains and narrow valleys. Flash flooding is a serious problem, particularly where settlements infringe on the narrow floodplain area of the Georges Creek Basin. In the eastern part of the region, a wide open valley called the Great Valley, or in Maryland, the Hagerstown Valley, is formed on Cambrian and Ordovician limestone and dolomite. West of Fairview Mountain, a more rugged terrain has developed upon shale and sandstone bedrock, which ranges in age from Silurian to Mississippian. Some of the valleys in this region are underlain by Silurian and Devonian limestone. For many years the limestone formations have been used as local sources of agricultural lime and building stone. Modern uses include crushed stone for aggregate and cement. Pure, white sandstone in the western region of the province is suitable for glass manufacturing.

The Appalachian Plateaus Province includes part of Allegany County west of Dan's Mountain and all of Garrett County; the westernmost county in Maryland. The bedrock of this region consists principally of gently folded shale, siltstone, and sandstone. Folding has produced elongated arches across the region, which exposes Devonian rocks at the surface. Most of the natural gas fields in Maryland are associated with these anticline folds in the Appalachian Plateau. In the intervening, synclinal basins, coal-bearing strata of Pennsylvania and Permian ages are preserved.

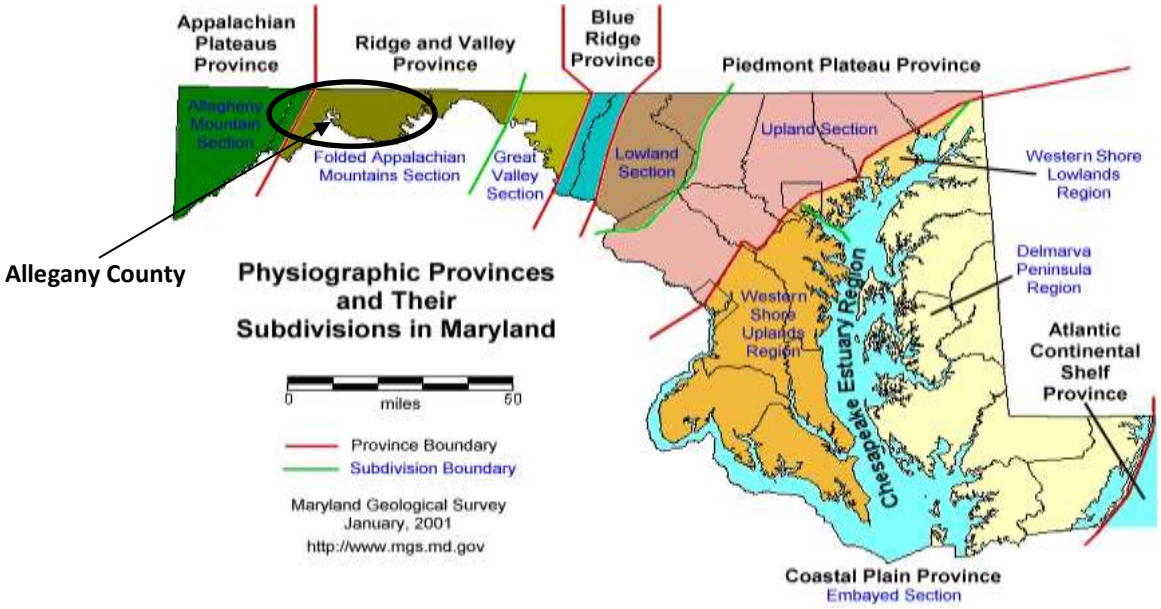


Figure 2-1. Source: Maryland Geological Survey.

2.3 Geology

The rock units that make up the county contain large deposits of bituminous coal, particularly west of Dans Mountain. Other deposits of clay, sandstone, limestone, and shale are valuable, in the construction industry. Normally, the sandstone units form the ridge tops, while softer shale or limestone underlies the valleys. Slope failure, particularly in cut or fill areas where soft shale is overlain by sandstone or in old coal mine diggings is not uncommon.

2.4 Climate

Due to the County's location in two physiographic provinces, the Appalachian Plateau and the Ridge and Valley in the Appalachian Mountains, Allegany County has two distinct climatic types. The area west of Dans Mountain has a climate similar to Garrett County with cooler temperatures and more precipitation, particularly in the form of snowfall, than the eastern two thirds of the county. By contrast, the Ridge and Valley area from LaVale east is 3-5 degrees warmer on average throughout the year and receives 8-10 inches less precipitation. On average, Frostburg receives 44.38 inches of rainfall precipitation annually, compared to 37.37 inches in Cumberland. Mean Annual Precipitation shown on Appendix A-3. Snowfall is even more pronounced in Frostburg with more than 82 inches average annual snowfall, while Cumberland receives 30 inches per season. While some of the higher ridges east of Cumberland have temperatures similar to Frostburg, precipitation is lower throughout the eastern part of the County. The essential reason for this climatic difference is elevation combined with the moisture derived from the Great Lakes falling over the Plateau to the west, while the Ridge and Valley is in effect in the "rain-shadow" of the Plateau; see Appendix A-2 to A-6 for weather and climate data.

2.5 Population

The population of Allegany County was 68,106 people according to the 2020 U.S. Census Bureau. This represents a decrease in population of 9.3% compared to the 2010 population of 75,087. Most of the population is found in the area within 5 miles of Cumberland and in the Frostburg-Georges Creek area. The most recent population estimate for Allegany County (per the 2022 U.S. Census Bureau American Community Survey) was 67,267, which is slightly less than 2020.

According to the Maryland Department of Planning and the U.S. Census Bureau, the population of Allegany County is projected to increase from 68,106 (2020) to 74,200 by 2045. This represents an 8.9% increase in population – 6,094 people.

In terms of vulnerable populations in Allegany County, two have been identified by the Planning Committee: the Hispanic or Latino population due to language barriers that may or may not be present and the Elderly population (65+). In 2010, Allegany County's Hispanic Population totaled 1,085 persons and the Elderly Population totaled 13,402. While the County's overall population has decreased from 2010 to 2020, the Hispanic or Latino Population has increased in the same time frame (Table 2-1).

Table 2-1. Vulnerable Populations in Allegany County

Year	County Population	Hispanic or Latino Population	Population Aged 65 and Older
2010	75,087	1,085	13,402
2015	73,549	1,195	13,991
2020	68,106	1,488*	13,627

Source: U.S. Census Bureau.
* 2022 ACS 1-year Estimates.

2.6 Housing

The 2020 U.S. Census determined that there are 32,911 housing units in Allegany County; this represents a slight decrease in housing units of -1.2% compared to the 33,311 housing units reported in 2010.

Approximately 83.9% (i.e., 27,596) of the total housing units were occupied at the time of the 2020 Census and 16.1% (i.e., 5,315) of housing units were vacant. Per ACS 5-year estimates, the vacancy rate of housing units for sale was 8.6%, and the vacancy rate for rental units was 15.3% in 2020. Owner occupied housing makes up 68.8% of total occupied housing units and renter occupied housing comprises 31.2% of total occupied housing units. According to the U.S. Census, a total of 24 building permits were issued for new single-family structures in Allegany County in 2022. Of these units, 17 were in the County's

unincorporated areas, two were in the City of Cumberland, and five were in the City of Frostburg.

2.7 Economy

Allegany County leads the region in healthcare, education, and advanced manufacturing. Its historic downtowns and abundance of outdoor recreation draws visitors worldwide, and innovative entrepreneurs are empowered through local programs that help to redevelop existing legacy structures into vibrant new businesses and housing options.[i] Major employers and their total employees in Allegany County are included in Table 2-2 below.

Table 2-2. Major Employers in Allegany County

Employer	Product/Service	Number of Employees
Western Maryland Health System	Medical services	2,200
Frostburg State University	Higher Education	890
American Woodmark	Cabinets	570
Allegany College of Maryland	Higher Education	510
CSX Transportation	Railroad	500
Rocky Gap Casino Resort	Resort, casino, golf and conference center	500
Walmart	Consumer goods	500
WebstaurantStore	Ecommerce restaurant supply distributor	500
Conduent Education services	Telecommunications	380
Giant Food Stores	Groceries	380
Aspira	Telecommunications	325
Federal Correctional Institution	Federal Corrections	305
Belt Group	General contracting services	250
Carefirst	Health Insurance	230
U.S. Army Reserve	National security	215
Hamilton	Telecom, relay for hearing impaired	195
Friends Aware	Services for the disabled	195

Sources: Allegany County Department of Economic & Community Development, Maryland Department of Commerce
Note: Excludes post offices, state and local governments, national retail and national foodservice.

The County's civilian labor force in 2022 was 31,102. Of this group, 29,849 were employed and 1,253 were unemployed . The County's unemployment rate as of 2022 was 4.0%. The top occupation groups between 2017 and 2021 were:

- Management, business, science, and arts – 8,942 (33.7%)
- Service – 5,545 (20.9%)
- Sales and office – 5,741 (21.6%)
- Production, transportation and material moving – 3,971 (14.9%)

Income data for Allegany County (per the U.S. Census Bureau's 2021 American Community Survey 5-year Estimates) is shown on Table 2-3, following.

Table 2-3. Income (Percent Households) for Allegany County			
Income Distribution	**Allegany County**	**State of Maryland**	**United States**
Under $25,000	24.3	12.3	17.2
$25,000 - $49,999	24.8	14.6	19.6
$50,000 - $74,999	18.1	14.7	16.8
$75,000 - $99,999	14.8	12.6	12.8
$100,000 - $149,999	11.9	19.4	16.3
$150,000 - $199,999	3.9	11.5	7.8
$200,000 and over	2.3	15	9.5
Median household	$51,090	$91,431	$69,021
Average household	$65,335	$120,234	$97,196
Per Capita	$26,762	$45,915	$37,638
Total income (millions)	$1,801	$275,849	$12,053,372
Source: Brief Economic Facts, Allegany County, Maryland			

2.8 Topography

Over 50% or approximately 150,000 acres of the County's land area is on slopes of greater than 25% grade. Of the remaining land, over 68,000 acres have slopes between 8-25% grades; while only 55,000 acres have a slope of less than 8% grade, see *Appendix A-7: Steep Slopes*.

Development in the County has predominantly occurred on slopes between 0-8% grades. Nearly every major stream valley and alluvial floodplain also occurs on these lands; see Appendix A-1. Thus, urban land uses, agricultural land uses, and stream floodplains all occur and compete for approximately 20% of the County's land surface.

2.9 Transportation

2.9.1 Highway System

The highway system of Allegany County contains a small number of arterial highways and a large number of connecting and collecting roads and streets. Most of the arterial highways are in the State Highway Administration System, while the connector and collector roads and streets are primarily in the County System. The principal arterial highways are I-68 connecting the County with urban centers to the east and west; and U.S. Route 220 connecting the County with points to the north and south.

The County Roads Division is responsible for the paving, plowing, and adjacent area vegetation control of 533 miles of county roads spread over 425 square miles. The county has 312 miles of tar and chip roads, 126 miles of gravel roads, and 95 miles of black top

roads; see Appendix A-8: Transportation. Road maintenance is performed by personnel based in four strategically located garages:

- Central/Cumberland
- Northeast/Little Orleans
- Southeast/Oldtown
- Western/Frostburg

2.9.2 Rail Service

Rail service as it exists today, is shown on Appendix A-8. In addition to the main CSX lines to Pittsburgh and Washington D.C., the CSX Corporation retains the other main western line to the West Virginia coal fields, and several pieces of the old system in the Georges Creek Valley west of Cumberland.

In addition, the Western Maryland Scenic Railroad operates a Tourist related passenger train on a seasonal basis on a section of the old Western Maryland C&O railbed between Cumberland and Frostburg.

The Amtrak Passenger Service operates one train per day, passing through Cumberland in each direction between Washington D.C., Pittsburgh, and Chicago.

2.10 Critical & Essential Facilities

2.10.1 Hospitals

UPMC Western Maryland provides healthcare services for residents in Allegany and Garrett Counties in Maryland and surrounding counties in West Virginia and Pennsylvania. State-of-the-art medical equipment and an experienced staff ensure community members have access to serious medicine close to home. This facility is located on Willowbrook Road in Cumberland.

Additionally, UPMC operates several urgent care centers: UPMC Urgent Care – Frostburg Plaza, Advanced Medical care, and UPMC Urgent Care – McHenry. These facilities service residents and visitors who have non-emergency related health conditions or injuries.

2.10.2 Fire and Rescue

Volunteers man all of the municipal and non-municipal fire companies and rescue squads, with the exception of Cumberland. In order that the financial needs of the volunteer

companies are met, special taxing areas have been established in various communities. Additionally, annual allocations of funds to each fire and rescue company from the County are administered by the County Fire Board. Beginning in 2017, Allegany County began a semi-countywide EMS paid system. Various rescue companies within the County have paid EMS crews working either 8-hour or 12-hour shifts. Appendix A-14 depicts the location of all fire and rescue stations within the county.

The County has also formed a Special Operations Team comprised of six disciplines (Hazard Materials Incident Response, Swiftwater Search and Rescue, Collapse Rescue, High-Angle Rescue, Confined Space Rescue and Search and Rescue) to assist local Fire and Rescue.

2.10.3 Police

Allegany County is served by the Sheriff's Office located in Cumberland. The goal of the office is to protect all citizens of Allegany County by preserving the peace, maintaining a safe and secure detention center, and securing the local courts. Additionally, both the City of Cumberland and the City of Frostburg have their own police departments. Frostburg State University has an on-campus police force to serve students and staff; the campus police department often collaborates with the City of Frostburg.

2.11 Municipal Profile

2.11.1 Town of Barton

The Town of Barton was Incorporated in 1900.

Population:

2000 Census: 478
2010 Census: 457
2020 Census: 466

Town Departments: Administrative, Finances, Parks, Recreation & History, Police, Streets

2.11.2 City of Cumberland

The City of Cumberland is the County seat of Allegany County and was incorporated in 1815.

Population:

2000 Census: 21,518
2010 Census: 20,859
2020 Census: 19,081

City Departments: Administrative Services, Community Development, City Clerk, City Solicitor, Finance, Management Information Systems, Parks & Recreation, Planning, Human Resources, Police, Public Works (Central Services, Engineering, Maintenance, Public Utilities, Street Maintenance, and Wastewater Divisions)

Additional, the City of Cumberland has a paid Fire Department under the direction of Chief Shannon W. Adams.

2.11.3 City of Frostburg

The City of Frostburg was incorporated in 1839.

Population:

2000 Census: 7,873
2010 Census: 9,002
2020 Census: 7,029

Note: At Frostburg State University, the student enrollment averages over 5,000 students during the fall and spring semesters. Therefore, a transient population exists for 8 to 9 months a year, increasing the City of Frostburg's overall population.

City Departments: Administration, Finance, Police, Public Works, Water, Parks &Recreation, Public Safety, Community Development, Code Enforcement, Street, City Planner

2.11.4 Town of Lonaconing

The Town of Lonaconing was incorporated in 1890.

Population:

2000 Census: 1,205
2010 Census: 1,214
2020 Census: 1,002

Town Departments: Administration, Finance, Police, Street, Water

2.11.5 Town of Luke

The Town of Luke was incorporated in 1922.

Population:

2000 Census: 80
2010 Census: 65

2020 Census: 85

Town Departments: Administration, Engineer, Legal Counsel, Maintenance, Police & Street Lights, Parks & Recreation, Property & Equipment, Streets & Water

2.11.6 Town of Midland

The Town of Midland was incorporated in 1900.

Population:
2000 Census: 473
2010 Census: 446
2020 Census: 487

Town Departments: Clerk, Treasurer

2.11.7 Town of Westernport

The Town of Westernport was incorporated in 1858.

Population:
2000 Census: 2,104
2010 Census: 1,888
2020 Census: 1,811

Town Departments: Administration, Finance, Police, Street, Water

2.12 Land Use and Development Trends

According to the *2010 Allegany County Water Resources Element,* development trends are concentrated between Cumberland, LaVale, Mt. Savage, Frostburg, Georges Creek Communities, Westernport, McCoole, Danville, Rawlings, Cresaptown and Bowling Green, which is due to the nature of the County's terrain. The development pattern follows the Potomac Valley, the Georges Creek Valley, the Braddock Run Valley and the Jennings/Wills Creek Valley in a circular pattern around Dans Mountain and Wills Mountain. According to the *2014 Allegany County Comprehensive Plan*, future growth is projected to remain in this general pattern and redevelopment is projected to occur in Cumberland, Frostburg, Mount Savage, Cresaptown, Westernport, and the Georges Creek communities.

Additionally, the 2010 Water Resources Element discusses development in three phases, which are as follows:

Phase 1

The first phase of new development should occur in the following areas: Frostburg and its satellite communities; the Wills Creek Valley between Corriganville and Ellerslie; the vicinity of Cash Valley Road; the Winchester Road area; Bedford Road; Baltimore Pike; Valley Road; and the Route 51/ Mexico Farms area. Redevelopment should occur in Cumberland, Frostburg, Mt. Savage, the Georges Creek communities, and in Cresaptown.

Phase 2

The second phase of new development should occur in the Potomac Valley between Bel Air and Rawlings as water and sewer is extended in this area. A modest amount of new development should also occur in Flintstone and Oldtown areas as water and sewer improvements are made in those communities. At the same time, redevelopment efforts should continue in the older communities.

Phase 3

The third phase of new development should occur in the triangle between Frostburg, Clarysville and Midland as water and sewer service is extended and improved in this area.

The Maryland Department of Planning (MDP) projects Allegany County to have a population of 72,150 by the year 2030, and a population of 74,200 by 2045. However, between 2010 and 2021 the County's population has decreased by an average of 0.9% per year. The U.S. Census Bureau has calculated the County's population total in 2020 to be 68,106. The County's population is 67,267 according to the U.S. Census ACS 5-year Estimates for 2022.

While the County's population has been declining since the 1950's, an obvious increase in urban growth has occurred even with the population decrease and an additional urban growth is projected by the year 2040. In terms of growth pressure impacts, certain natural features constrain development (i.e., steep slopes and floodplains). Unfortunately, much of the growth that occurred prior to the adoption of floodplain regulations in 1981 was in unsuitable locations due to the prevalence of steep slopes and floodplains. The declining population will cause less people in Allegany County overall to be vulnerable to hazards identified within the plan, and will potentially provide less competition for local resources, which may increase resilience.

The *2021 Allegany County Annual Report* summarizes permitting activities since 2012. The total amount of building permits both applied for and issued has steadily declined from 2012 to 2021. According to information presented in the 2021 Plan, a total of 21 single family dwellings and five mobile home permits were issued in 2021; in total, 229 permits were

issued in 2021. In the last decade (since 2012) the volume of total permits process has followed a noticeable downward trend, indicating less new development in the County. 2012 experienced a peak volume of 826 permits, compared to 616 in 2021. The minimal development experienced by the County, combined with current building regulations (refer to Chapter 14 for more information on capabilities), make it unlikely that the continued development that does occur in Allegany County over the next five years will increase or decrease the community's vulnerability to hazards identified within the plan. Presently, it is more likely that the projected increase in frequency and intensity of severe storms will increase hazard vulnerability in the County.

2.13 Municipal Growth

Comprehensive plans were reviewed for the following municipalities for the 2024 Plan Update:

- City of Cumberland (2013)
- City of Frostburg (2011)
- Town of Midland (2010)
- Town of Lonaconing (2011)
- Town of Barton (2010)
- Town of Westernport (2011)

While the Towns of Barton and Midland adopted comprehensive plans prior to the adoption of the *2014 Allegany County Comprehensive Plan*, they do not at present exercise zoning and land use authority. The Town of Luke currently has not adopted a comprehensive plan or municipal growth element, nor does it exercise zoning and land use authority.

In reviewing these plans, growth areas for all municipalities, with the exception of the City of Cumberland, were directed away from hazard areas such as 1 percent-annual-chance floodplain and steep slopes. Considering the amount of available land for development and the location of the floodplain in the City of Cumberland, projected development in the eastern portion may be impacted by flooding. It is imperative that the County and its municipalities promote new development away from the 1 percent-annual-chance floodplain and steep slopes in order to mitigate loss due to the flood and soil movement hazards.

2.13.1 City of Cumberland

The *City of Cumberland's 2013 Comprehensive Plan: City-Wide Element* was reviewed as part of the plan update process. The review of this document, particularly as it relates to impacts of municipal growth on sensitive areas, reveals major parallels between the goals of the 2013 Comprehensive Plan and the goals of the 2004 Comprehensive Plan.

The City of Cumberland's proposed future land use, Figure 2-2 following, represents the City's desire to "strengthen and aggressively promote revitalization and redevelopment of its existing commercial districts. This plan already presumes that 30 percent of all future residential development needs can be satisfied through infill development and redevelopment within the current city limits."

According to the *2004 City of Cumberland Comprehensive Plan*, and echoed in the *City of Cumberland's 2013 Comprehensive Plan: City-Wide Element*, new development could be accommodated in the following areas:

- *Accommodate new residential development, including housing types attractive to smaller households and active retirees. Opportunities include Haystack Mountain and Shriver Ridge (both in a manner compatible with maintaining views of wooded hillsides from the downtown); Valley Road; land on the east side of the I-68/Willowbrook Road interchange; and recently annexed lands to the east.*
- *Accommodate new commercial/mixed uses in the vicinity of the I-68/Willowbrook Road and Route 144 interchanges, as allowed by topography.*

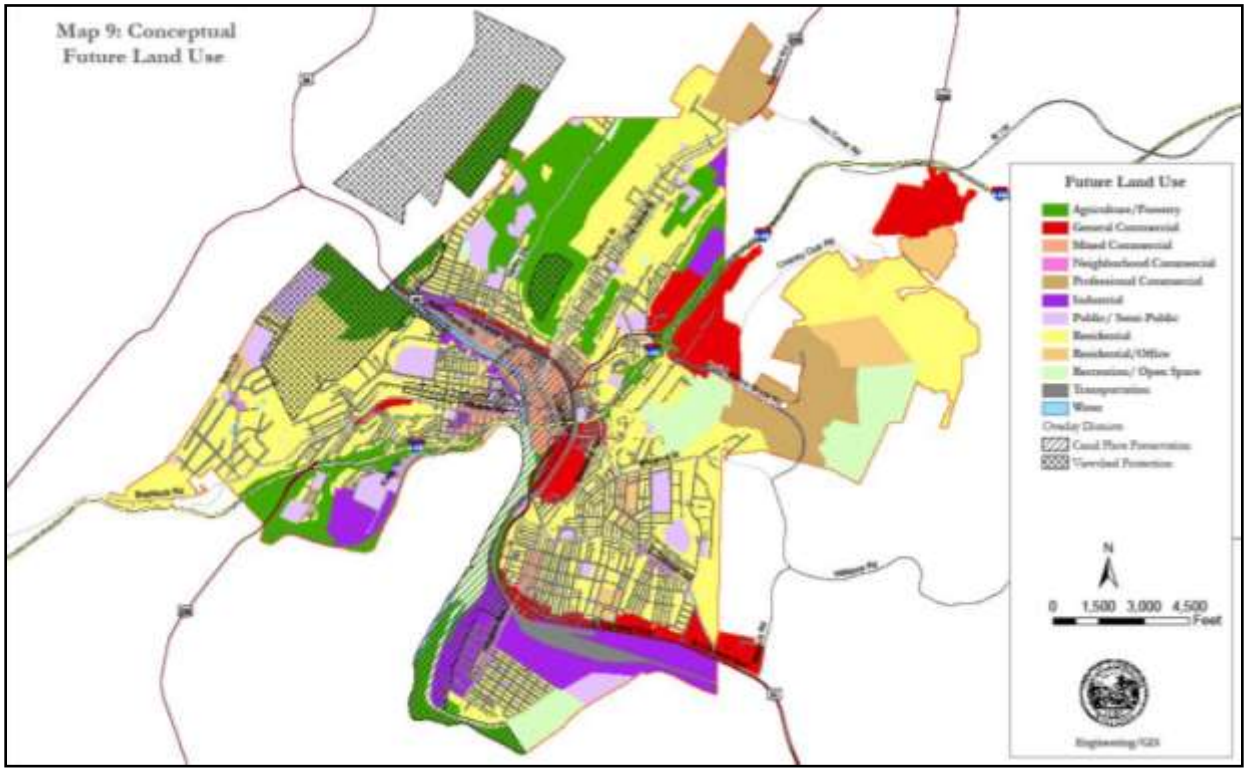


Figure 2.2: City of Cumberland's 2013 Comprehensive Plan: City-Wide Element

In addition to the above development opportunities, the City has plans for the annexation of areas outside the current city limits.

> *According to the 2013 Comprehensive Plan, the overarching goal of the annexation plan is to identify adjoining land areas with strong potential for future growth that will provide opportunities for land uses that may not fit well into the city's existing developed lands.*
>
> *Most of the city's anticipated future demand for annexation and new development is expected to occur on the City's east side building upon the emerging Willowbrook/Williams/Messick Road corridor. Since adoption of the prior Comprehensive Plan in April 2004, the Mayor and City Council have enacted seven annexations which added a total of 637.9 acres to the City's corporate boundaries. These annexations increased the size of the city to approximately 10.17 square miles.*

During the previous planning period, the site of the old Allegany High School closed and the school moved to a new location. This critical facility is now located on Seton Drive on the site of the previous community hospital – Sacred Heart Hospital. The location of the school is on top of Haystack Mountain, which places it squarely out of flood hazard areas. Due to the increased elevation, the facility may experience slightly more severe high wind and winter storm events.

2.13.2 City of Frostburg

The *2011 Frostburg Comprehensive Plan* detailed the results of their Growth Management Element. Excerpts from the draft Plan are as follows:

> *The City has determined to establish a four-cycle or 24-year Municipal Growth Boundary (MGB). This area will be described at the end of this report. Within this mega boundary the City has configured targeted lands for possible annexation during the 6-year planning period, which are termed Municipal Growth Areas (MGAs), described in priority order:*
>
> *MGA #1: Commercial/Light Industrial Area adjoining I-68 on both sides of Interchange #34, in proximity to an existing City waterline, with equivalent County zoning. The estimated area is 500 acres.*
>
> *MGA #2: Single Family Residential Area adjoining Braddock Road and Welsh Hill, including a planned extension of a low-density residential subdivision (Sand Spring Subdivision) with plans to interconnect with Braddock Estates and*

including sensitive areas along Sand Spring Run, with equivalent County zoning. Estimated area is 50 acres.

MGA #3: Single Family Residential Area with two components adjoining the 2001 Centennial Hill Annexation area, including Frost Elementary School and Glendenning Recreation Complex near the in-City Crestview/Timber Ridge Subdivisions. A sector west of Centennial Hill is based on a 17-lot portion of a planned 30-lot subdivision that extends across the City boundary line northwest from Timber Ridge Drive. A sector east of Centennial Hill is based on demand for annexation of an older 14-lot County subdivision north of Talcott Avenue. Both planned developments together are estimated to include 25 acres.

The City is limiting its specific interest to three areas in recognition that population growth for the planning period should be concentrated within existing City limits if the City is in fact going to be in a slow-growth mode, which is expected and desirable. Annexation is not likely to be a pressing matter in the first half of the planning period and may not be necessary at all depending on the direction of development trends in a volatile national and regional economic context.

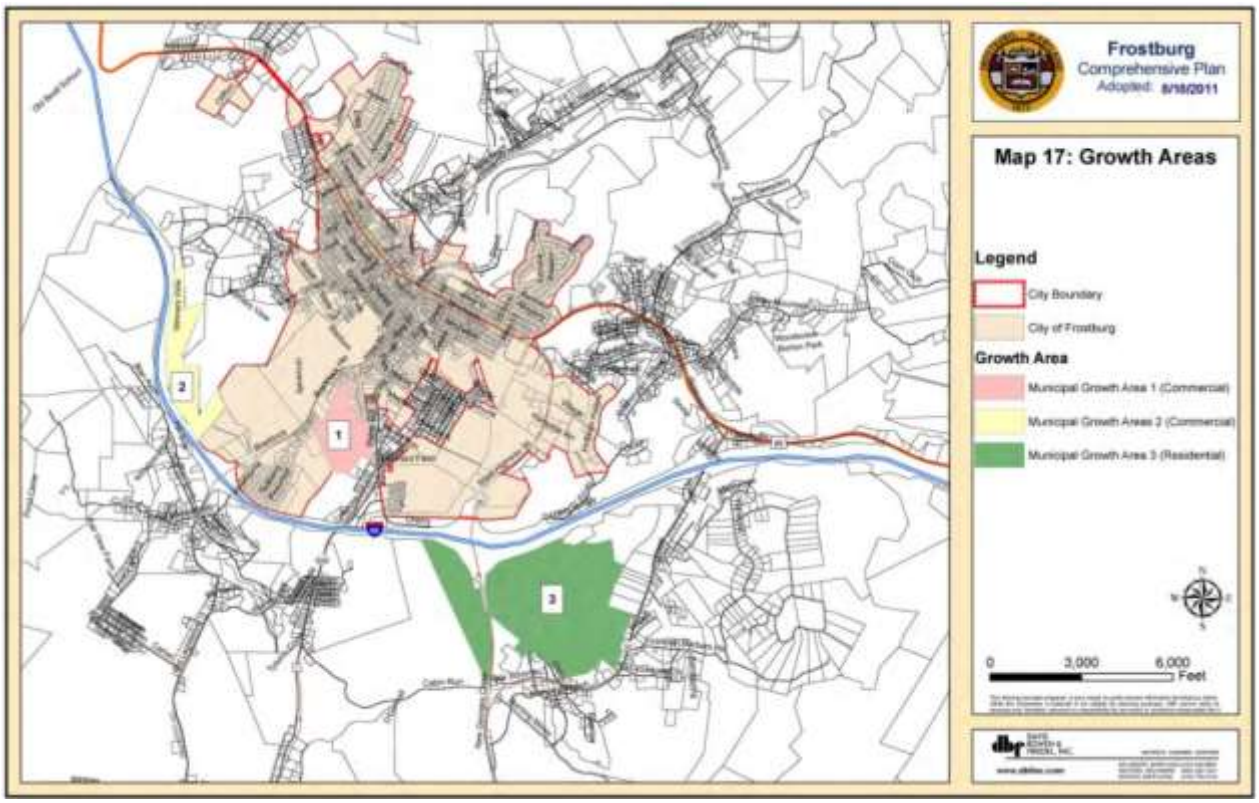


Figure 2-3. Source: Frostburg Comprehensive Plan – Growth Areas.

2.13.3 Town of Midland

According to the *2010 Town of Midland Comprehensive Plan*, Sensitive Areas (steep slopes and floodplains) comprise 44% of the total acreage within the Town of Midland. Therefore, an analysis including the following criteria was conducted: availability of water & sewer, access from existing roads, and land not impacted by sensitive areas. As a result, a large parcel on the western portion of Midland, meeting the analysis criteria was identified. This parcel is located along Old Legislative Road.

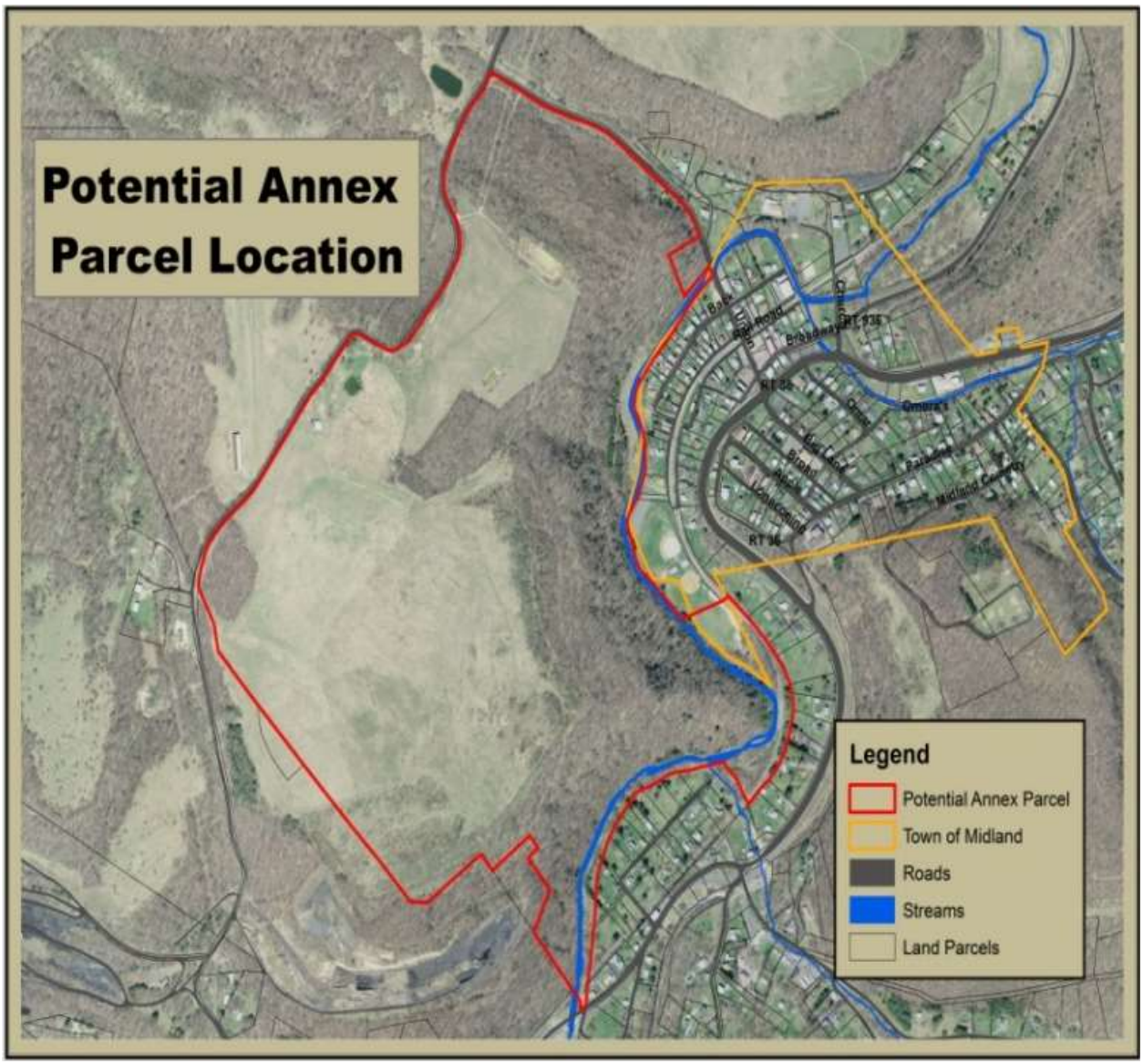


Figure 2-4. Source: 2010 Town of Midland Comprehensive Plan

2.11.4 Town of Lonaconing

Steep slopes and floodplains comprise 45% of the total acreage within the Town of Lonaconing; *2010 Town of Lonaconing Comprehensive Plan*. An analysis of adjacent parcels was conducted during the *Town of Lonaconing Plan* development process, which resulted in a large parcel on the south-eastern portion of Lonaconing meeting the analysis criteria being identified. According to the Plan, in order to access this parcel, Potential Annexation Area 1 would need to be annexed first or in conjunction with Potential Annexation Area 2 as shown on Figure 2-5, following.

No significant development changes have occurred in the Town of Lonaconing during the previous planning period that would have an impact on hazard vulnerability as identified within this plan update.

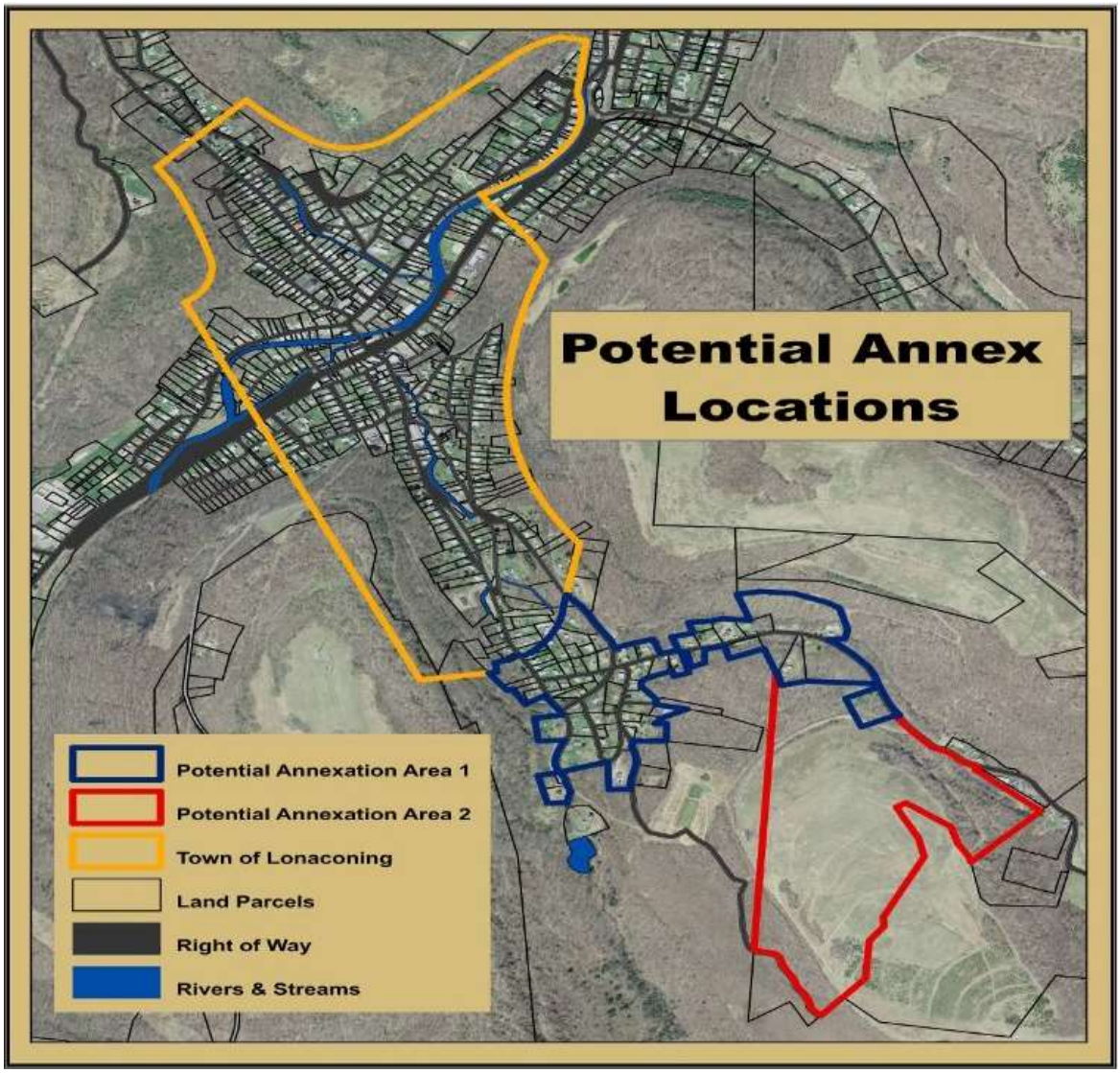


Figure 2-5. Source: 2010 Town of Lonaconing Comprehensive Plan

2.11.5 Town of Barton

The *2010 Town of Barton Comprehensive Plan* states that sensitive areas, steep slopes, and floodplains, comprise 63.89 of the total acreage within the Town of Barton. After an analysis was conducted, a large parcel located on the northwest side of Town was identified as being suitable for development as shown on Figure 2-6, following.

No significant development changes have occurred in the Town of Barton during the previous planning period that would have an impact on hazard vulnerability as identified within this plan update.

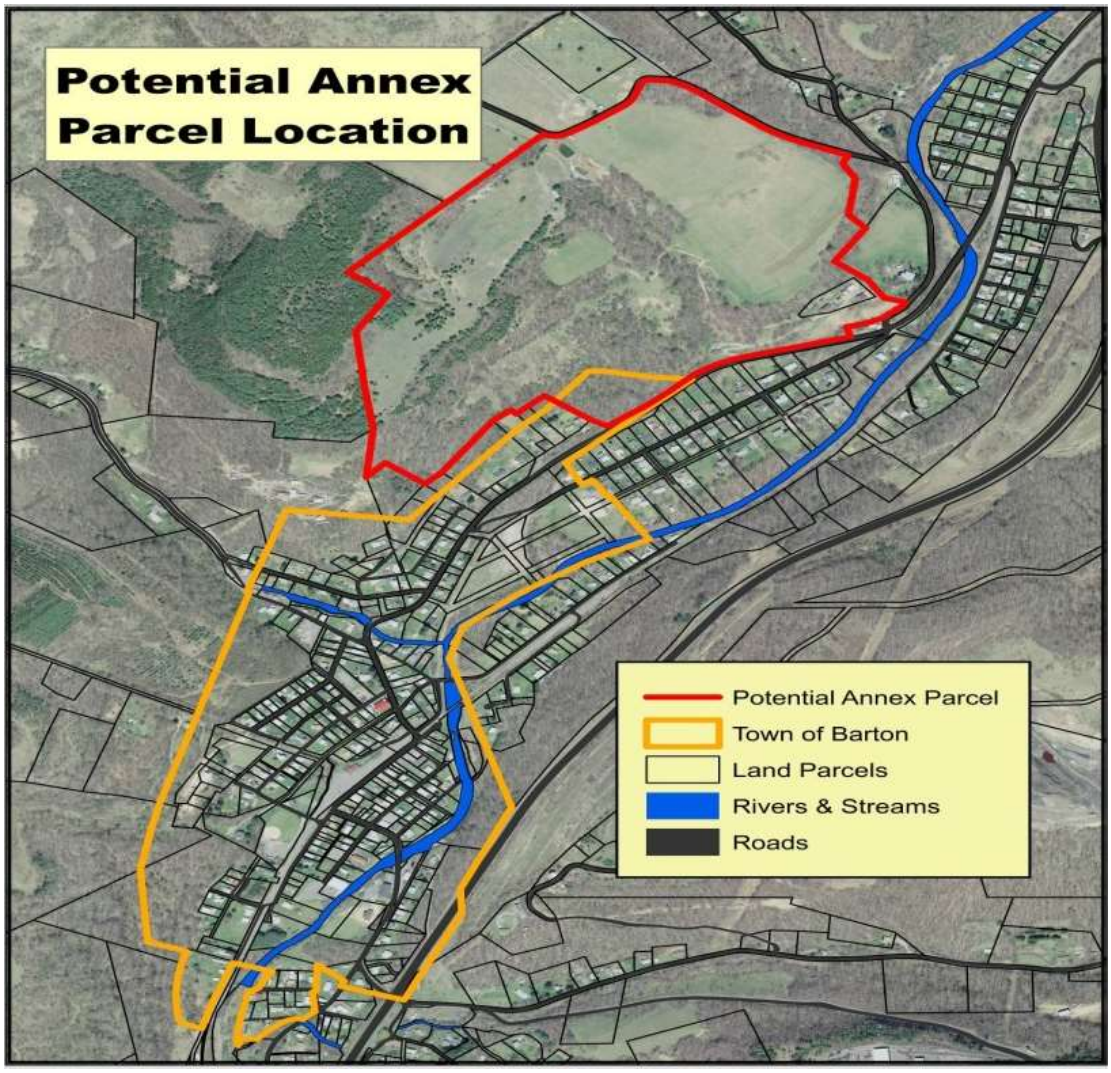


Figure 2-6. Source: 2010 Town of Barton Comprehensive Plan

2.11.6 Town of Westernport

According to the *2011 Town of Westernport Comprehensive Plan*:

In order to assess potential parcels for annexation, Westernport officials were involved during the Plan development process. Factors considered by the officials for annexations were; availability of water and sewer and existing road access. As a result, three different areas were identified for annexation and are defined by direction (north, west, and east). Additionally, a fourth area, located inside the East annex area was identified and is considered a high priority for annexation. This area is located adjacent to the municipal boundary and is undeveloped. These annexations are located within the Priority Funding Areas, which are defined as existing communities and places where local governments want State investment to support future growth.

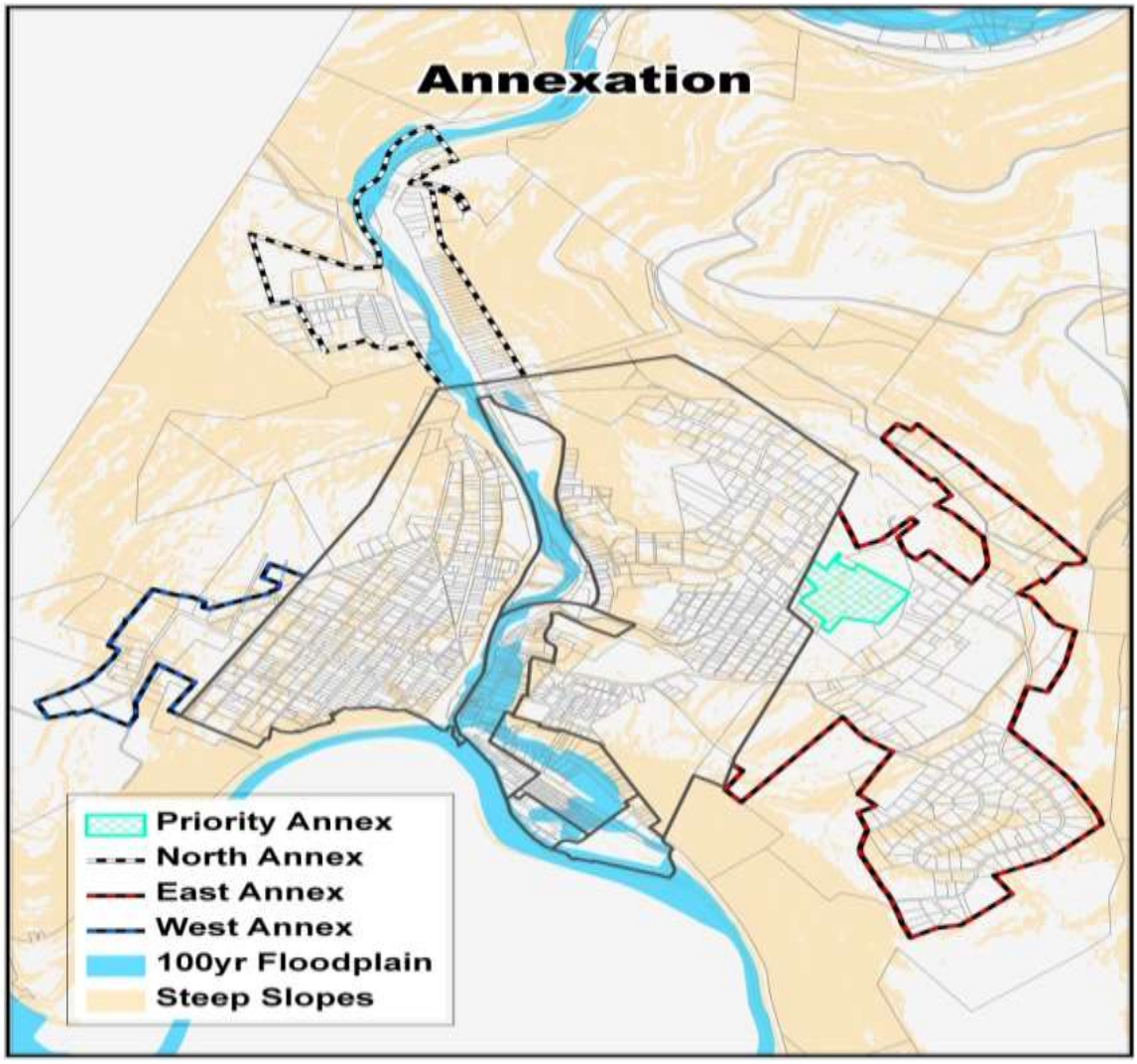


Figure 2-7. Source: 2011 Town of Westernport Comprehensive Plan

No significant development changes have occurred in the Town of Westernport during the previous planning period that would have an impact on hazard vulnerability as identified within this plan update.

2.11.7 Town of Luke

The Town of Luke currently does not have a municipal growth element; therefore, development trends could not be analyzed. Given the small size and population (2020 Census: 85) of Luke, new development is unlikely. However, any development in the Town must be conscious of the close proximity to the Potomac River, steep slopes, and other sensitive areas.

No significant development changes have occurred in the Town of Luke during the previous planning period that would have an impact on hazard vulnerability as identified within this plan update.

In regard to the municipalities of Midland, Lonaconing, Barton, and Westernport – proposed annexes are located outside of the floodplains and within 0-15% slopes only. The City of Frostburg proposes three growth areas, all of which avoid the floodplains and steep slopes. However, the City of Cumberland has proposed development that may be impacted by flooding. Therefore, considering the County's significant amount of floodplain land, it is extremely important that new development, within the County and municipalities, be directed away from the floodplain as well as areas with steep slopes.

[i] Maryland Department of Commerce (2022, February). *Brief Economic Facts Allegany County, Maryland*. Open.Maryland.gov. Retrieved June 9, 2023, from https://commerce.maryland.gov/Documents/ResearchDocument/AlleganyBef.pdf

CHAPTER 3: HAZARD IDENTIFICATION AND RISK ASSESSMENT

As part of the Plan Update process for Allegany County, a Hazard Identification and Risk Assessment (HIRA) has been completed.

A **risk** is the chance, high or low, that any hazard will occur and the severity or impact from that hazard.

Eleven (11) hazards have been identified and a hazard risk ranking has been assigned to each. These scores are summarized in Table 3-1, including the 2018 risk score for each hazard. Hazard definitions per the National Centers for Environmental Information (NCEI) are included within each data table included Section 3.3 of this chapter. Hazard definitions are also included in each hazard-specific chapter included within this plan.

Table 3-1. Hazard Identification and Risk Assessment Ranking Results

Hazards	2018 Hazard Ranking	2021 State of Maryland Ranking	2024 Hazard Ranking
Flood (Riverine and Flash)	High	Medium	High
Winter Storm	High	High	High
Severe Weather (Thunderstorm, Lightning, Hail, Fog)	Medium-High	Medium	Medium-High
Tornado	Medium	Medium-High	Medium-High
Excessive Heat	Medium	Medium	Medium
Drought	Medium	Medium-Low	Medium
Wildfire	Medium	Medium-High	High
Soil Movement (Land Subsidence)	Medium	Medium	Medium
HazMat Transportation*	Medium-High	Medium-High	High
Railway Accidents	Medium	Medium-High	Medium
Emerging Infectious Diseases**	Medium-Low	Medium-High**	High
Dam Failure	-	Medium-Low	Medium

Note: Epidemic was ranked in the 2018 plan but was not profiled. It is now included under the Emerging Infectious Diseases hazard profile.
* The 2021 State Hazard Mitigation Plan includes HazMat Transportation under the Transportation Accidents hazard as part of the plan's "Human-Caused Hazards and Threats" category.
** This hazard is identified as "Public Health Emergencies" in the State Plan.

Compared to 2018, rankings for 2024 stayed the same for the following hazards: flood, winter storm, severe weather, excessive heat and drought, soil movement, and railway accidents. Rankings changed for the following hazards: tornado (medium to medium-high), wildfire (medium to high), hazmat transportation (medium-high to high), and emerging infectious diseases (medium-low to high). Most of the ranking differences are small with the exception of emerging infectious diseases. This is likely due for two reasons; first, the hazard was known as "epidemic" in the 2018 plan and is not directly comparable to emerging

infectious diseases, and secondly the recent COVID19 global pandemic likely impacted the community perspective component for this particular hazard.

The methodology and data used to complete the HIRA for the hazards listed in Table 3-1 has been included on the following pages. While man-made hazards (railway accidents and hazmat transportation) were ranked and profiled in this plan update, only the nine (9) natural hazards identified on the table above are included in this HIRA.

13.1 Hazard Identification and Risk Assessment Method

To assess the hazard risk for the nine (9) natural hazards identified in this Plan Update, a composite score method was undertaken. The composite score method was based on a blend of quantitative and qualitative factors extracted from the National Centers for Environmental Information (NCEI) database, and other available data sources. These included:

- Historical impacts, in terms of human lives and property;
- Geographic extent;
- Historical occurrence;
- Future probability; and,
- Community perspective.

The following ranking parameters (Tables 3-2 and 3-3) were used to develop the composite risk score, which provides the hazard ranking results (i.e., High, Medium-High, Medium, Medium-Low, or Low) for the nine (9) identified hazards. Each parameter was rated on a scale of one (1) to four (4). These parameters, along with their weights, are also included in Table 3-4.

Table 3-2. Ranking Parameters	
Injuries and Death Ranking	
Death	4
N/A	3
Injury	2
None	1
Property and Crop Damage Ranking	
≥ $2M	4
≥ $501K	3
≥ $50k	2
≥ $0	1
Annualized Events Ranking	
≥ 2.51	4
≥ 1.01	3
≥ 0.11	2
≥ 0	1
Probability and Future Ranking	

Table 3-2. Ranking Parameters	
Highly Likely (hazard event is likely to occur more than once every 5 years)	4
Likely (hazard event is likely to occur less than every 5 years, but more often than once every 30 years)	3
Occasional (hazard event is likely to occur once every 15 years)	2
Unlikely (hazard event is likely to occur less than once every 30 years)	1
Community Perspective Ranking*	
Very Concerned	4
Concerned	3
Somewhat Concerned	2
Not Concerned	1

Sources: National Centers for Environmental Information Storm Events Database.
AND
* Allegany County Hazard Mitigation Plan Update Public Survey and HMPC Risk Survey. The Community Perspective Ranking is derived from Question 2 of the HMPC Risk Survey and Question 4 of the Public Survey, which is: "Please indicate your level of concern for each hazard." Options include "not concerned", "somewhat concerned", "concerned", and "very concerned."

Table 3-3. Max Geographic Extent (Hazard Dependent) Ranking								
Ranking	**Coastal Hazards**	**Drought**	**Flood**	**Thunderstorm**	**Tornado & Earthquake**	**Wildfire**	**High Wind**	**Winter Weather**
1	0.00	0	0.00	0-2 events	0-10 events	0	0.00	10"-19"
2	25.00	0.18	10.00	3-5 events	11-17 events	0.4674	60.00	20"-29"
3	50.00	0.3421	20.00	6-8 events	18-22 events	2.1545	74.00	30"-39"
4	75.00	0.49	30.00	>9 events	>23 event	3.9041	95.00	>40"
Calculated Using:	% Coastal Land Area	% Crop Area	% Area in 100-yr Floodplain	Avg number based on: # of events, 2"> hail and lightning events with Injuries/Deaths	Sum of all tornados weighted by F-scale (F1*1.5, F2*2, F3*3, F4*4); Number of Earthquake Events	Average annual acres burned (%)	ASCE Design Wind Speeds	Average Snowfall
Source:	*COASTAL: Risk Area*	*DROUGHT: CDL MD*	*FLOOD: DFIRMS*	*THUNDERSTORM: NCDC*	*TORNADO: NCDC EARTHQUAKE: Maryland Geological Survey*	*WILDFIRE: MD DNR Forest Service*	*WIND: ASCE*	*WINTER STORM: National Weather Service*

Source: 2021 State of Maryland Hazard Mitigation Plan.

The weighted risk factors in Table 3-4 were used in the equation below to determine the composite risk score for each identified hazard.

Equation: Composite Score = IN + DT + PD + CD + (GE*1.5) + EV + FP + (CP*1.5)

Table 3-4. Weighted Risk Factors		
Injuries	IN	**1**
Deaths	DT	**1**
Property Damage	PD	**1**
Crop Damage	CD	**1**
Geographic Extent (Hazard Dependent)	GE	**1.5**
Events (Annualized)	EV	**1**
Future Probability	FP	**1**
Community Perspective	CP	**1.5**

3.2 Hazard Ranking Results

Using the data tables described in *Section 3.1* to populate the parameters, the composite score was determined for each hazard identified in Table 3-1. Hazard Rankings were assigned accordingly using the Composite Score, Table 3-5 below. The highest possible composite score is 36.

Table 3-5. Composite Score	
Composite Score	**Hazard Ranking**
0 to 9.9	**Low**
10.0 to 12.9	**Medium-Low**
13.0 to 18.9	**Medium**
19.0 to 22.9	**Medium-High**
> 23.0	**High**

Table 3-6, following, provides the hazard risk ranking update results. Flood, Winter Storm, Wildfire, and Emerging Infectious Diseases were ranked as "High" risk hazards. Severe Weather and Tornado were ranked as "Medium-High" risk hazards. Drought & Excessive Heat, Soil Movement, and Dam Failure were ranked as "Medium" risk hazards.

Table 3-6. 2024 Hazard Risk Ranking Results										
Hazard	Injuries & Deaths		Property & Crop Damage		Geographic Extent	Total Events Annualized	Future Probability	Community Perspective	Composite Score	Hazard Ranking
	IN	DT	PD	CD	GE	EV	FP	CP	CS	
Flood (Riverine and Flash)	1	1	4	1	1 % = 1	2.41 = 4	4	4.5	23.25	High
Winter Storm (Heavy Snow, Winter Weather, Winter Storm, Ice Storm, Extreme Cold)	1	1	2	1	4 (annual avg = 42”)	9.8= 4	4	4.5	25.75	High
Severe Weather (Thunderstorm Wind, Lightning, Hail, Dense Fog)	2	1	3	1	2	7.1 = 4	4	3	22.5	Medium-High
Tornado (High Wind)	2	1	4	2	2	0.67 = 2	2	3	20.5	Medium-High
Drought (Drought, Excessive Heat, Heat)	1	1	1	1	1 (5.5% total land area is cropland)	0.81 = 2	2	2.5	13.25	Medium
Wildfire	2	1	1	1	4	4	4	3	23.5	High
Soil Movement (Land Subsidence)	1	1	3	1	4	1	2	2.5	18.75	Medium
Emerging Infectious Diseases	2	4	1	1	4	4	4	3	26.5	High
Dam Failure	1	1	1	1	1	1	4	3	15	Medium

3.3 Data Tables

The following data tables are from each hazard profile. These tables are populated with data gathered from the NCEI Storm Events Database.

The data from these tables populated the injuries and deaths, property and crop damage, and total events annualized variables of the composite score. NCEI definitions for each hazard are included as part of the data tables. Results of the composite score are included in Section 3.2.

Table 3-7 below includes all the hazards included in this plan, along with associated sub-hazards, as well as their definitions. These definitions are included for each hazard data table in this section, as well as in each hazard-specific chapter of this Plan Update.

Note: events included for each hazard were identified as having impacted Allegany County in the past. Due to the nature of the NCEI Storm Events Database, it is likely that event narratives include hazard impacts to other communities in Maryland.

Table 3-7. Hazard Definitions	
Hazard	**NCEI Definition (as included within the NCEI Storm Events Database)**
FLOOD	
Flash Flooding	Based on NCEI definitions/criteria: Flash Flood (C). A life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to the shorter-term flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash flooding, such as dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Conversely, flash flooding can transition into flooding as rapidly rising waters abate. The Storm Data preparer uses professional judgment in determining when the event is no longer characteristic of a Flash Flood and becomes a Flood.
Flood	Based on NCEI definitions/criteria: Flood (C). Any high flow, overflow, or inundation by water which causes damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, that poses a threat to life or property. If the event is considered significant, it should be entered into Storm Data, even if it only affected a small area. Refer to the Flash Flood event (Section 14) for guidelines for differentiating between Flood and Flash Flood events.
WINTER STORM	
Ice Storm	Based on NCEI definitions/criteria: Ice Storm (Z). Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more).
Winter Storm	Based on NCEI definitions/criteria: Winter Storm (Z). A winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally, a Winter Storm would pose a threat to life or property.

Table 3-7. Hazard Definitions	
Hazard	**NCEI Definition (as included within the NCEI Storm Events Database)**
Winter Weather	Based on NCEI definitions/criteria: Winter Weather (Z). A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle). The Winter Weather event can also be used to document out-of-season and other unusual or rare occurrences of snow, or blowing/drifting snow, or freezing rain/drizzle. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.
Cold/Wind Chill	Based on NCEI definitions/criteria: Cold / Wind Chill (Z). (Z). Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -180 F or colder) conditions. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. There can be situations where advisory criteria are not met, but the combination of seasonably cold temperatures and low wind chill values (roughly 15 degrees F below normal) may result in a fatality. In these situations, a cold/wind chill event may be documented if the weather conditions were the primary cause of death as determined by a medical examiner or coroner. Normally, cold/wind chill conditions should cause human and/or economic impact.
Extreme Cold/Wind Chill	Based on NCEI definitions/criteria: Extreme Cold (Z). A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -35 degrees F or colder). If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally these conditions should cause significant human and/or economic impact. However, if fatalities occur with cold temperatures/wind chills but extreme cold/wind chill criteria are not met, the event should also be included in Storm Data as a Cold/Wind Chill event and the fatalities are direct.
SEVERE WEATHER	
Thunderstorm Wind	Based on NCEI definitions/criteria: Thunderstorm Wind (C). Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. Maximum sustained winds or wind gusts (measured or estimated) equal to or greater than 50 knots (58 mph) will always be entered. Events with maximum sustained winds or wind gusts less than 50 knots (58 mph) should be entered as a Storm Data event only if the result in fatalities, injuries, or serious property damage. Storm Data software permits only one event name for encoding severe and non-severe thunderstorm winds. The Storm Data software program requires the preparer to indicate whether the sustained wind or wind gust value was measured or estimated.
Hail	Based on NCEI definitions/criteria: Hail (C). Frozen precipitation in the form of balls or irregular lumps of ice. Hail 3/4 of an inch or larger in diameter will be entered. Hail accumulations of smaller size, which cause property and/or crop damage or casualties, should be entered. Maximum hail size will be encoded for all hail reports entered.
Lightning	Based on NCEI definitions/criteria: Lightning (C). A sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage.
Dense Fog	Based on NCEI definitions/criteria: Dense Fog (Z). Water droplets suspended in the air just above the Earth's surface reducing visibility to values equal to or below locally/regionally established values for dense fog (usually 1/4 mile or less) and impacting transportation or commerce. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Accidents, which resulted in injuries or

Table 3-7. Hazard Definitions	
Hazard	**NCEI Definition (as included within the NCEI Storm Events Database)**
	fatalities, during a dense fog event, are reported using this event category. These injuries or fatalities should be listed as indirect.
TORNADO	
Tornado	Based on NCEI definitions/criteria: Tornado (C). A violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. For a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance.
Funnel Cloud	Based on NCEI definitions/criteria: Funnel Cloud (C). A rotating, visible extension of a cloud pendant from a convective cloud with circulation not reaching the ground. The funnel cloud should be large, noteworthy, or create strong public or media interest to be entered.
High Wind	Based on NCEI definitions/criteria: High Wind (Z). Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.
EXTREME HEAT	
Heat	Based on NCEI definitions/criteria: Heat (Z). A period of heat resulting from the combination of high temperatures (above normal) and relative humidity. A Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established advisory thresholds. Fatalities or major impacts on human health occurring when ambient weather conditions meet heat advisory criteria are reported using the Heat event. If the ambient weather conditions are below heat advisory criteria, a Heat event entry is permissible only if a directly related fatality occurred due to unseasonably warm weather, and not man-made environments.
Excessive Heat	Based on NCEI definitions/criteria: Excessive Heat (Z). Excessive Heat results from a combination of high temperatures (well above normal) and high humidity. An Excessive Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established excessive heat warning thresholds. Fatalities (directly related) or major impacts to human health that occur during excessive heat warning conditions are reported using this event category. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.
DROUGHT	
Drought	Based on NCEI definitions/criteria: Drought (Z). Drought is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. Conceptually, drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield. There are different kinds of drought: meteorological, agricultural, hydrological, and social-economic. Each kind of drought starts and ends at different times.
WILDFIRE	
Wildfire	Based on NCEI definitions/criteria: Wildfire (Z). Any significant forest fire, grassland fire, rangeland fire, or wildland-urban interface fire that consumes the natural fuels and spreads in response to its environment. “Significant” is defined as a wildfire that causes one or more fatalities, one or more significant injuries, and/or property damage.

3.3.1 FLOOD

Table 3-8. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
49 Flash Flood events		
Number of Days with Event:	30	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	10	$10,317,000
Number of Days with Event and Crop Damage:	1	$25,000
Number of Event Types reported:	1	**Flash Flood**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Flash Flood (C). A life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to shorter-term flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash flooding, such as dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Conversely, flash flooding can transition into flooding as rapidly rising waters abate. The Storm Data preparer uses professional judgment in determining when the event is no longer characteristic of a Flash Flood and becomes a Flood.

Table 3-9. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 19 to 22, 1996	Snowmelt combined with 1 to 3 inches of rain (some locations received 5 inches) to produce, in some cases, catastrophic river flooding. The flooding was the worst in the region since 1985. Record flooding occurred on Wills Creek near Cumberland (MDZ002), damaging all dwellings in the town of Locust Grove. The largest losses were sustained just outside of Cumberland. Water line breaks occurred in LaVale (MDZ002). Three counties in central Maryland were declared under a federal state of emergency: Washington, Allegany, and Frederick.	$60,000,000
June 11, 1996	One of these storms ravaged western Allegany Co, flooding roads in and near Frostburg and Cumberland. Substantial damage was reported in Mt. Savage, where mud slides closed roads and runoff from higher terrain flooded several homes.	$50,000
September 6, 1996	No report.	$250,000
May 7, 1999	Lightning also struck the 1st Presbyterian Church, damaging electrical equipment. Between 1.25 and 2.00 inches of rain fell across the county in less than one hour, causing water levels to rise rapidly. A co-op observer in Cumberland reported 1.15 inches of rain fell in only 10 minutes around 8:00 PM EDT. This deluge of water flooded basements and led to high water closures on several roads in Cumberland and across the county. Green Street and Henderson Avenue were also impassable after the storm. Roads in the	$15,000

Table 3-9. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	western end of the county required maintenance after mud and debris settled on road margins after being washed onto the roadway.	
July 31, 2000	Roads and streams were flooded. Across the western portion of Allegany County, several roads were flooded, and streams overflowed their banks after heavy downpours. Near Lonaconing, trees were downed along Route 36 at the intersection of George's Creek. A total of 1.85 inches of rain was recorded in Cumberland and over 3 inches fell in Westernport.	Not Available
August 6, 2000	Flooding resulted after a total of 3.19 inches of rain fell in Frostburg and Pinto and 2.48 inches fell in Cumberland. In Westernport, Ross Street, Riordan Road, and Lincoln Drive were damaged by rapidly moving water and 46 basements were flooded. Main street became a makeshift river and after the water subsided piles of mud debris had to be removed. Rising water threatened Westernport Elementary School. In Barton, 2 streets were damaged, and 25 basements were flooded. In Lonaconing, 14 basements were flooded. Flooded basements were reported in Frostburg and a toll bridge and Bowery Street were submerged. Flooding was also reported near the junction of the Savage River Dam and the Potomac River. Across the County, Route 135 and old Route 36 were closed by high water.	$250,000
September 11, 2000	Numerous roads, creeks, and structures were flooded. A thunderstorm with torrential rainfall became stationary over the western portion of Allegany County during the evening of the 11th. Serious flash flooding developed in less than an hour. Nearly $2 million in flood damage was reported. Hardest hit communities included Cumberland's north and west side, LaVale, communities along Goose Creek, the Haystack Mountain area, Westernport, and Barton. Across the county, three businesses and a residence were destroyed by flood waters. A total of 27 homes and businesses received major damaged and 141 other structures reported minor damage.	$2,000,000
June 7, 2001	Several roads and creeks were flooded, and some structures were damaged. An area of showers and thunderstorms with very heavy rainfall moved across western and central Maryland during the early morning hours of the 7th. The heaviest rain fell across western Allegany County where flash flooding was reported. The hardest hit area included Westernport, McCoole, and Barton.	$150,000
June 22, 2001	Flooding was reported in Rawlings and on Route 220. During the afternoon of the 22nd, numerous showers and thunderstorms developed just east of the In Allegany County, the heaviest rain fell across the southwestern portion of the county. Several basements were flooded in Rawlings and parts of Route 220 were covered in water. Heavy rainfall downed a tree onto a power line in Frostburg.	Not Available
August 3, 2001	Several roads were closed by flooding after George's Creek and other waterways overflowed. Radar estimated that three inches of rain fell along Dan's Mountain near the border of Grant County. This caused George's Creek to overflow its banks and flood Old Route 936 between Midland and Shaft.	Not Available

Table 3-9. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
May 27, 2002	Interstate 68 was closed by flooding and an apartment building was evacuated after Elk Lick Run overflowed. In Allegany County, significant flooding occurred just east of Cumberland along the west slope of Martin Mountain after Elk Lick Run overflowed its banks. Flood waters damaged property in a 2.5 mile area along Baltimore Pike (Route 144) from Rocky Gap Road to Hinkle Road near Interstate 68. An apartment complex on Baltimore Pike was surrounded by flood water. Twenty people had to be evacuated and were eventually displaced after 12 rental units sustained major flood damage. Twenty homes nearby were significantly damaged by flooding, including one which was moved off its foundation by the rushing water. Up to 15 private driveway bridges across Elk Lick Run were damaged and a parking lot was washed away. Three feet of creek water spilled onto Interstate 68 which forced officials to shut down the road for over an hour. Four to five inches of rain was believed to have fallen in this area in only 2 hours.	$500,000
May 29, 2002	Roads and basements were flooded. A thunderstorm with very heavy rainfall moved through the northern portion of Allegany County between 6 and 8 AM. Flood waters closed Kreigbaum and Cash Valley roads and Route 35. Several other side streets were also flooded. Over 30 homes reported flooded basements.	Not Available
September 27, 2003	Route 220 was closed by flooding from near Cumberland to Bedford. Streams were out of their banks in LaVale, and 30 basements were flooded across the county. Rainfall totals included 2.50 inches in Mt. Savage, 2.10 inches in Frostburg, and an unofficial reading of up to 4 inches in LaVale.	Not Available
November 19, 2003	A few roads closed due to high water. Widespread power outages were reported due to downed trees and power lines. The heavy rainfall led to flash flooding across the Potomac Highlands and Northeast and Central Maryland.	Not Available
June 25, 2004	Water covering three roads in the county.	Not Available
September 8, 2004	Allegany and Washington Counties were especially hard hit according to emergency personnel. 7 inches of rain fell in the western Panhandle of Maryland. In Allegany County Georges Creek rose out of its bank between Frostburg and Westernport. Route 135 was closed for buckling due to high water. Several bridges were under water and around 20 basements were flooded.	Not Available
September 17 to 18, 2004	The remnants of Hurricane Ivan affected the Mid-Atlantic Region on the 17th and 18th. Washington and Allegany Counties once again bore the brunt of the flooding as small streams and creeks rose out of their banks.	Not Available
March 28 to 29, 2005	A fairly significant severe weather event occurred on March 28. This was due to a strong low pressure system that moved west of the area leaving Maryland with abundant moisture and an unstable air mass.	Not Available
May 28, 2010	Roads were closed due to flash flooding around Mount Savage and Frostburg	Not Available
December 1, 2010	Several basements were flooded in Cumberland. A rain gauge nearby recorded 2.39 inches.	Not Available

Table 3-9. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
May 17, 2011	Flash flooding was occurring over Dickerson Hollow Road and Murleys Branch Road. A nearby spotter measured 1.15 inches of rain. Baltimore Pike Fire Hall was experiencing flash flooding on its site. A nearby spotter measured 3.5 inches of rain.	$0
May 18, 2011	Numerous roads were closed and basements and yards were flooded in LaVale and Mount Savage.	$0
May 27, 2011	• Lexington Avenue was closed due to flash flooding. • At least six inches of water was flowing down Louisiana Avenue in Cumberland. A rain gage near the event measured a total of 1.75 inches. • At least 4 flooded basements in the area. Spotter reported 1 inch of rain in about 10 minutes. • Car stranded in water on Virginia Avenue. A nearby spotter observed 1.18 inches of rain in 30 minutes leading up to the event. • Water was over the roadways of Industrial Blvd and Maryland Ave. • Water was deep and swift enough to wash the payment off Williams Street between the 100 and 700 blocks.	$0
September 11, 2013	There were water rescues ongoing on highway 40 near Shaw Street.	$0
June 12, 2014	There was street flooding on Winchester Road, Warrior Drive and Route 220. There was water as high as the wind shields of cars.	$0
June 12, 2014	There were multiple water rescues ongoing in the southern portion of Cresaptown near Route 220. Route 220 was closed at Potomac Park and between I-68 and Highway 636 due to high water.	$0
August 2, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. Torrential downpours combined with convection training over the same areas led to some flooding and flash flooding. Some of the flooding lingered into August 3rd. • The stream gauge on Georges Creek near Westernport quickly rose above the flood stage of 8 feet, cresting at 8.65 feet. Water reached the underside of the railroad bridge at downtown Westernport. • Numerous roads were blocked by high water in Westernport. Some roads were washed out. • A mudslide was reported along MD-36 near Barton. • Buskirk Hollow Road Southwest was washed out near Elklick Road. • Water and debris were reported over the road in multiple spots in the Bowling Green and Potomac Park areas, with a rockslide reported in one location. • Ten inches of water was into a house on McKinley Street.	$0

Table 3-9. Flood Hazard – Flash Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
September 1, 2021	The remnants of Ida produced widespread flooding along with instances of flash flooding across the area. Tropical moisture infiltrated the area and there were moderate amounts of instability as well. This combined with the lift provided from the remnants of Ida led to heavy rainfall during this time. Rainfall amounts averaged around 1-3 near and east of Interstate 95, with amounts around 4 to 8 inches across portions of northern and central Maryland. Excess runoff from the heavy rainfall led to river flooding as well. • There were five reports of roads closed in western Allegany County, mainly near Georges Creek and Mount Savage. One swift water rescue occurred due to an individual stuck in flood waters.	$0
August 4, 2022	Numerous showers and thunderstorms developed during the afternoon and evening of the 4th. Slow storm movement led to some instances of flooding and flash flooding. • Bald Knob Road was reported near Blank Road. • Barrelville Road was reported to be flooded near Mount Savage Road.	$0
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-10. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
36 Flood events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	6	$536,000
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Flood**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Flood (C). Any high flow, overflow, or inundation by water which causes damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, that poses a threat to life or property. If the event is considered significant, it should be entered into Storm Data, even if it only affected a small area. Refer to the Flash Flood event (Section 14) for guidelines for differentiating between Flood and Flash Flood events.		

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
November 7, 1997	Rainfall averaging 2 to 4 inches, with localized totals between 4 and 6 inches at higher elevations, caused minor flooding of creeks and small streams. Dozens of	Not Available

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	secondary roads were closed in the area, most due to swollen creeks but a few others from high standing water. Rain tapered off during the early evening in Allegany Co.	
May 4, 1998	1 1/2 and 2 inches of rain in less than 3 hours onto saturated ground. In Midland, Neff's Run flooded, causing damage to the flood wall and washing away several gabion baskets. Damage to the baskets was estimated at $100 thousand. A section of state route 936 was closed, and a few trees were knocked down by the swollen creek. Elsewhere, road and basement flooding was noted in Frostburg, McCoole, and Lonaconing.	$100,000
January 1, 2003	In Allegany County, high water caused basement flooding and a handful of mud slides and rock slides. In Cumberland, a total of 1.30 inches of rain was recorded.	Not Available
May 16 to 17, 2003	The system dropped between 2 and 4 inches of rain across western and central Maryland which caused several low lying areas to flood. In Allegany County, twenty sewage pumping stations overflowed after being inundated by water. Residents in 3 communities had to boil their water for a few days following the flood.	Not Available
September 19 to 23, 2003	On September 18, 2003, remnants of Hurricane Isabel caused wind gusts of 50 to 60 mph. Allegany County was on the fringe of the storm. Higher terrain saw the most wind. Two to four inches of rain fell across central and western Maryland. This was not enough to cause flash flooding but when added to previous rains; it was enough to bring the Potomac River out of its banks. Route 135 was closed due to river flooding in Luke. Officially, the river crested in Luke 1.7 feet below flood stage. Cumberland and Hancock crested just 4 feet below flood stage.	$130,000
April 13, 2004	Heavy rainfall on the 12th and 13th led to rises on area streams and rivers. The one to two inches of rain produced nuisance flooding in the Oldtown area. A privately owned low water bridge was affected.	Not Available
September 8, 2004	The remnants of Hurricane Frances produced damaging winds, tornadoes and flooding in the Mid Atlantic Region on the 8th. Allegany and Washington Counties were especially hard hit according to emergency personnel. 7 inches of rain fell in the western Panhandle of Maryland. In Allegany County Georges Creek rose out of its bank between Frostburg and Westernport. Route 135 was closed for buckling due to high water. Several bridges were under water and around 20 basements were flooded. Students were held in schools for an extra 1 « hours due to inclement weather on the 8th and some schools were closed on the 9th.	$100,000
July 13, 2005	Several streets were closed and basements were flooded in Cumberland, Maryland. Roads were closed at Green Street and Virginia Avenue due to high water. Storm total rainfall was measured at 3.0 inches by a trained storm spotter.	Not Available

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
April 22, 2006	Flooding occurred along the banks of the C and O Canal. There were several reports of flooding and flash flooding due to the heavy rainfall across portions of the region.	Not Available
April 15, 2007	A Trained Spotter reported flooding of Town Creek in Flintstone, MD.	Not Available
June 13, 2007	Green Street and Kelly Road were both closed for more than an hour when they flooded at the railroad trestles. A car was stuck in high water in the Virginia Ave. subway at Industrial Blvd. Numerous reports of flooded basements were also received by Emergency Officials.	$1,000
March 4, 2008	A trained spotter reported Route 144 (National Pike) covered with water. There were also 5 flooded basements.	$5,000
May 4, 2009	Observed rainfall amounts of 2 to 3 inches caused streams and tributaries to flow out of their banks. In Bowling Green, 12 basements were flooded.	Not Available
March 13, 2010	Route 36 was flooded in several locations by Jennings Run, particularly along Parkersburg Road. Rain gauge in the area observed 1.12 inches of precipitation.	Not Available
April 19, 2011	Basements were flooded due to heavy rain.	0
June 2, 2016	Many streets including Spruce Street, Walnut Street, Rock Street and Stony Run Road were all closed due to flooding.	0
June 3, 2016	Winchester Road was closed due to flooding between the town of LaVale and Cresaptown.	0
May 27, 2018	A cold front sagged into Maryland during the afternoon of May 27th. Heavy rain trained to the northeast of Baltimore early in the afternoon, causing flash flooding. Then, later in the afternoon, the line completely stalled just west of Baltimore, producing 6-12 inches of rain in a very short period of time. Catastrophic flash flooding occurred in the Ellicott City and Catonsville areas, with significant flooding also observed in other nearby areas. Stream flooding continued through the next morning. Flooding of unknown depth was reported on Bedford Street in Cumberland.	$0
July 24, 2018	Following the passage of a coastal low, bands of moisture continued to pull northward across the same areas that had already experienced heavy rain. Heavy rainfall fell in some areas, especially in Baltimore and Carroll Counties, with widespread flooding and flash flooding throughout the period. Over half a dozen roads reported flooded and closed in Cumberland.	$0
July 31, 2018	Isolated heavy rain occurred in Allegany County, Maryland during the evening of July 31st. Over three inches was reported, with a couple isolated instances of flooding. • Bear Hill Road flooded and closed due to heavy rain. • Portions of Town Creek Road were flooded and closed.	$0
August 1, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. An isolated incident of flooding occurred due to locally heavy rainfall.	$0

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	The USGS stream gage on Sideling Hill Creek near Bellegrove exceeded the 7.5 foot flood stage during the indicated period. The peak level of 7.88 feet occurred at 1:45am EST. Agricultural flooding occurred, along with water approaching Allegany Line Road.	
August 2, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. Torrential downpours combined with convection training over the same areas led to some flooding and flash flooding. Some of the flooding lingered into August 3rd. • MD-36 Mount Savage Road Northwest was closed due to flooding over Jennings Run near MD-638 Parkersburg Road Northwest. • Hardwood Drive Southwest was closed due to flooding over Preston Run.	$0
September 6, 2018	An isolated flooding incident occurred from locally heavy rainfall. US-220 McMullen Highway southwest was blocked by high water and debris.	$0
September 9, 2018	Low pressure tracked to the west while a nearly stationary boundary was to the south. Warm and moist tropical air overran the surface cooler air in place, resulting in a moderate to heavy rainfall. Excess runoff from the rainfall led to flooding. One and a half to three inches of rain fell across northern Maryland late on the 8th into the 9th, followed by another one to three inches on the 9th into the 10th. This combination produced fairly widespread flooding, including of the mainstem rivers, which continued through the 11th and into the 12th. • MD-36 Mount Savage Road northwest was closed due to flooding near MD-638. • The river level surpassed flood stage at Georges Creek at Westernport, cresting at 8.83 feet on September 9th at 3:45 PM EST. Water reached the underside of the railroad bridge at downtown Westernport. • The USGS stream gage on Wills Creek near Cumberland exceeded the 10 foot flood stage during the indicated period. This caused flooding of a car wash at Motor City, with water in parking lots in the same area. The peak level of 11.57 feet was observed at 4:45pm EST on the 9th. • The Oldtown Toll Bridge was closed due to high water.	$0
September 10, 2018	Country Club Road was closed near Christie Road due to flooding.	$0
September 27, 2018	Showers and thunderstorms associated with a cold front produced locally heavy rainfall in Frederick County on the 26th. Runoff from this heavy rain moved into larger rivers, causing flooding on a portion of the Potomac into the 27th. The river level surpassed flood stage at Georges Creek at Westernport, cresting at 8.09 feet on September 27th at 10:00 PM EST. Water reached the underside of the railroad bridge at downtown Westernport.	$0

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
September 28, 2018	A warm front moved through the area during the morning hours of the 28th. Warm and moist air associated with a tropical air mass overran the relatively cooler air in place, resulting in heavy rainfall. Also, the steering flow aloft was weak so showers and thunderstorms were slow to move. This enhanced the flooding threat. The resulting flooding moved into larger streams and rivers and continued through the 30th. The river level surpassed the flood stage of 25 feet at Paw Paw along the Potomac River. The river level crested at 25.90 feet at 6:15 PM EST September 28th. ||A parking area adjacent to the highway bridge was flooded. The roadway to the C&O Canal parking area flooded, as did the lowest end of the Purslane Run hiker/biker area.	$0
December 16, 2018	A potent upper-level low and associated area of surface low pressure approached the region from southwest on the 15th. Strong forcing for ascent and ample moisture transport in advance of the upper-level low led to a prolonged period of rain across the region. Eventually low pressure transferred to the coast before precipitation wound down on the 16th. Widespread rainfall totals of 2-4 inches were observed across the area. The river gage on the Potomac River at Paw Paw exceeded the 25 foot flood stage during the indicated period. The roadway to the C&O Canal parking area flooded, as did the lowest end of the Purslane Run hiker/biker area, and a parking area adjacent to the highway bridge. The peak level of 25.33 feet occurred at 1:00 PM.	$0
August 12, 2020	Showers and thunderstorms developed, and with little steering flow aloft this caused the storm motion to be slow. The slow storm motion resulted in instances of flooding and flash flooding. About a foot of flowing water over the intersection at E Oldtown Rd. and Blackston Ave.	$0
June 3, 2021	Showers and thunderstorms developed, and due to higher amounts of instability and moisture, heavy rain led to instances of flooding and flash flooding in northeastern Maryland. North Main Street was closed due to flooding in Port Deposit.	$0
August 28, 2021	Several rounds of showers and thunderstorms developed ahead of an approaching cold front on August 27th-28th, primarily during the afternoon/evening hours each day. Heavy rainfall occurred with these storms which lead to several instances of flooding across the area. • Calla Hill Rd. closed due to flooding. • Several roads in and around Frostburg closed due to flooding.	$0
September 1, 2021	The remnants of Ida produced widespread flooding along with instances of flash flooding across the area. Tropical moisture infiltrated the area and there were moderate amounts of instability as well. This combined with the lift provided by	$200,000

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	the remnants of Ida led to heavy rainfall during this time. Rainfall amounts averaged around 1-3 near and east of Interstate 95, with amounts around 4 to 8 inches across portions of northern and central Maryland. Excess runoff from the heavy rainfall led to river flooding as well. • Several roads closed due to high water. • Several roads closed due to flooding. • Several roads closed in and near Mount Savage due to high water. • MD 36 closed at Jennings Run due to flooding. • The water level along Georges Creek at Westernport rose above flood stage, cresting 9.41 feet at 1:45 PM EST on the 1st of September. Water overflowed out of Georges Creek into low-lying areas in the city of Westernport. • The water level along the Wills Creek in Cumberland rose above major flood stage, cresting at 14.10 feet at 7:15 PM on the first of September. Several businesses at Motor City and outside the levee protection north of Cumberland were flooded along with at least a couple homes in Locust Grove. Water approached low spots on Route 36, possibly affecting one lane. • Wills Creek out of banks and flowing onto nearby roads between La Vale and Corriganville. • Part of the wall of the foundation of a home on Crocus Avenue collapsed due to flooding. • Lower portion of Ellerslie evacuated due to rising waters and numerous water rescues on Wills Creek. • The water level along the Sideling Hill Creek at Bellegrove rose above flood stage, cresting at 9.17 feet at 11:30 PM EST on the 1st of September. Lowlands near the creek were flooded and a low spot on Allegany Line Road was also flooded. • The water rose above flood stage along the North Branch Potomac River at Cumberland, cresting at 18.34 feet at 9:45 PM EST on the 1st of September. A low spot on Airport Road in Wiley Ford, West Virginia was flooded. A livestock field southeast of the Cumberland Regional Airport also flooded.	
September 2, 2021	The water level along the Town Creek in Oldtown rose above flood stage of 14 feet, cresting at 15.11 feet on the 2nd of September at 2:30 AM EST. Water overflowed thee banks just downstream of the Pack Horse Road bridge.	$0
September 23, 2021	A slow moving cold front approached the area on the 22nd before passing through on the 23rd. A deep southerly flow allowed tropical moisture to move into the area ahead of the boundary. This led to heavy rainfall as the cold front approached, and several instances of flooding along with isolated instances of flash flooding occurred.	$0

Table 3-11. Flood Hazard – Flood Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	New Bridge Road closed at Horseshoe Road due to Octoraro Creek flowing onto the intersection/bridge.	
May 6, 2022	A line of thunderstorms crossing a warm front caused several instances of flooding across MD from May 6th into May 7th. Residual river flooding continued through May 9th due to excessive runoff. Several roads were submerged in flood waters in the Jennings area, especially along Jennings Rd. and Millers Rd.	$0
May 7, 2022	The stream gage on Sideling Hill Creek near Bellegrove reached flood stage during the specified timeframe, reaching a peak crest of 8.02 ft at 3:45 PM EST on May 7th. At this level lowlands near the creek begin to flood. Also, a low spot on Allegany Line Road is likely also flooded.	$0
Source: National Centers for Environmental Information (NCEI), 2023.		

3.3.2 WINTER STORM

Table 3-12. Winter Storm Hazard – Heavy Snow Allegany County from January 2006 – April 2023		
5 Heavy Snow events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$5,210,000
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Heavy Snow**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Heavy Snow (Z). Snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24 hour warning criteria. This could mean values such as 4, 6, or 8 inches or more in 12 hours or less; or 6, 8, or 10 inches in 24 hours or less. If the event that occurred is considered significant, even if it affected a small area, it should be entered into Storm Data. In some heavy snow events, structural damage, due to the excessive weight of snow accumulations, may occur in the few days following the meteorological end of the event.

Table 3-13. Winter Storm Hazard – Heavy Snow Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
April 16, 2007	A Nor'Easter impacted the Mid-Atlantic region on April 15th and 16th. Low pressure off the southeastern coast moved north along the Delmarva. Heavy rain spread north across the region early April 15th, causing flooding by the afternoon and evening. As the low pressure area pushed north and intensified, colder air advanced from the northwest. This allowed rain to change to snow along the upslope region of the Allegheny Front. Winds also increased in the wake of the low, downing trees and power lines across central and lower southern Maryland. A Cooperative Observer reported 7 inches of snow 1 mile west of Frostburg, MD.	$0
December 5, 2007	An Alberta Clipper system moved quickly across the Mid Atlantic on December 5th. This was the first snow of the season for much of the region. This storm caused significant traffic impacts during the morning commute across the Washington DC and Baltimore metro areas. The highest snowfall accumulations were measured across northern Maryland from Allegany County east to Carroll County. Snow amounts ranged from 1 to 3 inches across lower southern Maryland north into the Washington and southern Baltimore suburbs, and up to 7 inches in far western Allegany County. Cooperative Observers and trained spotters reported between 4 and 5 inches of snow.	$0
February 12, 2008	Light precipitation spread east across the Mid Atlantic ahead of a low pressure system. Temperatures at the onset of precipitation were cold enough to produce snow. As precipitation spread east of the Blue Ridge, temperatures aloft increased to above freezing while temperatures at the surface remained below freezing. This caused eastern portions of the state to see a change over from snow to freezing rain. Road conditions began to rapidly deteriorate during the afternoon rush when rain began to freeze onto the roadways. Numerous traffic	$0

Table 3-13. Winter Storm Hazard – Heavy Snow Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	accidents were reported across the Baltimore Metro and across the northern Washington DC suburbs. Several inches of snow were reported in the western part of the state in Allegany and Washington counties, with a mix of snow, sleet and freezing rain in central Maryland. Mostly ice was reported further east into the Baltimore Metro and northern Washington DC suburbs. Trained spotters and cooperative observers reported 4 to 5 inches of snow.	
February 22, 2008	Low pressure across the Gulf of Mexico spread snow across the region during the overnight hours February 21st and continued through the morning of February 22nd. Warm air moved in aloft, causing snow to mix with and change over to sleet and freezing rain. Most locations reported a tenth of an inch or less of ice with only an inch or two of snow. The exception was across western Allegany County where 4 to 6 inches of snow was reported with very little freezing rain or sleet. Trained spotters measured 4 to 5 inches of snow in western Allegany County.	$0
December 25, 2008	The combination of cold moist air of the mountains triggered snow along and west of the Allegheny front in Maryland from the afternoon of the 25th through the morning of the 26th. A storm total of 6.0 inches was reported two miles north of Frostburg. Snowfall also totaled up to 5.0 inches in Eckhart Mines as well as Frostburg.	$0

Table 3-14. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
58 Winter Storm events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$20,000
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Winter Storm**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Winter Storm (Z). A winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally, a Winter Storm would pose a threat to life or property.

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
February 12, 2007	A low pressure system moved out of the Southern Plains and strengthened off the southeast coast February 12th through 14th, bringing accumulating wintry precipitation to much of Maryland beginning during the afternoon and evening hours of February 12th and continued through the early morning hours of February 14th. The heaviest precipitation occurred February 13th as the low pressure system intensified off the coast. |Snow and sleet accumulations ranged from 1 to 9 inches and ice accumulations ranged from a tenth to three quarters of an inch. This mix of sleet, snow and freezing rain created a very hard and thick layer of ice. Many snow plows were not equipped to handle such heavy precipitation, leading to longer wait times for roadways and sidewalks to be cleared. Across lower southern Maryland, freezing rain was more of a problem. Ice coated trees and power lines, causing over 100,000 power outages. Several roadways were closed due to downed trees. Those open roadways were snarled with traffic and dozens of minor car accidents. Schools were closed for much of the week. Restaurants and florists reported reduced Valentinesï¿½ï¿½ï¿½ Day sales due to the hazardous road conditions.	$0
February 24, 2007	A low pressure system developed over the high plains of eastern Colorado on February 23rd and pushed east to the Ohio Valley by February 25th. Abundant warm and moist air just above the surface originating from the Gulf of Mexico was pulled north over the Mid Atlantic ahead of the system. Snow began to fall over the region beginning late on February 24th and continued through the early evening hours on February 25th.|Snowfall amounts ranged from 3 to 6 inches across Maryland. Nearly 2000 people lost power in Montgomery County with the snowfall. Numerous traffic accidents were reported across the Baltimore metro area due to the icy road conditions. Schools were delayed Monday, February 26th, in Montgomery and Prince Georges Counties.	$0
March 7, 2007	A strong clipper system developed over the Great Lakes March 6th and dove south across the Mid Atlantic on March 7th. Snow began along the western edge of the Allegheny Front shortly after midnight on March 7th and spread east overnight. |The highest snowfall reports came from Allegany County. Trained spotters in Frostburg, MD., reported 10 inches of snow. Snowfall amounts diminished further east, with an average of 1 to 3 inches reported across the Baltimore metro.	$0
March 16, 2007	A strong cold front crossed the region on the afternoon of March 15th, ushering in drastically colder temperatures. A low pressure system approached the region that night and moved north along the Atlantic coast on March 16th. As the low approached the region early on the 16th, precipitation became widespread and continued through much day. |Warm air briefly surged ahead of the low pressure system, allowing precipitation to begin in the form of rain. Several roads were closed due to flooding across Anne Arundel, St. Maryï¿½ï¿½ï¿½s and Northern Baltimore Counties. |Colder air was brought into the region by the low. This forced rain to change to snow and sleet before changing to all snow. Snowfall amounts ranged from 2 to 10 inches. Hazardous driving conditions led to numerous minor car accidents. A vehicle in President Bushï¿½ï¿½ï¿½s motorcade traveling from Washington DC to the Camp David presidential retreat collided with another car along Interstate 270 in Urbana, MD., in Frederick County. No injuries were reported.	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 15, 2007	A low pressure system developed over the lower Mississippi River Valley on December 15th and moved north across the Mid Atlantic on December 16th. Precipitation began during the late afternoon of the 15th as a mixture of snow and sleet. Warm air aloft then pushed over the region during the late evening and overnight hours on the 16th, changing the precipitation to a mixture of sleet and freezing rain. Significant accumulations of ice, snow and sleet were reported across northern Maryland.	$0
October 28, 2008	A combination of cold air and low-level moisture triggered snow showers around the Allegheny front across extreme western Maryland.	$0
December 16, 2008	A cold front moved through the region early on the 16th. A storm system along the cold front triggered precipitation. As the colder air worked in, rain changed over to ice and wintry precipitation lasted into the early morning hours of the 17th.	$0
January 6, 2009	An area of low pressure passed through the Ohio Valley spreading precipitation across Maryland on the 6th and 7th. Warmer air was drawn into the storm system aloft, but surface temperatures remained below freezing resulting in freezing rain.	$0
January 27, 2009	An area of low pressure tracked through the Tennessee Valley into the Ohio Valley on the 27th spreading precipitation across Maryland. Precipitation began as snow, but a change over to sleet, and eventually freezing rain occurred from south to north during the afternoon and evening of the 27th. Freezing rain finally changed to rain from south to north during the morning and afternoon hours of the 28th. Rain ended during the early evening hours of the 28th.	$0
December 5, 2009	Low pressure tracked through the Tennessee Valley and emerged off the Mid-Atlantic coast on the 5th. This system spread precipitation across Maryland. There was enough cold air drawn in from the north for precipitation to fall in the form of snow across most areas. Most of the snow fell during the morning and afternoon hours.	$0
December 8, 2009	Low pressure tracked up through the Great Lakes. Plenty of moisture from the Atlantic Ocean and Gulf of Mexico was drawn into this system to produce widespread precipitation. There was enough cold air at the start of the storm for mixed precipitation, but warmer air did eventually work its way into the storm changing all mixed precipitation to rain.	$0
December 18, 2009	A disturbance in the northern branch of the jet stream was able to phase with low pressure in the southern branch of the jet stream over the Southeast Coast on the night of the 18th. These two systems combined to develop a strong area of low pressure that slowly track up the Mid-Atlantic Coast during the 19th. The low was able to tap into moisture from the Gulf of Mexico and the Atlantic Ocean causing copious amounts of precipitation to develop. High pressure to the north kept plenty of cold air in place causing the precipitation to fall in the form of snow.	$0
January 1, 2010	A cold front passed through western Maryland triggering snow showers. The heaviest snow fell across locations along and west of the Allegheny front.	$0
January 7, 2010	A clipper system tracked through the Mid-Atlantic bringing a period of snow to most locations beginning on the evening of the 7th and lasting into the morning of the 8th. |Snow persisted through the afternoon hours on the 8th across locations along and west of the Allegheny front.	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 30, 2010	An upper-level low passed through the Mid-Atlantic triggering snow on the 30th. The heaviest snow fell during the late morning and afternoon hours.	$0
February 5, 2010	A potent area of low pressure strengthened over the central portion of the nation on the fifth of February. The storm system slowly moved through the Mid-Atlantic during the night of the 5th before redeveloping off the Mid-Atlantic coast on 6th. The storm system finally moved away from the area on the night of the 6th. ||Strong high pressure continued to pump in plenty of cold air across the region for the entire event. Due to the slow movement of the storm, there was a prolonged period of precipitation. The storm system ushered in copious amounts of moisture from the Gulf of Mexico and the Atlantic Ocean. The deep moisture combined with the forcing from the storm system to bring a period of heavy precipitation to the area on the night of the 5th through the daytime hours on the 6th. Precipitation finally ended during the evening hours of the 6th as the storm system moved away. Most of the precipitation fell in the form of snow due to the cold air that was already in place. ||Major snow accumulations were reported throughout the state of Maryland.	$0
February 9, 2010	A potent area of low pressure tracked through the Midwest on the 9th. As the low approached the Mid-Atlantic coast, this system phased with energy in the southern branch of the jet stream to cause strong low pressure to develop just off the Delmarva peninsula. The low continued to rapidly strengthen as it moved off to our northeast on the 10th. ||The system spread snow across Maryland that began on the 9th and lasted into the 10th. Major snow accumulations were reported with this storm, especially across the northeastern portion of Maryland. As the low pressure rapidly intensified, strong winds caused blowing and drifting snow that led to blizzard conditions across portions of the state.	$0
February 25, 2010	An upper-level low passed through the Mid-Atlantic on the night of the 24th. The upper-level low combined with energy in the southern branch of the jet stream, causing low pressure to rapidly intensify over New England on the 25th into the 26th. Low pressure remained nearly stationary before finally weakening and moving off to the east on the 28th. ||A northwest flow around the low triggered a prolonged period of upslope snow for locations along and west of the Allegheny Front. Gusty winds and locally heavy snow reduced visibility to near zero at times, especially on the night of the 25th into the 26th.	$0
January 26, 2011	A potent area of low pressure was located over the Tennessee Valley on the morning of Wednesday, January 26th. The warm front associated with the low triggered a period of mixed precipitation early Wednesday morning. There was enough warm air behind the warm front for precipitation to fall in the form of light rain and drizzle later in the morning into the afternoon.||The low passed through the area late in the afternoon into the evening. A burst of heavier precipitation was associated with the low and at the same time colder air was drawn into the system. This caused a period of heavy snow to bring significant snow accumulation to the area in a short period of time. The heavy snow which fell around the evening rush hour caused numerous traffic accidents and there were also numerous power outages due to the heavy snow weighing on trees and power lines. Stranded vehicles were also reported around the Baltimore metropolitan area due to the snow.	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
February 21, 2011	A cold front passed through the region on the evening of the 21st. High pressure to the north allowed for plenty of cold air to move into the region during the nighttime hours of the 21st. A wave of low pressure was moving along the front during this time causing precipitation over the area. Precipitation initially started out as rain before changing over to ice and snow as colder air worked its way in.	$0
October 28, 2011	High pressure over New England pumped in an abundant amount of cold air while low pressure developed along the Mid-Atlantic Coast. Precipitation well ahead of the low overspread Maryland on the evening of the 28th. Precipitation continued through most of the 29th before ending during the late afternoon and evening hours. Precipitation started off as rain across most areas, but colder air wrapped into the storm system causing rain to change over to snow. ||The combination of heavy wet snow on trees that still had leaves caused numerous power outages across northern and western Maryland.	$0
October 29, 2011	High pressure over New England pumped in an abundant amount of cold air while low pressure developed along the Mid-Atlantic Coast. Precipitation well ahead of the low overspread Maryland on the evening of the 28th. Precipitation continued through most of the 29th before ending during the late afternoon and evening hours. Precipitation started off as rain across most areas, but colder air wrapped into the storm system causing rain to change over to snow. ||The combination of heavy wet snow on trees that still had leaves caused numerous power outages across northern and western Maryland.	$0
December 26, 2012	Parent low pressure moved up the Tennessee Valley towards the Mid Atlantic. As precipitation moved over the area, surface temperatures were below freezing and a wintery mix of sleet and freezing rain occurred. Low pressure continued to intensify across the Mid Atlantic and onward to New England. Wrap around moisture produced heavy snow showers in the higher elevations.	$0
January 25, 2013	An Alberta clipper moved through the Mid Atlantic producing light snow for most of the region. Dry air at the surface limited snowfall amounts for most of the area.	$0
March 6, 2013	Strong low pressure impacted the Mid Atlantic bringing rain and snow to the region. A rain-snow line was present across the I-95 corridor where snowfall accumulations dropped off significantly from west to east.	$20,000
March 24, 2013	Coastal low pressure impacted the Mid Atlantic region with snow and rain showers. Surface temperatures were marginal during the event and a sharp gradient of snowfall accumulation existed in the vicinity of Washington DC.	$0
December 8, 2013	High pressure was wedged down the east coast and surface temperatures fell below freezing. Low pressure developed across the gulf coast states and moved across the Ohio Valley. Snow began but changed over to sleet and freezing rain as warmer temperatures aloft overran the cold air at the surface.	$0
December 14, 2013	Cold air filtered into the Mid Atlantic from the north while low pressure approached from the south. A rain and snow line pushed north and west through the day and snow totals dropped off dramatically across the I-95 corridor.	$0
January 21, 2014	A shortwave trough moved into the region while low pressure developed south of the Mid Atlantic. Upper level dynamics led to moderate to heavy snow to move into the region.	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
February 2, 2014	A cold front moved through the Mid Atlantic while low pressure formed along it. Moisture streamed in from the Gulf of Mexico and snowfall accumulation occurred.	$0
February 4, 2014	A wedge of high pressure extended southwest along the Appalachian Mountains. Low pressure approached the Mid Atlantic from the Tennessee Valley and warm air overran colder air at the surface resulting in freezing rain.	$0
February 12, 2014	Low pressure moved up the east coast and approached the Mid Atlantic. High pressure was located across New England and fed cold air into the region. Heavy snow fell across most parts of the Mid Atlantic with the highest amounts near the Mason Dixon line where mid level forcing led to a heavy band.	$0
March 16, 2014	Two areas of low pressure formed south of the Mid Atlantic. Dry and cold air at the surface led to precipitation to quickly change to snow. Heavy snow fell across the region with a confined area of greater than 10 inches across the Central Foothills.	$0
November 26, 2014	A deepening coastal low tracking along the Eastern Seaboard brought widespread precipitation to the Mid-Atlantic. Cold air damming as a result of high pressure over New England advected in colder air, transitioning the precipitation to snow.	$0
March 20, 2015	Widespread precipitation formed as energy transferred from low pressure moving through the Ohio River Valley to a developing coastal low off the Carolinas. Snow was brief as a strengthening low level jet aided in transitioning the precipitation to rain by midday, limiting snow totals.	$0
January 22, 2016	Coastal low pressure rapidly intensified as it tracked up the Mid-Atlantic coast. At the same time, high pressure to the north was funneling cold air into the region. The strong low pressure system was able to tap into moisture from the Gulf of Mexico and the Atlantic Ocean resulting in heavy amounts of precipitation. The cold air caused that precipitation to fall in the form of snow. ||Gusty winds also accompanied this storm. The combination of gusty winds and low visibility along with snow and blowing snow caused blizzard conditions across central and southern Maryland.	$0
December 17, 2016	Warm and moist air overran an arctic air mass that was in place. This resulted in a period of freezing rain that caused hazardous conditions.	$0
March 13, 2017	The northern and southern branches of the jet phased together, which resulted in coastal low pressure on the 13th. The coastal low tracked up the Mid-Atlantic Coast during the morning hours of the 14th before moving out to sea later in the day. High pressure over New England caused enough cold air for precipitation to start out as snow. However, warmer air did work its way in aloft causing precipitation to change to a period of sleet and rain across eastern areas. This cut down on some of the snow totals across these areas, but also caused ice accumulations.	$0
February 7, 2018	Low pressure tracked up the Appalachians. Warm and moist air overran the colder air in place, resulting in precipitation. There was a cold layer near the surface that caused freezing rain.	$0
March 20, 2018	A wave of low pressure passed by to the south on the 20th. At the same time, high pressure was building to the north and this caused cold air to filter in from New England. Rain changed to a wintry mix on the 20th. There was enough cold air for a period of heavier snow across northern Maryland with snow, sleet and	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	freezing rain elsewhere. A light wintry mix continued for all areas on the night of the 20th. Coastal low pressure developed along the Mid-Atlantic Coast on the morning of the 21st. This caused a round of heavier precipitation to fall mainly in the form of snow. The snow tapered off later in the day as the low moved off to the north and east.	
April 2, 2018	Low pressure passed by to the south behind a cold front. There was enough cold air that moved in behind the front for rain to end as a period of accumulating snow especially for locations along and west of the Allegheny Front.	$0
November 15, 2018	An area of low pressure developed across the southeastern United States on the night of November 14th and tracked northeastward along the North and South Carolina coastlines during the daytime hours on the 15th, strengthening to around 995mb on the night of the 15th as it continued moving northward through the Delmarva to New Jersey by the morning of the 16th. Further strengthening to around 985 mb occurred on the 16th as the system sped up and moved towards Nova Scotia. Widespread precipitation was brought to the region, including heavy snow and mixed precipitation northwest of the I-95 corridor, and mainly rain in southern Maryland.	$0
November 24, 2018	An area of low pressure developed along the Gulf Coast on the night of November 23rd and tracked northeastward to the North and South Carolina coastlines during the daytime hours on the 24th, strengthening to around 990mb on the night of the 24th as it continued moving northeastward through the Delmarva to off the coast of New Jersey by the morning of the 25th. The system then began weakening on the 25th as it moved out into the western Atlantic Ocean. Widespread rain was brought to the region, along with a period of freezing rain and ice accumulations along and west of the Blue Ridge/Catoctin Mountains.	$0
January 12, 2019	A low pressure system developed across the south central United States during the daylight hours of January 12th as high pressure was positioned over the northeastern United States and southeastern Canada. The low pressure system then tracked into the southeastern United States during the overnight hours of January 12th and moved northeastward offshore near the Outer Banks of North Carolina through the day of January 13th. Widespread accumulating snow affected the state of Maryland, with the highest totals south and west of Baltimore.	$0
January 19, 2019	On the morning of January 19th, a low pressure system was located across the lower Mississippi Valley. This moved northeastward through the day and by the evening of the 19th was located across eastern Kentucky and Tennessee, intensifying to 994 mb as it did so. Overnight, the low tracked across Virginia and by mid morning on January 20th it was located near Philadelphia and had strengthened further to 988 mb. As it crossed the region, the system brought widespread precipitation, with mainly rain across central and southern Maryland, but accumulating snow and ice to areas near the Catoctin Mountains and points westward.	$0
February 1, 2019	High pressure overhead of the region late on January 31st shifted eastward and offshore in the early morning of February 1st. A frontal boundary was positioned south of the region across southern Virginia, and a wave of low pressure developed along the boundary in the Ohio Valley on the morning of the 1st. This	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	then moved eastward to the Virginia Tidewater by the evening hours. Warm air advection associated with this frontal wave led to widespread light to moderate accumulating snow for much of the state, with a coating to 1 inch reported across southern Maryland to 1 to 3 inches across central Maryland, and up to 6 inches reported in western Maryland.	
February 10, 2019	Surface high pressure was located over the region on the morning of February 10th. This gave way to several waves of low pressure that moved near the region from the evening of the 10th and through the 12th. Several periods of mixed wintry precipitation affected the state of Maryland during this time, with snow accumulations ranging from a coating to half inch across southern Maryland to up to 6 inches across northern Maryland. Portions of the state north and west of Interstate 95 also saw ice accumulations that ranged from a quarter to half inch in some locations.	$0
February 20, 2019	Surface high pressure was in place over the northeastern United States during the overnight hours of February 19th. At the same time, low pressure was tracking northeastward from the south central US. Strong warm air advection and associated frontogenetical forcing led to a period of moderate to heavy snow that spread northeastward across the state of Maryland, especially along and northwest of Interstate 95, on the morning of February 20th. As warmer air continued to move aloft, precipitation then transitioned over to sleet and then freezing rain during the afternoon hours. By later that evening, the primary low was moving through the Great Lakes region as a secondary low moved along the Mid-Atlantic coastline. Eventually enough warm air moved into the region, changing all precipitation over to rain during the overnight hours on the 20th.	$0
March 3, 2019	A low pressure system organized over the southeastern United States on the morning of March 3rd and tracked northeastward to a position near coastal North Carolina by that evening. The low pressure then intensified overnight and moved to a position southeast of Cape Cod by the morning of March 4th. This system brought widespread precipitation to the state of Maryland, with 3 to 6 inches of snow falling across the western portions of the state, and very little to no snow falling along and southeast of Interstate 95 where the majority of the precipitation was rain.	$0
December 16, 2020	Low pressure tracked into the Ohio Valley before transferring its energy to a coastal low along the Mid-Atlantic Coast. The coastal low intensified as it moved to the northeast. At the same time, high pressure was located to the north. Therefore, significant wintry precipitation fell across the area in the form of snow, sleet, and freezing rain. Snowfall amounts averaged around 6 to 12 inches west of Interstate 95 with 2 to 4 inches around Interstate 95. Freezing rain also occurred with around tenth to a quarter inch of ice from near the Catoctin Mountains to near Interstate 95.	$0
January 1, 2021	Low pressure tracked through the Ohio Valley and toward the Great Lakes. Warmer air aloft overran colder air in places associated with high pressure over New England, resulting in some freezing rain. Ice accumulations ranged from a trace to around a tenth of an inch, over the higher elevations in central Maryland, and around a quarter inch in the Allegheny Highlands.	$0
January 31, 2021	Closed low pressure slowly tracked into the Ohio Valley on the 31st before transferring its energy to low pressure off the Mid-Atlantic Coast on the 1st of	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	February. The coastal low slowly tracked northeast while intensifying through midday on February the 2nd. ||Snow overspread the area on the 31st of January ahead of the first low. Drier air and warmer air moved in aloft, causing snow to change to a light wintry mix on the night of the 31st into the 1st. However, another period of snow developed as the coastal low strengthened to the east later on the 1st and that continued into the 2nd. ||Total snowfall accumulations ranged from around 1 to 3 inches in southern Maryland, to around 3 to 5 inches around Interstate 95, to around 6 to 12 inches west of Interstate 95, with locally 12 to 20 inches in the higher elevations of western Maryland as well as the Catoctin Mountains. Ice accumulation from freezing rain averaged around a tenth to a quarter inch east of the Catoctin Mountains.	
February 15, 2021	A wave of low pressure passed by to the west while high pressure remained entrenched to the north and east, keeping colder air in place. Ice accumulations between one and two tenths of an inch were reported along the higher elevations of northern Maryland from the Catoctin Mountains westward. Ice accumulation of around a quarter inch was reported in Garrett and western Allegany Counties. Elsewhere, a light glaze of ice was estimated to be on elevated surfaces in the far northern and western suburbs of Washington and Baltimore, based on radar and temperature observations.	$0
January 6, 2022	A wave of low pressure tracked through the area, bringing some snow with it. Snowfall ranged from around an inch in extreme southern Maryland, to around two to 4 inches near Interstate 95, with 4 to 6 inches west of Interstate 95 over northern and central Maryland.	$0
January 16, 2022	Low pressure developed over the southeastern CONUS while high pressure to the north supplied cold air to start. Precipitation started as snow, but warmer air worked its way in from the Atlantic, causing precipitation to change to ice and even rain across portions of central and eastern Maryland. Snow on the back side of the system impacted the Allegheny Highlands through the 17th. Snowfall amounts ranged from around 1 to 3 inches near and east of Interstate 95 with 2 to 4 inches west of Interstate 95 to the Catoctin Mountains. Snowfall totaled to around 4 to 8 inches across western Maryland around Interstate 81 with snowfall totals around 12 to 16 inches in the mountains.||Ice accumulation from freezing rain range from less than a tenth of an inch around the Baltimore and Washington areas with around one to two tenths of an inch across northern and western Maryland around Interstate 81. Localized amounts around a quarter inch were reported in Frederick County.	$0
April 18, 2022	Coastal low pressure intensified as it tracked up the Mid-Atlantic coast. There was enough cold air in place for precipitation to fall as snow, especially along and west of the Blue Ridge and Catoctin Mountains. Snowfall amounts ranged from 1 to 3 inches in the valleys, with 3 to 6 inches along the ridge tops. There were localized amounts around 6 to 8 inches along the ridge tops above 3,000 feet. ||There was a warm layer aloft on the western side of the Allegheny Highlands that led to freezing rain and sleet. Ice accumulation from freezing rain was around a tenth of an inch across these areas.	$0
December 22, 2022	A wave of wintry precipitation developed over the region with temperatures at or just below freezing. This resulted in a period of snow, sleet, and freezing rain that eventually turned to freezing drizzle during the afternoon and evening.	$0

Table 3-15. Winter Storm Hazard – Winter Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	Snow/sleet accumulations totaled four to seven inches and ice accumulations totaled a tenth to one quarter of an inch. This led to several accidents.	
January 25, 2023	A wave of wintry precipitation along a warm front moved through the region bringing snow accumulations of four to seven inches and a coating of sleet and freezing rain. The snow was heavy at times and visibilities were reduced below one quarter of a mile. Several car accidents were reported.	$0

Table 3-16. Winter Weather Hazard – Winter Weather Allegany County from January 2006 – April 2023		
166 Winter Weather events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Winter Weather**

Source: National Centers for Environmental Information (NCEI), 2023.

Legend: There are three designators: Winter Weather (Z). A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle). The Winter Weather event can also be used to document out-of-season and other unusual or rare occurrences of snow, or blowing/drifting snow, or freezing rain/drizzle. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 7, 2006	Cold air combined with moisture from the Great Lakes caused several inches of snow to fall in the favored upslope locations of Western Maryland, Eastern West Virginia, and West-Central Virginia. Between 1 to 3 inches of snow fell in the favored upslope areas of Western Allegany County, MD.	$0
December 26, 2006	Cold winds blew into the western slopes of the Allegheny Front in Western Allegany County, causing snow to accumulate between 1 to 2 inches.	$0
January 9, 2007	A fast-moving Alberta Clipper brought snow showers and gusty winds to the Allegheny Front of western Maryland by 10:00 AM on January 9 through 9:00 AM on January 10. Average snowfall reports with this system ranged from 1 to 3 inches with locally higher amounts, including 1.5 inches in La Valle, MD.	$0
January 19, 2007	Upslope snow showers developed across the Allegheny Front of western Maryland on the morning of January 19 in the wake of a strong cold front. Total snow accumulations around 3 inches were reported in La Valle, MD.	$0
January 21, 2007	A low pressure system moving out of the central plains weakened as it pushed east across the forecast area. After snow began to fall across the region, warm	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	air at low levels moved in above sub-freezing temperatures at the surface. Light to moderate snow showers caused minor accumulations during the late morning hours of January 21 before snow mixed with sleet and freezing rain and then changed over to freezing drizzle during the early morning hours of January 22. SKYWARN Spotters and Cooperative Observers reported a mixture of snow, sleet and freezing rain and drizzle, with total accumulations ranging from 1 to 4 inches across the region. |Multiple car accidents between 3:00 PM and 4:00 PM on January 21 closed portions of Interstate 95 and the Baltimore-Washington Parkway. Minor injuries were reported. Minor accidents were also reported on the elevated portions of the Jones Falls Expressway. Montgomery County authorities reported nearly 150 calls between 2:00 PM and 6:00 PM for traffic incidents. |In Frederick County, MD., dozens of traffic accidents were called into state police; ten of those resulted in minor injuries.	
January 25, 2007	A reinforcing cold front crossed the Allegheny Front and Potomac Highlands, bringing gusty northwest winds and scattered snow showers to the region from mid morning January 25 through the morning of January 26. Snow amounts ranged from 1 to 3 inches along the Allegany Front of western Maryland.	$0
January 28, 2007	A cold front crossed the Mid Atlantic region during the morning hours of January 28. The eastern Great Lakes remained unfrozen, allowing lake effect snow showers to develop across the Allegheny Front and Potomac Highlands during the mid afternoon January 28 through the early morning hours of January 26. Snowfall amounts ranged from 1 to 2 inches Frostburg, MD, in Allegany County.	$0
January 30, 2007	A strong cold front pushed across the Mid Atlantic during the afternoon of January 30. Upslope snow showers persisted over the Allegheny Front and Potomac Highlands through the morning of January 29. Light snow showers producing accumulations between 1 and 2 inches occurred across western and central Maryland.	$0
February 6, 2007	A fast-moving clipper system moved over the Mid Atlantic during the evening hours of February 6th through early morning on February 7th. Snow amounts ranged from 1 to 4 inches across northern and central Maryland.|Schools were closed Wednesday, February 7th in Anne Arundel, Baltimore, Carroll, Harford and Howard Counties due to road conditions.	$0
February 12, 2007	A low pressure system moved out of the Southern Plains and strengthened off the southeast coast February 12th through 14th, bringing accumulating wintry precipitation to much of Maryland beginning during the afternoon and evening hours of February 12th and continued through the early morning hours of February 14th. The heaviest precipitation occurred February 13th as the low pressure system intensified off the coast. |Snow and sleet accumulations ranged from 1 to 9 inches and ice accumulations ranged from a tenth to three quarters of an inch. This mix of sleet, snow and freezing rain created a very hard and thick layer of ice. Many snow plows were not equipped to handle such heavy precipitation, leading to longer wait times for roadways and sidewalks to be cleared. Across lower southern Maryland, freezing rain was more of a problem. Ice coated trees and power lines, causing over 100,000 power outages. Several roadways were closed due to downed trees. Those open roadways were snarled with traffic and dozens of minor car accidents. Schools were closed for much of	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	the week. Restaurants and florists reported reduced Valentinesï¿½ï¿½ï¿½ Day sales due to the hazardous road conditions.	
February 17, 2007	Northwest flow in the wake of a weak clipper system allowed very cold air to stream across the still unfrozen waters of Lake Michigan and transport moisture into the higher elevations of the Allegheny Front of western Maryland. Cooperative Observers and trained spotters reported total new snow accumulations of between 3 and 4 inches from Frostburg to Eckhart Mines in Allegany County, Maryland.	$0
March 3, 2007	Snow showers developed during the evening hours of March 3rd and continued through the morning hours of March 4th along and west of the Allegheny Front in the wake of a strong cold front. |A SKYWARN Spotter reported 2 inches of snowfall in Frostburg, MD.	$0
March 17, 2007	Upslope snow showers developed during the early morning hours of March 17th and continued through the late evening along the western slopes of the Allegheny Front in the wake of a strong cold front. The cold front and associated low pressure system brought several inches of snow to the region on March 16th before upslope showers developed several hours later. Snowfall amounts ranged from 3 to 5 inches across Allegany and Washington Counties.	$0
December 3, 2007	A strong cold front moved across the Mid Atlantic early on December 3rd. This brought gusty winds to portions of central Maryland through much of the day. Many automated observations measured wind gusts between 40 and 55 mph. Damages consisted of trees and power lines brought down by the winds. Some trees and power lines fell onto homes and cars. ||Upslope snow showers developed during the late morning hours along the western face of the Allegheny Front in western Maryland. Snow amounts ranged from 3 to 4 inches.	$0
December 13, 2007	A low pressure system moving across the Mid Atlantic brought a mixture of rain and freezing rain to portions of northern and western Maryland. Sub-freezing temperatures at the surface combined with a layer of warmer air aloft caused rain to change over to freezing rain. Ice accumulations between one quarter and one half inch were reported in western Allegany County, with lesser amounts further east.	$0
January 1, 2008	A strong cold front triggered upslope snow showers along and west of the Allegheny Front in Maryland beginning early on January 1st. These snow showers continued through the late evening hours of January 2nd. Wind gusts to 40 mph produced blowing and drifting of snow. The gusty winds and cold temperatures resulted in wind chill values below zero. Snowfall amounts ranged from 2 to 3 inches in Allegany County.	$0
January 14, 2008	Snow showers developed along and west of the Allegheny Front in Maryland on January 14th and continued through the evening of January 15th. Snowfall amounts ranged from 1 to 3 inches in western Allegany County.	$0
January 17, 2008	An area of low pressure moved northeast from the central Gulf of Mexico off the North Carolina on January 17th. Precipitation began as snow before warmer air moved in aloft. This changed snow to a mix of sleet and freezing rain and ended as freezing drizzle. Significant accumulations of snow and sleet were reported with only a trace of ice. ||The highest snowfall accumulations, up to 6 inches, were reported from western Montgomery County through Howard County north across eastern Carroll County in central Maryland. According to newspaper	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	reports, snow caused numerous traffic accidents in northern Maryland east towards the Baltimore Metro. Accidents were also reported further west in Allegany County.	
February 1, 2008	An area of low pressure over the Lower Mississippi River Valley moved up the Appalachians on February 1st. Warmer temperatures aloft combined with subfreezing temperatures at the surface to produce widespread freezing rain across the Mid Atlantic. A quarter of an inch of ice was reported in western Allegany County, with between a trace to a tenth of an inch as far east as northern Baltimore County. Numerous traffic accidents and power outages were reported across the region.||Precipitation continued through the afternoon and early evening as temperatures rose above freezing. Rainfall amounts between 1 and 3 inches were measured across much of Maryland, with highest amounts from the Baltimore metro area south through lower southern Maryland. Flooding was reported in Baltimore County.	$0
February 10, 2008	Upslope snow showers developed February 10th in the wake of a strong cold front. Spotters and Cooperative Observers measured between 1 and 2 inches of snow in Allegany County.	$0
February 12, 2008	Light precipitation spread east across the Mid Atlantic ahead of a low pressure system. Temperatures at the onset of precipitation were cold enough to produce snow. As precipitation spread east of the Blue Ridge, temperatures aloft increased to above freezing while temperatures at the surface remained below freezing. This caused eastern portions of the state to see a change over from snow to freezing rain. Road conditions began to rapidly deteriorate during the afternoon rush when rain began to freezing onto the roadways. Numerous traffic accidents were reported across the Baltimore Metro and across the northern Washington DC suburbs. ||Several inches of snow was reported in the western part of the state in Allegany and Washington counties, with a mix of snow, sleet and freezing rain in central Maryland. Mostly ice was reported further east into the Baltimore Metro and northern Washington DC suburbs.	$0
February 20, 2008	An Alberta Clipper system brought snow to the Mid Atlantic on February 20th. Snow amounts ranged from 3 to 5 inches along and west of the Allegheny Front to 1 to 2 inches further east across the Baltimore Metro and south across lower southern Maryland.	$0
February 22, 2008	Low pressure across the Gulf of Mexico spread snow across the region during the overnight hours February 21st and continued through the morning of February 22nd. Warm air moved in aloft, causing snow to mix with and change over to sleet and freezing rain. Most locations reported a tenth of an inch or less of ice with only an inch or two of snow. The exception was across western Allegany County were 4 to 6 inches of snow was reported with very little freezing rain or sleet.	$0
November 17, 2008	A strong cold front triggered upslope snow showers along and west of the Allegheny Front in Maryland beginning on the afternoon of the 17th and lasting into the afternoon of the 18th.	$0
November 20, 2008	A strong cold front triggered upslope snow showers along and west of the Allegheny Front in Maryland beginning on the evening of the 20th and lasting into the evening of the 21st.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
November 24, 2008	An area of low pressure tracked through the Great Lakes on the 24th. This spread precipitation across western Maryland. Low-level cold air remained in place during the afternoon hours allowing for some freezing rain. Ice accumulations were around a trace.	$0
November 30, 2008	An area of low pressure tracked through the Great Lakes on the 30th. This spread precipitation across Maryland. Low-level cold air remained in place during the morning and early afternoon hours of the 30th allowing for some freezing rain. Ice accumulations ranged from a trace to around one tenth of an inch across north-central and western Maryland.	$0
December 6, 2008	An area of low pressure combined with cold air to trigger snow across portions of western Maryland. The snow started on the afternoon of the 6th and lasted through the morning of the 7th.	$0
December 21, 2008	An area of low pressure tracked through the Mid-Atlantic on the morning of the 21st allowing for precipitation to develop over Maryland. Despite warmer air just a few thousand feet above the surface, temperatures at the surface remained below freezing allowing for freezing rain to occur.	$0
December 23, 2008	A warm front tracked through the Mid-Atlantic spreading precipitation over Maryland during the evening of the 23rd into the morning of the 24th. Low-level cold air ahead of the cold front triggered some freezing rain.	$0
December 30, 2008	A cold front triggered upslope snow showers along and west of the Allegheny front over Maryland during the morning of the 30th. The snow showers lasted into the evening of the 31st.	$0
January 7, 2009	A northwest flow behind a cold front triggered snow showers across western Maryland along and west of the Allegheny front. Snow showers began on the afternoon of the 7th and lasted into the morning of the 9th.	$0
January 10, 2009	An area of low pressure passed through the Mid-Atlantic on the 10th into the early morning hours of the 11th. The track of the low was far enough north for warmer air to be drawn into the storm system above the surface. However, colder air remained trapped at the surface causing freezing rain to develop.	$0
January 14, 2009	An area of low pressure passed through the Mid-Atlantic spreading snow across northern Maryland. The snow began on the evening of the 14th and lasted into the morning hours of the 15th.	$0
January 18, 2009	A cold northwest flow behind a cold front triggered snow showers across western Maryland along and west of the Allegheny front. The snow showers occurred on the 18th. An area of low pressure passed through the region on the 19th bringing another period of snow.	$0
February 19, 2009	A northwest flow behind a cold front resulted in upslope snow showers for locations along and west of the Allegheny front across western Maryland.	$0
February 22, 2009	Cold moist air behind a cold front triggered upslope snow showers for locations along and west of the Allegheny front across western Maryland. The snow began during the morning of the 22nd and lasted into the afternoon of the 23rd.	$0
December 8, 2009	Low pressure tracked up through the Great Lakes. Plenty of moisture from the Atlantic Ocean and Gulf of Mexico was drawn into this system to produce widespread precipitation. There was enough cold air at the start of the storm for mixed precipitation, but warmer air did eventually work its way into the storm changing all mixed precipitation to rain.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 13, 2009	Low pressure developed off the Mid-Atlantic coast causing precipitation to develop over Maryland. There was enough cold air in place for precipitation to start off as a wintry mix of sleet and freezing rain across locations to the north and west of Baltimore. Precipitation changed to all rain by late in the morning as warmer air was drawn into the system.	$0
December 25, 2009	Low Pressure tracked through the Midwest and into the Great Lakes spreading precipitation across the area. There was just enough cold air in place for precipitation to begin in the form of freezing rain across western Maryland. Warmer air eventually worked its way into the system causing precipitation to change to rain.	$0
December 28, 2009	A cold front passed through western Maryland on the 27th. The combination of cold air and moisture from the Great Lakes triggered snow for locations along and west of the Allegheny front. The snow lasted into the morning of the 29th before high pressure eventually dried things out.	$0
December 31, 2009	Low pressure passed through the Mid-Atlantic spreading precipitation over Maryland on the morning of the 31st. There was enough cold air for a period of snow and ice before drier air worked in during the afternoon.	$0
January 7, 2010	A clipper system tracked through the Mid-Atlantic bringing a period of snow to most locations beginning on the evening of the 7th and lasting into the morning of the 8th. |Snow persisted through the afternoon hours on the 8th across locations along and west of the Allegheny front.	$0
January 21, 2010	Low pressure tracked through the Ohio Valley before redeveloping off the Mid-Atlantic Coast. High pressure to the north kept just enough cold air for precipitation that was associated with this low to fall in the from of snow and ice. The highest snow and ice totals were across the western portion of Maryland.	$0
January 30, 2010	An upper-level low passed through the Mid-Atlantic triggering snow on the 30th. The heaviest snow fell during the late morning and afternoon hours.	$0
February 2, 2010	Low pressure tracked through the Ohio Valley on the 2nd before emerging off the Mid-Atlantic Coast during the early morning hours of the 3rd. The forcing from the low combined with cold air already in place to produce snow across Maryland during late afternoon hours on the 2nd into the early morning hours of the 3rd.	$0
February 11, 2010	A northwest flow around departing low pressure triggered upslope snow showers for locations along and west of the Allegheny front in western Maryland.	$0
February 15, 2010	An upper-level low passed through Maryland on the 15th triggering snow showers. Low pressure intensified as it slowly moved up the New England coast on the 16th and 17th before eventually moving into Canada on the 18th. A northwest flow around the low triggered a prolonged period of upslope snow showers for locations along and west of the Allegheny Front.	$0
November 24, 2010	High pressure centered over New England wedged into the Mid-Atlantic on the 24th. A storm system developed over the central portion of the nation and the warm front associated with this system triggered wintry precipitation across western Maryland. High pressure kept enough low-level cold air in place for freezing rain across portions of western Maryland.	$0
December 5, 2010	A trough of low pressure remained over the region from the fifth of December through the 8th. A northwest flow around the trough continued to pump in	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	plenty of cold air. The cold air picked up moisture from the Great Lakes and deposited it in the form of snow for locations along and west of the Allegheny Front.	
December 12, 2010	Low pressure cut up through the great lakes during the early morning hours of the 12th. Warm and moist air overrode the surface cold air in place causing precipitation to occur. There was enough cold air at the surface for pockets of freezing rain across portions of western Maryland.	$0
December 16, 2010	Low pressure passed through the region in a zonal flow causing precipitation to develop on the 16th. There was plenty of cold air in place ahead of this system causing precipitation to fall in the form of snow.	$0
December 30, 2010	Low pressure was centered over the Plains while surface high was located along the Mid-Atlantic Coast. A southerly flow between these two systems caused enough overrunning for a brief period of freezing rain across western Maryland.	$0
January 6, 2011	The combination of cold air over the relatively moist Great Lakes triggered snow showers for locations along and west of the Allegheny front during the evening hours of the 6th through the morning hours of the 7th.	$0
January 11, 2011	Low pressure tracked through the Ohio Valley on the 11th before transferring its energy to another area of low pressure off the Mid-Atlantic Coast during the evening hours. A period of snow associated with these systems affected the area during the late afternoon and evening hours of the 11th. Upslope snow continued into the early morning hours of the 12 for locations along and west of the Allegheny front.	$0
February 1, 2011	Low pressure over the Ohio Valley caused periods of precipitation during the first into the morning hours of the second. There was enough low-level cold air for a period of wintry precipitation before enough warm air eventually worked its way into the storm causing precipitation to change to rain.	$0
February 5, 2011	Low pressure tracked through the Ohio Valley on the fifth of February causing precipitation over the area. High pressure just off the New England coast supplied enough low-level cold air for a period of freezing rain. Precipitation changed to rain later in the morning as warmer air was drawn into the system.	$0
February 21, 2011	A cold front passed through the region on the evening of the 21st. High pressure to the north allowed for plenty of cold air to move into the region during the nighttime hours of the 21st. A wave of low pressure was moving along the front during this time causing precipitation over the area. Precipitation initially started out as rain before changing over to ice and snow as colder air worked its way in.	$0
March 6, 2011	Low pressure tracked up the Mid-Atlantic Coast spreading rain across most of Maryland on the 6th. As the low passed by to the east, colder air was drawn into the system causing rain to change to snow during the afternoon and evening hours over north-central and western Maryland. Snow ended early on the 7th. The heaviest snow amounts were over the higher elevations.	$0
March 9, 2011	Low pressure tracked through the Midwest on the 9th. Plenty of moisture from the Atlantic Ocean was drawn into this system causing widespread precipitation across Maryland. Most of the precipitation fell in the form of rain, but there was enough cold air for a period of snow across western Maryland during the morning and afternoon hours of the 9th.	$0
January 2, 2012	Low pressure remained over southern Canada during the 2nd and 3rd. A northwest flow around the low caused cold and moist air from the Great Lakes	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	to be forced up the mountains, resulting in snow across locations along and west of the Allegheny front.	
January 16, 2012	Low pressure tracked through the Great Lakes during the 16th. Warm air overran cold air in place, resulting in a period of freezing rain across western Maryland before precipitation changed to all rain.	$0
January 20, 2012	Low pressure passed through the area during the evening of the 20th into the morning hours of the 21st. There was enough cold air for precipitation to start off as snow, but warmer air eventually wrapped into the system, causing precipitation to change to a wintry mix.	$0
January 23, 2012	Low pressure was located over the central portion of the nation while high pressure remained just off the New England Coast. Surface cold air remained in place during the evening hours of the 22nd into the morning hours of the 23rd. A southerly flow around the low allowed for warm and moist air to overrun the surface cold air, resulting in periods of freezing drizzle. Temperatures rose above freezing later during the morning hours of the 23rd.	$0
February 25, 2012	Low pressure intensified over eastern Canada on the 25th. A cold northwest flow around this system was able to pick up moisture from the Great Lakes, triggering snow showers across locations along and west of the Allegheny Front.	$0
April 23, 2012	Strong low pressure moved up the East Coast toward New England during the early morning hours of the 23rd. A northwest flow around the low was able to pick up moisture from the Great Lakes, causing snow showers across locations along and west of the Allegheny Front.	$0
December 29, 2012	Low pressure developed near Mississippi and moved northeast and across the Mid Atlantic. A secondary low formed off the Carolina coast and moved northeast. A wintery mix of rain and snow moved across the Mid Atlantic. Surface temperatures were above freezing which led to rain south and east of I-95. Snow did accumulate across parts of Northern Maryland and the panhandle of WV.	$0
January 14, 2013	A cold front stalled to the south of the Mid Atlantic region and waves of low pressure moved along it. Northerly flow caused temperatures to get below freezing in the higher elevations west of the Allegheny Front. Moisture and warmer air aloft streamed in from the Atlantic and freezing rain formed in the higher elevations.	$0
January 15, 2013	A cold front stalled to the south of the Mid Atlantic region and a weak disturbance moved along it. Northerly flow caused temperatures to get below freezing west of the Blue Ridge and Northern Maryland. Moisture and warmer air aloft streamed in from the Atlantic and freezing rain formed where temperatures were below freezing.	$0
January 25, 2013	An Alberta clipper moved through the Mid Atlantic producing light snow for most of the region. Dry air at the surface limited snowfall amounts for most of the area.	$0
January 28, 2013	High pressure was slow to move off the Atlantic Coast and sub freezing air was trapped on the leeward side of the Appalachian Mountains. Southwest flow a few thousand feet above the surface brought above freezing temperatures and led to freezing rain and accumulating ice in the Mid Atlantic.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 31, 2013	An upper trough of low pressure was over the Great Lakes region. After a cold frontal passage, northwest flow produced upslope snow showers west of the Allegheny Front in the Mid Atlantic.	$0
February 2, 2013	A large upper level trough was located across the eastern United States. Northwest flow from a cold air mass caused upslope snow showers to occur across the Allegheny Front.	$0
February 4, 2013	A clipper system moved through the region in northwest flow aloft. This clipper system produced short lived snow bands that produced several inches of snow in the higher terrain including the Allegheny Front and Potomac Highlands.	$0
February 22, 2013	A stacked low pressure system was over the Northern Plains. High pressure to the north caused below freezing temperatures to advect southward into the Mid Atlantic. Southerly flow aloft and ahead of low pressure led to above freezing temperatures above the below freezing surface. Freezing rain occurred in most areas in the Mid Atlantic.	$0
February 26, 2013	A secondary low pressure system formed over the Carolinas as the primary system moved northward and was located across the Central Plains/Ohio Valley. High pressure over New England and northerly winds brought below freezing temperatures across the Potomac Highlands. Over running precipitation was able to melt and re-freeze on contact.	$0
March 18, 2013	Warm and moist air overran cold air at the low levels of the atmosphere, causing light rain, sleet and snow. However, surface temperatures were below freezing across the higher elevations, resulting in areas of freezing rain.	$0
November 26, 2013	High pressure was wedged southward in the Mid Atlantic while low pressure deepened off the gulf coast. Below freezing surface temperatures and warm and moist air aloft produced freezing rain.	$0
December 6, 2013	Low pressure moved along a cold front across the Mid Atlantic bringing unsettled conditions. Most of the region was warm enough for rain but colder air at the surface led to freezing rain and ice accumulation along the western slopes of the Allegheny Front.	$0
December 14, 2013	Cold air filtered into the Mid Atlantic from the north while low pressure approached from the south. A rain and snow line pushed north and west through the day and snow totals dropped off dramatically across the I-95 corridor.	$0
January 5, 2014	Low pressure tracked up the Appalachian mountains and southerly flow ahead of the system led to warm air overrunning cold air at the surface. This led to freezing rain and ice accumulation across the Mid Atlantic.	$0
January 10, 2014	A weak disturbance crossed the Mid Atlantic while a wedge of high pressure was at the surface. Precipitation that fell melted aloft and froze on contact.	$0
February 15, 2014	An area of low pressure moved across the Mid Atlantic from the Tennessee Valley. Temperature differences in the boundary layer led to snow accumulation for the Potomac Highlands and rain further east.	$0
February 19, 2014	A wedge of cold air was in place across the Potomac Highlands and Northern Maryland while warm air moved into the region from the Tennessee Valley. This led to overrunning and showers across the area. Freezing rain occurred for areas with surface temperatures below freezing.	$0
March 2, 2014	A cold front crossed the region as low pressure passed across the south of the Mid Atlantic and heavy snow moved across the region. Temperatures dropped	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	from north to south and precipitation changed from rain to sleet/freezing rain to snow.	
March 16, 2014	Two areas of low pressure formed south of the Mid Atlantic. Dry and cold air at the surface led to precipitation to quickly change to snow. Heavy snow fell across the region with a confined area of greater than 10 inches across the Central Foothills.	$0
December 2, 2014	Cold air damming situation evolved Tuesday as a cold front stalled just to the south of the Mid-Atlantic region and high pressure built in over New England. This synoptic set up resulted in persisting northeasterly flow that kept surface temperatures at or just below freezing while southwesterly flow in the lower levels provided a deep warm layer. This combination of temperatures with the overrunning precipitation resulted in ice accumulations across most of northern and western Maryland.	$0
December 4, 2014	A passing upper level disturbance triggered light rain across the Mid-Atlantic. High pressure building south from New England resulted in a wedge of cold air, keeping surface temperatures at or just below freezing mainly at higher elevations, which resulted in areas of light ice accumulation.	$0
December 8, 2014	Cold air damming situation as high pressure retreated to the north of the area and low pressure formed over the Mid-Atlantic region. The northeast flow kept temperatures right around freezing during the evening and overnight hours while the forming low brought plenty of moisture, resulting in on-going precipitation for most of the night and into the morning of the 9th.	$0
December 22, 2014	Low pressure moving through the Mid-Atlantic brought widespread precipitation that overrode persisting surface cold air, resulting in freezing rain, mainly at elevated locations.	$0
January 3, 2015	Low pressure pushed to the north and west, with the associated warm front slowly approaching from the south. High pressure to the north kept a wedge of cold air in place, which resulted in freezing rain as precipitation overspread ahead of the warm front at mainly higher elevations.	$0
January 6, 2015	A quick moving clipper system brought widespread snow showers to the region.	$0
January 11, 2015	Low pressure passed just to the south of the region, with overspreading precipitation pushing to the north. High pressure to the north resulting in cold air wedging led to the precipitation falling as freezing drizzle and rain.	$0
January 23, 2015	Low pressure tracking just offshore of Delmarva brought a mix of precipitation to the area as a result of cold air wedging from a retreating high pressure.	$0
January 26, 2015	A surface low tracked across the Mid Atlantic. As the low pushed offshore and deepened while the upper level trough became negatively tilted, precipitation became more widespread.	$0
February 1, 2015	Low pressure moving through the Mid-Atlantic brought periods of snow, sleet and freezing rain. Retreating high pressure initially provided a cold air mass, but a strengthening low level jet injected in warmer air overnight, resulting in a transition to sleet and freezing rain.	$0
February 14, 2015	A strong cold front moving through brought a quick moderate snow.	$0
February 21, 2015	Low pressure lifting from the Ohio River Valley into the eastern Great Lakes dragged a cold front through the region. Southerly flow ahead of the front	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	resulted in high moisture advection and with temperatures hovering in the 20s, moderate to heavy snow was reported across the region.	
March 1, 2015	Widespread precipitation was produced ahead of an approaching cold front. Southerly flow overrunning near freezing surface temperatures led to the main precipitation type being freezing rain.	$0
March 3, 2015	A warm front lifting north through the area resulted in light freezing rain and sleet.	$0
March 4, 2015	A cold front brought widespread heavy snow to the area with a strong convergence zone aligning across northern Virginia into eastern Maryland resulting in mesoscale banding and higher snow totals.	$0
March 20, 2015	Widespread precipitation formed as energy transferred from low pressure moving through the Ohio River Valley to a developing coastal low off the Carolinas. Snow was brief as a strengthening low level jet aided in transitioning the precipitation to rain by midday, limiting snow totals.	$0
March 25, 2015	High pressure wedging combining with clearing skies resulted in temperatures dropping below freezing. An upper level disturbance passing to the north brought light precipitation to the area. Warm air advection aloft led to the precipitation falling mainly as freezing rain.	$0
November 30, 2015	Retreating high pressure to the north ahead of an approaching warm front let to a CAD situation, with temperatures hovering right around freezing for a good portion of the day for very isolated spots at the highest elevations of the Blue Ridge. The combo of the light rain overrunning the warm front and the freezing temps led to trace ice amounts.	$0
December 28, 2015	A cold front sank south across the region during the day, quickly returning during the overnight hours as a warm front. A shallow layer of cold air trapped in isolated spots of western Maryland led to the development the freezing drizzle as the front moved north.	$0
January 8, 2016	A wedge of high pressure remained across the Mid-Atlantic, trapping below freezing temperatures in valleys of western Maryland. An elevated warm front lifted north over the high pressure, resulting in light rain and drizzle. Due to the below freezing temperatures, reports of freezing rain and drizzle were observed.	$0
January 12, 2016	A strong cold front swung through the region late in the day accompanied by a mid and upper level trough with strong forcing. Steep lapse rates and weak CAPE combining with the upper level support led to the development of snow squalls, resulting in a quick accumulation of a couple of inches over the Alleghany Front.	$0
January 26, 2016	Retreating high pressure resulted in colder air being wedged in the valleys along and east of the Appalachians. As a warm front lifted north during the overnight hours, light rain formed, which when combined with the below freezing surface temperatures, resulted in patches of freezing rain.	$0
February 8, 2016	Two low pressure systems impacted the Mid-Atlantic while an upper level trough deepened across the region. As one low pushed to the south and then east, energy from the second low over the Great Lakes region was transferred to the coastal flow, resulting in snow banding across portions of central Maryland.	$0
February 9, 2016	Two low pressure systems impacted the Mid-Atlantic while an upper level trough deepened across the region. As one low pushed to the south and then east, energy from the second low over the Great Lakes region was transferred to the coastal flow, resulting in snow banding across portions of central Maryland.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
March 19, 2016	A cold front swung through the region, with upslope snow showers forming along the Allegheny Front.	$0
December 2, 2016	A light upslope flow caused freezing drizzle and light freezing rain along and west of the Allegheny Front.	$0
December 4, 2016	Rain moved through the area on the 4th into the 5th. However, there was a layer of cold air aloft that caused freezing rain in the higher elevations.	$0
December 7, 2016	Rain moved through the area on the 6th. However, there was a layer of cold air aloft that caused freezing rain in the higher elevations.	$0
December 11, 2016	A period of freezing rain occurred across northern Maryland late on the 11th into the 12th. This is because cold air was trapped near the surface while rain moved into the area.	$0
December 18, 2016	A period of light freezing rain occurred along and west of the Allegheny Front.	$0
December 29, 2016	Low pressure passed by well to the west. There was enough cold air for a period of freezing rain before temperatures rose above freezing.	$0
January 5, 2017	Low pressure developed and tracked off Mid-Atlantic coast at the same time colder air was funneling in from the north. This resulted in a period of snow.	$0
January 10, 2017	Low pressure tracked through the Great Lakes, bringing some rain to the area. However, there was enough low-level cold air for a brief period of light freezing rain.	$0
January 13, 2017	Low pressure passed through the area. There was enough cold air trapped near the surface for a period of freezing rain.	$0
January 14, 2017	Low pressure passed through the area. There was enough cold air trapped near the surface for a period of freezing rain.	$0
January 23, 2017	Coastal low pressure impacted the area. A strong upper-level low provided just enough cold air for rain to change to snow before precipitation ended.	$0
February 9, 2017	Low pressure passed by to the south, causing precipitation to overspread the area. Cold air was moving in during this time and this caused rain to end as a period of snow.	$0
March 10, 2017	Low pressure passed by to the south. Cold air from the north filtered in during this time while precipitation was occurring. This allowed for rain to change to snow before ending and the highest accumulations were on the ridges where surface temps were below freezing.	$0
March 24, 2017	High pressure moved off the coast and a southerly flow developed. The southerly flow ushered in more moisture at the same time and upper-level disturbance was passing through. The upper-level disturbance caused a period of rain, but there was enough cold air in place for rain to freeze on some surfaces during the early morning hours.	$0
December 13, 2017	An upslope wind combined with moisture from the Great Lakes caused snow to develop along and west of the Allegheny front.	$0
January 8, 2018	Low pressure passed by to the west. Warm and moist air overran the arctic air in place causing a period of freezing rain.	$0
January 16, 2018	A couple waves of low pressure brought some precipitation to the area, and there was enough cold air ahead of this system for the precipitation type to be snow.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
February 4, 2018	Weak low pressure tracked up the Mid-Atlantic Coast. A cold air mass in place caused precipitation with this low to fall in the form of snow and ice.	$0
February 17, 2018	Low pressure to our west transferred its energy to a weak coastal low off the Mid-Atlantic Coast. High pressure to the north supplied the cold air and moisture from the low caused snow to develop.	$0
March 8, 2018	Cold and moist air moving over the mountains led to a period of snow along and west of the Allegheny Front.	$0
January 7, 2019	A warm front approached the area during the day and into the evening of January 7th as a strong area of high pressure remained positioned off the Northeastern US coastline. Warm and moist air overrunning much cooler air at the surface led to areas of precipitation, some of which fell as light freezing rain across the terrain near the Allegheny Front.	$0
January 9, 2019	A strong low pressure system moved northeastward through the Northeastern US during the early morning hours of January 9th. Strong northwest flow followed behind the system leading to the formation of upslope snow along and near the Allegheny Front from January 9th and into January 10th.	$0
February 1, 2019	High pressure overhead of the region late on January 31st shifted eastward and offshore in the early morning of February 1st. A frontal boundary was positioned south of the region across southern Virginia, and a wave of low pressure developed along the boundary in the Ohio Valley on the morning of the 1st. This then moved eastward to the Virginia Tidewater by the evening hours. Warm air advection associated with this frontal wave led to widespread light to moderate accumulating snow for much of the state, with a coating to 1 inch reported across southern Maryland to 1 to 3 inches across central Maryland, and up to 6 inches reported in western Maryland.	$0
February 17, 2019	A ridge of high pressure was in place over the northeastern United States in the early morning hours of February 17th. At the same time, low pressure was tracking northeastward from the lower Mississippi Valley. By the afternoon the area of low pressure had progressed into the Ohio Valley with warm air advection occurring aloft over the Mid-Atlantic states, while cold surface temperatures remained. This led to areas of freezing rain and sleet during the afternoon and evening hours of the 17th for locations in Maryland near and north and west of the Baltimore metropolitan area. Ice accumulations were light and around a tenth of an inch or less. Precipitation then changed to rain during the overnight hours.	$0
February 23, 2019	Surface high pressure was located over New England through the day on February 23rd. Overrunning warm and moist air advection associated with a developing system in the southern plains led to rain overspreading portions of the state of Maryland. In western Maryland temperatures at elevations between 1500 and 4000 feet were below freezing for much of the day and evening, which led to a glazing of ice up to about a tenth of an inch.	$0
March 1, 2019	During the overnight hours of February 28th into the early morning hours of March 1st, an upper level trough moved through the Ohio Valley as an area of surface low pressure|moved through North and South Carolina. This helped to foster warm air advection aloft across the region as high pressure positioned over the eastern Great Lakes and New York funneled in cool air at the surface. This led to the development of a wintry mix across the state of Maryland during	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	the early morning hours of March 1st, although snow was the favored precipitation type, and several inches accumulated.	
December 1, 2019	A layer of cold air caused rain to freeze on surfaces over the Allegheny Highlands. Ice accumulation was between one and two tenths of an inch.	$0
December 13, 2019	Low pressure tracking to the west allowed for warm and moist air to overrun surface colder air in place. However, the surface air was cold enough for a period of freezing rain across northern and central Maryland. Ice amounts ranged from a light glaze to around a tenth of an inch.	$0
December 16, 2019	Low pressure passed by to the west on the 16th into the 17th. Ahead of the low, plenty of cold air remained in place, and this led to a period of snow across northern and central Maryland during the morning of the 16th. Temperatures rose above freezing, causing precipitation to change to rain for most areas. However, across northern Maryland into the Allegheny Highlands, temperatures hovered very close to freezing and this led to some freezing rain later on the 16th into the morning of the 17th.	$0
January 7, 2020	A wave of low pressure passed through the area on the 7th of January. There was plenty of cold air ahead of this system for precipitation to fall as a period of snow. Snow accumulations ranged from 1 to 3 inches along the I-95 corridor, to 3 to 5 inches to the north and west of I-95.	$0
January 18, 2020	A push of warm advection aloft well in advance of a developing surface low over the Great Lakes produced a period of freezing rain for locations along and northwest of the I-95 corridor in MD. Ice accumulations were minor and ranged from less than a tenth of an inch along the I-95 corridor, to 0.1-0.2 further north and west.	$0
March 14, 2020	A weak area of low pressure tracked to our south. Just enough cold air was in place to bring periods of snow to higher elevation locations in Western Allegany County. 3 inches of snow was observed in Frostburg.	$0
December 1, 2020	Strong low pressure slowly tracked northward from upstate New York into southeastern Canada. Plenty of moisture wrapped around the low along with colder air from Canada. As the cold and moist air flowed over the mountains, this triggered a prolonged period of snow for locations near the Allegheny Front in western Maryland.	$0
January 1, 2021	Low pressure tracked through the Ohio Valley and toward the Great Lakes. Warmer air aloft overran colder air in place associated with high pressure over New England, resulting in some freezing rain. Ice accumulations ranged from a trace to around a tenth of an inch, over the higher elevations in central Maryland, and around a quarter inch in the Allegheny Highlands.	$0
January 3, 2021	Low pressure tracked to our west and transferred its energy to a weak coastal low. Most places received rain, but there was a thin layer of cold air that caused rain to freeze in the higher elevations, with ice accumulation around a tenth of an inch in Garrett and western Allegany Counties.	$0
February 5, 2021	A cold front passed through early on the 5th. Warm advection ahead of the front led to some light rain. However, there was a layer of cold air that caused rain to freeze on some surfaces in the higher elevations. A light glaze of ice was reported in western Allegany and Garrett Counties.	$0
February 10, 2021	Low pressure passed through the area while high pressure to the north supplied cold air. The heaviest snow occurred over northern Maryland, just north from	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	the surface low. Snowfall averaged between 4 to 8 inches for most of these areas. Snowfall averaged around 1 to 3 inches across central Maryland, with less over southern Maryland toward Washington DC. ||There was also a light glaze of ice in the Allegheny Highlands as warmer air worked its way in aloft allowing the snow to end as a period of light freezing rain and freezing drizzle.	
February 13, 2021	Low pressure tracked into the Ohio Valley on the 13th before transferring its energy to a coastal low that moved offshore on the 14th. A period of sleet and freezing rain occurred across the area. Ice accumulations ranged from less than a tenth of an inch across western Maryland, to 0.1-0.2 west of Interstate 95, to around a quarter inch near and east of Interstate 95 south of Baltimore into southern Maryland.	$0
February 18, 2021	Low pressure passed by to the west as it tracked into the Ohio Valley and Great Lakes on the 18th into the morning of the 19th, before transferring its energy to a coastal low along the Mid-Atlantic Coast. The coastal low moved out to sea later on the 19th. ||Canadian high pressure supplied plenty of low-level cold air, but warmer air worked its way in aloft, and this caused a wintry mix of snow, sleet, and freezing rain. Snow and sleet overspread the area on the early morning of the 18th. Snow and sleet changed to a light wintry mix including freezing rain by the evening of the 18th. Precipitation ended as a period of light snow and sleet on the morning of the 19th. ||The highest snowfall accumulations (around 3 to 6 inches) were across northern Maryland east of Interstate 81, but west of Interstate 95 where the heaviest precipitation occurred, and temperatures aloft were cold enough for precipitation to start off as snow. However, mostly sleet occurred in the Washington and Baltimore Metropolitan areas, so accumulations were less (around an inch). Snowfall amounts around 2 to 5 inches were reported across northern Maryland near and west of Interstate 81. ||Ice accumulation from freezing rain was up to a tenth of an inch for most areas, but around a quarter inch in southern Maryland where warmer air aloft cause more freezing rain vs. snow or sleet.	$0
December 23, 2021	Light rain with temperatures near freezing caused a trace of ice on a few elevated surfaces.	$0
December 27, 2021	A weak wave of low pressure passed through the area, causing overrunning precipitation over low-level cold air in place. This resulted in light snow, sleet, and freezing rain. A trace to a couple hundredths of an inch of ice were reported on elevated surfaces in western Maryland.	$0
January 9, 2022	Warm advection associated with a warm front caused light freezing rain across northern and western Maryland, before warmer air eventually worked its way in causing a change over to rain. Ice accumulations were light for most areas with a glaze on elevated surfaces. However, cold air hung on a while longer in western Maryland on the eastern slopes of the Allegheny Front, where ice amounts around a tenth to a quarter inch were reported.	$0
March 30, 2022	A brief period of freezing rain occurred early in the morning on the 30th. Ice accumulation was confined mainly to elevated surfaces in western Maryland.	$0
April 18, 2022	Coastal low pressure intensified as it tracked up the Mid-Atlantic coast. There was enough cold air in place for precipitation to fall as snow, especially along and west of the Blue Ridge and Catoctin Mountains. Snowfall amounts ranged from 1 to 3 inches in the valleys, with 3 to 6 inches along the ridge tops. There were	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	localized amounts around 6 to 8 inches along the ridge tops above 3,000 feet. ||There was a warm layer aloft on the western side of the Allegheny Highlands that led to freezing rain and sleet. Ice accumulation from freezing rain was around a tenth of an inch across these areas.	
November 14, 2022	A snow squall with visibilities less than one quarter of a mile and winds gusting in excess of 30 mph quickly accumulated one to two inches across the I-68 corridor during rush hour.	$0
November 15, 2022	Low pressure passed by to our west while another low passed by to our east on the 15th of November. High pressure remained to the north and this allowed for a layer of cold air to hang around, causing a wintry mix over the higher elevations. ||Snowfall accumulations were around 1 to 3 inches across Garrett County into western Allegany County near and east of Keysers Ridge, with localized amounts around 4 inches around the Garrett/Allegany County line near and north of Interstate 68. ||Freezing rain led to ice accumulation over the higher elevations generally above 1,000 feet in elevation. Ice amounts ranged from a trace to around one tenth of an inch.	$0
December 6, 2022	A weak low passed by to the west, causing southerly winds to overrun colder air near the surface. This resulted in freezing rain across the higher elevations in the Allegheny and Potomac Highlands where temperatures were just below freezing. Ice accumulation totaled up to around a trace to a few hundredths of an inch, but this led to icy roads that caused several accidents.	$0
December 9, 2022	A weak low passed by to the west, causing southerly winds to overrun colder air near the surface. This resulted in freezing rain across the higher elevations in the Allegheny Highlands where temperatures were just below freezing. Ice accumulation totaled a trace to a few hundredths of an inch.	$0
December 10, 2022	A weak low passed by to the north, causing a warm front to overrun colder air near the surface. This resulted in freezing rain across the higher elevations in the Allegheny Highlands where temperatures were just below freezing. Ice accumulation totaled a trace to a few hundredths of an inch.	$0
December 22, 2022	A wave of wintry precipitation developed over the region with temperatures at or just below freezing. This resulted in a period of snow, sleet, and freezing rain that eventually turned to rain during the late morning and afternoon. Snow/sleet accumulations totaled one to four inches and ice accumulations totaled a few hundredths to one tenth of an inch. This led to several accidents.	$0
December 23, 2022	A potent arctic front moved through the area bringing one to three inches of snow and wind gusts up to 60 mph during the morning hours of December 23rd. Blowing and drifting of snow resulted in visibilities below one-half mile at times.	$0
January 8, 2023	A wave of wintry precipitation developed over the region with temperatures at or just below freezing. This resulted in a period of snow, sleet, and freezing rain. Snow/sleet accumulations totaled a few tenths to two inches and ice accumulations totaled a few hundredths to one tenth of an inch. This led to several accidents.	$0
January 22, 2023	A wave of wintry precipitation developed over the region with temperatures at or just below freezing. This resulted in a period of sleet and freezing rain. Sleet accumulations totaled a coating to a few tenths and ice accumulations totaled a few hundredths to one tenth of an inch.	$0

Table 3-17. Winter Storm Hazard – Winter Weather Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 26, 2023	A snow squall with visibilities less than one quarter of a mile and winds gusting in excess of 30 mph quickly accumulated up to one inch of snow in southwestern Allegany County, MD.	$0
January 31, 2023	A wave of wintry precipitation developed to the north of an area of low pressure with temperatures falling below freezing. This resulted in a period of freezing drizzle which then changed to snow. Ice accumulations totaled a coating to a few hundredths of an inch and snow accumulations totaled a coating to around one inch.	$0

Table 3-18. Winter Storm Hazard – Ice Storm Allegany County from January 2006 – April 2023		
6 Ice Storm events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	3	$20,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Ice Storm**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Ice Storm (Z). Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more).		

Table 3-19. Winter Storm Hazard – Ice Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 13, 2007	A low pressure system moving across the Mid Atlantic brought a mixture of rain and freezing rain to portions of northern and western Maryland. Sub-freezing temperatures at the surface combined with a layer of warmer air aloft caused rain to change over to freezing rain. Ice accumulations between one quarter and one half inch were reported in western Allegany County, with lesser amounts further east.	$0
February 1, 2008	An area of low pressure over the Lower Mississippi River Valley moved up the Appalachians on February 1st. Warmer temperatures aloft combined with subfreezing temperatures at the surface to produce widespread freezing rain across the Mid Atlantic. A quarter of an inch of ice was reported in western Allegany County.	$5,000
February 14, 2016	Prolonged event impacted the Mid-Atlantic. Southwest flow aloft overriding northeast flow at the surface from departing high pressure led to snow spreading over the region initially. Low pressure formed and organized over the Gulf of Mexico, eventually pushing off to the northeast and impacting the region on the 15th. As the cold air wedge was eroded away from this low, warming at all levels led to the snow transitioning to sleet and ice for most of the area.	$0

Table 3-19. Winter Storm Hazard – Ice Storm Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 16, 2019	Low pressure passed by to the west on the 16th into the 17th. Ahead of the low, plenty of cold air remained in place, and this led to a period of snow across northern and central Maryland during the morning of the 16th. Temperatures rose above freezing, causing precipitation to change to rain for most areas. However, across northern Maryland into the Allegheny Highlands, temperatures hovered very close to freezing and this led to some freezing rain later on the 16th into the morning of the 17th.	$10,000
February 24, 2022	A wave of low pressure passed by to the west high high pressure remained to the north. Warm and moist air overran the low-level cold air, resulting in a wintry mix. Snow and sleet amounts were light. Freezing rain ranged from a light glaze on elevated surfaces around the Baltimore Metropolitan area, to around one to two tenths of an inch in northern Maryland as well as the northern suburbs of Washington DC, to around a quarter inch in portions of Garrett and western Allegany Counties.	$5,000
December 14, 2022	An area of low pressure passed by to the west with another area of low pressure developing near the Chesapeake Bay. This resulted in southeasterly winds to overrun colder air near the surface and a prolonged wintry mix/freezing rain event across the Allegheny and Potomac Highlands where temperatures were just below freezing. Ice accumulations totaled one quarter to three quarters of an inch. Sleet accumulations totaled upwards of 2 as well. This led to numerous accidents, downed trees and power lines which resulted in isolated power outages.	$0

Table 3-20. Winter Storm Hazard – Cold/Wind Chill Allegany County from January 2006 – April 2023		
14 Cold/Wind Chill events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Cold/Wind Chill**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Cold / Wind Chill (Z). (Z). Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -180 F or colder) conditions. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. There can be situations where advisory criteria are not met, but the combination of seasonably cold temperatures and low wind chill values (roughly 15 degrees F below normal) may result in a fatality. In these situations, a cold/wind chill event may be documented if the weather conditions were the primary cause of death as determined by a medical examiner or coroner. Normally, cold/wind chill conditions should cause human and/or economic impact.

Table 3-21. Winter Storm Hazard – Cold/Wind Chill Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
November 18, 2014	High pressure building in from the west coupled with a deepening upper level trough ushered in record breaking cold temperatures for multiple days.	$0
December 15, 2016	Gusty northwest winds ushered in very cold conditions. The combination of the gusty winds and very cold conditions lead to low wind chill values.	$0
March 14, 2017	Strong northwest winds ushered in very cold air during the overnight hours of the 14th through the morning hours of the 15th. The combination of bitterly cold air and strong winds caused wind chill values to dip well below zero.	$0
December 13, 2017	Gusty northwest winds and bitterly cold temps caused dangerously low wind chills over the ridges.	$0
December 27, 2017	Gusty northwest winds and bitterly cold temps caused dangerously low wind chills over the ridges.	$0
December 31, 2017	Gusty winds and bitterly cold temperatures caused dangerously low wind chills.	$0
January 1, 2018	Gusty winds and bitterly cold temperatures led to dangerously low wind chills.	$0
January 4, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0
January 5, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0
January 21, 2019	A low pressure system moved up the eastern seaboard of the United States on January 20th, with cold temperatures and strong northwest winds funneling behind the system from the night of the 20th into the morning of the 21st. This was able to produce very low wind chills across much of the state.	$0
January 30, 2019	A low pressure system moved into southeastern Canada on January 30th, with a cold front crossing through the Mid-Atlantic states. Cold temperatures and strong northwest winds followed behind the front on the night of the 30th and into the morning of the 31st. This was able to produce very low wind chills across much of the state.	$0
March 6, 2019	An arctic cold front crossed the region during the evening of March 5th, with very cold temperatures and strong northwest winds funneling behind the system from the night of the 5th and into the morning hours on the 6th. This was able to produce wind chill values as low as -10 degrees over the higher terrain near the Allegheny Front.	$0
December 23, 2022	A cold northwest wind behind an arctic cold front caused wind chills to drop to around -5 near the Chesapeake Bay to -20 degrees in western Maryland the day of the 23rd through the early afternoon of the 24th.	$0
December 24, 2022	A cold northwest wind behind an arctic cold front caused wind chills to continue to range between -10 and -20 degrees during the afternoon of the 24th into the morning of the 25th.	$0

Table 3-22. Winter Storm Hazard – Extreme Cold/Wind Chill Allegany County from January 2006 – April 2023		
15 Extreme Cold/Wind Chill events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Extreme Cold/Wind Chill**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Extreme Cold (Z). A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -350 F or colder). If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally these conditions should cause significant human and/or economic impact. However, if fatalities occur with cold temperatures/wind chills but extreme cold/wind chill criteria are not met, the event should also be included in Storm Data as a Cold/Wind Chill event and the fatalities are direct.

Table 3-23. Winter Storm Hazard – Extreme Cold/Wind Chill Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 8, 2011	Low pressure intensified off the New England coast while high pressure approached from the Midwest. A strong gradient between these two systems caused windy conditions. The gusty winds combined with cold air for extremely low wind chills.	$0
January 12, 2011	Low pressure intensified off the New England coast while high pressure approached from the Midwest. A strong gradient between these two systems caused windy conditions. The gusty winds combined with cold air for extremely low wind chills for locations near the Allegheny Front.	$0
January 21, 2011	Low pressure intensified was located off the New England Coast while high pressure approached from the Ohio Valley. The pressure gradient between these two systems caused breezy conditions. Cold temperatures combined with breezy conditions for extremely low wind chill values near the Allegheny Front.	$0
January 22, 2011	Low pressure intensified was located off the New England Coast while high pressure approached from the Ohio Valley. The pressure gradient between these two systems caused breezy conditions. Cold temperatures combined with breezy conditions for extremely low wind chill values near the Allegheny Front.	$0
January 3, 2014	A tight pressure gradient between low pressure and high pressure moving into the region led to gusty winds along the Allegheny Front with wind chill values -20 and below.	$0
January 6, 2014	An arctic front moved through the Mid-Atlantic and cold air moved into the region. Gusty winds and cold temperatures led to wind chill values below -20. High pressure settled across the area and led to cold conditions to continue for a few days.	$0
January 22, 2014	Arctic high pressure moved into the region with a strong pressure gradient between the departing low pressure. Gusty northwest winds and cold temperatures resulted in wind chill values below -20.	$0
January 23, 2014	A cold front moved through the region reinforcing cold air and gusty winds. Wind chill values were -20 and below in the Potomac Highlands.	$0

Table 3-23. Winter Storm Hazard – Extreme Cold/Wind Chill Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 28, 2014	High pressure was moving into the region while a pressure gradient existed due to a departing cold front. Gusty winds and cold conditions led to wind chill values at -20 and below for the Potomac Highlands.	$0
January 29, 2014	A pressure gradient between the high pressure approaching from the west and a cold front to the east led to gusty conditions. Northerly flow led to cold conditions and wind chill values of -20 and below were measured in the Potomac Highlands.	$0
February 14, 2015	Strong Arctic high pressure built in across the region in the wake of a cold front, resulting in multiple days of sub-zero wind chills across mainly the higher elevations of western Maryland.	$0
January 5, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0
January 21, 2019	A low pressure system moved up the eastern seaboard of the United States on January 20th, with cold temperatures and strong northwest winds funneling behind the system from the night of the 20th into the morning of the 21st. This was able to produce very low wind chills across much of the state.	$0
January 30, 2019	A low pressure system moved into southeastern Canada on January 30th, with a cold front crossing through the Mid-Atlantic states. Cold temperatures and strong northwest winds followed behind the front on the night of the 30th and into the morning of the 31st. This was able to produce very low wind chills across much of the state.	$0
December 23, 2022	A cold northwest wind behind an arctic cold front caused wind chills to drop to around -25 to -40 degrees the day of the 23rd through the early afternoon of the 24th.	$0

3.3.3 SEVERE WEATHER (Thunderstorm Wind, Lightning, Hail, Dense Fog)

Table 3-24. Severe Weather Hazard – Thunderstorm Wind Allegany County from January 2006 – April 2023		
76 Thunderstorm Wind events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	52	$433,000
Number of Days with Event and Crop Damage:	7	$8,250
Number of Event Types reported:	1	**Thunderstorm Wind**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Thunderstorm Wind (C). Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. Maximum sustained winds or wind gusts (measured or estimated) equal to or greater than 50 knots (58 mph) will always be entered. Events with maximum sustained winds or wind gusts less than 50 knots (58 mph) should be entered as a Storm Data event only if the result in fatalities, injuries, or serious property damage. Storm Data software permits only one event name for encoding severe and non-severe thunderstorm winds. The Storm Data software program requires the preparer to indicate whether the sustained wind or wind gust value was measured or estimated.

Table 3-25. Severe Weather Hazard – Thunderstorm Wind Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
June 22, 2006	Strong winds brought several electrical wires down in South Cumberland and Bowling Green. A small brush fire started due to arcing in Bowling Green.	22000
July 18, 2006	Trees down along Interstate 68 near Orleans Road. The downed trees blocked the interstate temporarily.	10000
October 4, 2006	Powerlines downed in the town of Barton.	8000
May 10, 2007	County officials reported trees and power lines down in Flintstone and Oldtown.	2000
June 1, 2007	Emergency Management reported a few trees down in Cumberland, MD.	1000
June 12, 2007	Emergency Management officials reported numerous trees down along Route 144 and Interstate 68 near Flintstone, MD.	5000
June 13, 2007	A Trained Spotter reported trees down in Cumberland, MD.	1000
June 18, 2007	Trees were downed in Cumberland, MD.	0
July 25, 2007	Allegany County Emergency Management reported trees and power lines down in Cumberland. A local newspaper reported multiple trees and power lines down as well as large hail from Barton to Cumberland.	5000
July 27, 2007	Allegany County Emergency Management reported a tree down in Westernport, MD.	1000
June 10, 2008	A trained spotter as well as local newspapers reported trees and power lines down in the Frostburg area.	35000
June 28, 2008	A local newspaper reported trees down in Barton.	6000
July 20, 2008	Allegany County Emergency Management reported a tree down near Mount Savage.	6000

Table 3-25. Severe Weather Hazard – Thunderstorm Wind Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
July 21, 2008	Allegany County Emergency Management reported a tree down near the intersection of Fayette Street and Cumberland Street.	5000
February 11, 2009	Trees were down from thunderstorm winds in McCoole.	0
July 29, 2009	Trees were down near Little Orleans.	0
August 4, 2010	Trees were down in Westernport.	8000
April 28, 2011	Several tree limbs were down near the Corriganville Fire Station.	1000
May 26, 2011	Multiple trees were down in Oldtown.	4000
August 14, 2011	Large tree limbs fell off of pine trees due to thunderstorm winds.	1000
June 1, 2012	Trees were blown down along Moss Ave.	3000
June 29, 2012	Numerous trees were down across western Allegany County.	88000
July 3, 2012	Branches that were two to three inches in diameter were broken off.	0
July 26, 2012	A tree was down due to thunderstorm wind gusts.	0
August 9, 2012	Large tree down onto a residence along Iowa Dr NW.	1500
August 14, 2012	Tree down across telephone lines near intersection of Drake Rd SE and Williams Rd SE.	2500
June 24, 2013	A few large trees about 12 to 14 inches in diameter brought down power lines near Reckley Spring Lane SE and Brice Hollow Road SE.	0
August 21, 2013	There was a tree down on Cabin Run Road.	0
November 1, 2013	A tree was down near Maryland Route 36 and Flint Road and Northbound Maryland Route 36 was blocked.	0
May 13, 2014	There were trees were reported down on Williams Road.	0
June 8, 2014	There were seven large trees down including on that fell on a trailer.	2000
July 8, 2014	There was a tree down at Louisiana Avenue in Cumberland MD.	0
September 2, 2014	There were trees and power lines down.	2000
June 18, 2015	A large tree was reported down across New School Rd.	1000
September 2, 2015	A tree and multiple power lines were reported down in the 1500 lock of Frederick St, resulting in the closure of the road.	3000
September 4, 2015	A limb, 5 inches in diameter, was reported down on Breakneck Rd.	0
June 2, 2016	A tree was reported down on Blackberry Dr.	0
June 16, 2016	A three foot in diameter maple tree was uprooted onto a construction trailer.	0
July 18, 2016	Tree down near the intersection of Industrial Boulevard and Seymour Street.	0
March 1, 2017	A wind gust of 58 mph was reported in Westernport.	0
July 4, 2017	A tree was down on a house along Wilmont Avenue near Fayette Street.	0
August 4, 2017	A large tree was down near the intersection of Old Legislative Road Southwest and Plains Moab Road.	0
August 12, 2017	Two trees were down along Turkey Farm Road.	0
August 21, 2018	A tree was blown down in the 15000 block of Mount Savage Road.	0
April 12, 2019	A tree was blown down near the intersection of Maryland Route 51 Oldtown Road Southeast and Moores Hollow Road Southeast.	0
June 29, 2019	A tree was blown down near the intersection of East Industrial Boulevard and Winston Street.	0

Table 3-25. Severe Weather Hazard – Thunderstorm Wind Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
July 11, 2019	A tree was blown down near the intersection of West Elder Street and Canal Parkway.	0
July 30, 2019	Trees and wires were blown down in the 11800 block of Crocus Avenue in Cumberland. Another tree was blown down on MD-51 near the intersection with Kirk Hollow Road.	0
August 15, 2019	A tree was blown down in the 19000 block of Churchill Road.	0
March 3, 2020	Trees down on Bottle Run Road and Hazen Drive.	2000
April 8, 2020	Trees were reported blown down on MD-53 Winchester Road near Cesaptown.	5000
June 4, 2020	A tree was blown down on Schuler Lane.	5000
June 22, 2020	Several trees were blown down near Spring Gap.	5000
July 23, 2020	Tree damage was reported near Old Town, including on MD-51 Oldtown Road Southeast near Crabtree Lane.	1000
August 7, 2020	Tree damage was reported on private property near the CSX Railroad Tracks in Cumberland.	1000
August 25, 2020	A tree was blown down in the 10000 block of Mount Savage Road Northwest.	1000
November 15, 2020	There were nearly two dozen reports of trees blown down through Allegany County.	25000
May 5, 2021	Two trees blew down on power lines near the intersection of Thompson Corner Road and MD-234 Budds Creek Road.	3000
June 2, 2021	There were multiple reports of trees and wires blown down between Westernport and McCoole.	7000
June 21, 2021	Numerous trees were blown down in the Barton and Lonaconing area.	9000
June 30, 2021	There were multiple calls for trees blown down in and around Oldtown.	2000
July 9, 2021	Trees were blown down near the intersection of MD-202 Largo Road and Kettering Drive/West Kettering Drive.	2000
July 11, 2021	Numerous trees blew down along Orleans Road.	5000
July 13, 2021	Trees blew down blocking Sugar Maple Lane and MD-36 New Georges Creek Road Southwest.	2000
August 25, 2021	Trees blew down near the intersection of National Pike Northeast and Mountain Road.	2000
August 26, 2021	Numerous trees blew down in the Flintstone area, including along Murrays Branch Road and Williams Road at Stickley Road. Wires blew down near the intersection of Georges Creek Road and Welsh Hill Road.	10000
August 28, 2021	Numerous trees and wires blew down near La Vale and Corriganville between Frostburg and Cumberland. A tree blew down blocking the roadway on Bedford Road Northeast and Valley Road Northeast. A tree blew down onto power lines on MD-36 Mount Savage Road Northwest near MD-638 Parkersburg Road Northwest. Wires blew down near the intersection of MD-36 Mount Savage Road Northwest and Portertown Road. Wires blew down on Greenpoint Road. A tree blew down onto power lines on MD-36 Mount Savage Road Northwest near Moss Cottage Lane Northwest. A tree blew down blocking MD-36 Mount Savage Road Northwest above the Brick Yard. A tree blew down onto power lines on Woodcock Hollow Road.	10000

Table 3-25. Severe Weather Hazard – Thunderstorm Wind Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
August 29, 2021	Two trees blew down in the Westernport and Luke area: one on wires on Riordan Road, and one on MD-135 Pratt Street.	3000
September 15, 2021	Large tree limbs and wires blew down on Lower Town Creek Road Southeast.	2000
March 7, 2022	Numerous trees and power lines were blown down throughout the city of Cumberland.	6000
March 31, 2022	Two trees blew down in the 10000 block of Mason Dixon View.	3000
May 20, 2022	Tree damage was reported in Frostburg and Midlothian. A tree blew down onto a house in the 100 block of West Main Street. Two trees blew down on Old Legislative Road Southwest near Shaft Road Southwest.	21000
June 22, 2022	Tree damage was reported near McCoole, including along US-220 McMullen Highway Southwest near Dawson Cemetery Road.	3000
July 23, 2022	Tree damage was reported in Frostburg. A tree blew down onto wires bringing down a pole on First Street.	16000
August 4, 2022	A tree was reported down near the intersection of Oliver Beltz Road Southeast and Warrior Mountain Cutoff Road Southeast.	1000
August 6, 2022	Several trees blew down near Little Orleans. A tree blew down onto westbound I-68 National Freeway at Mile Marker 65. A tree blew down along Dug Hill Road.	2000
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-26. Severe Weather Hazard – Hail Allegany County from January 2006 – April 2023		
21 Hail events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	21	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$21,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Hail**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Hail (C). Frozen precipitation in the form of balls or irregular lumps of ice. Hail 3/4 of an inch or larger in diameter will be entered. Hail accumulations of smaller size, which cause property and/or crop damage or casualties, should be entered. Maximum hail size will be encoded for all hail reports entered.		

Table 3-27. Severe Weather Hazard – Hail Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
April 3, 2006	A cold front combined with strong instability to cause numerous severe thunderstorms to occur on April 3 across the Mid Atlantic. The majority of the severe weather reports were from large hail and damaging wind gusts.	0
June 13, 2007	A series of weak surface low pressure troughs over the Mid Atlantic triggered numerous showers and thunderstorms across western and central Maryland. These storms moved east into the Baltimore Metro area and south into lower southern Maryland. Some of these storms became severe, producing damaging winds and large hail.	0
September 27, 2007	A Trained Spotter reported nickel size hail in Cresaptown, MD.	0
June 22, 2008	Amateur radio replayed a report of quarter-sized hail in Spring Gap.	0
May 23, 2009	Nickel size hail was reported in Wiley Ford.	0
May 28, 2009	Nickel size hail was reported near Town Creek.	0
March 23, 2011	Quarter sized hail was reported near Lonaconing.	0
May 18, 2011	Quarter sized hail was reported at Eckhart Mines.	0
May 26, 2011	Hail up to 2.25 inches in diameter was reported near Bellegrove. Hail caused minor roof damage along with broken windows.	32000
May 27, 2011	Quarter sized hail was reported near Woodland.	0
June 29, 2012	Quarter sized hail was reported.	0
July 4, 2012	Quarter sized hail was reported.	0
August 9, 2012	A cold front approached the Mid Atlantic from the west during the afternoon. Instability and wind shear led to the development of severe thunderstorms that produced damaging winds and hail.	0
June 24, 2013	An upper level low was located over the region. Hot and humid conditions were at the surface with cold air aloft. Terrain circulations led to thunderstorm development in a conducive environment in the Potomac Highlands.	0
May 13, 2014	A cold front moved into the Mid-Atlantic from Delaware and showers and thunderstorms formed on the warm side where temperatures were near 90 and humid conditions led to heavy rain in activity.	0
September 4, 2015	Showers and thunderstorms were triggered along a nearly stalled back door cold front. Temperatures pushed well into the 80s, with even some 90s, allowing for MLCAPE values of around 2000 J/kg.	0
August 15, 2016	Quarter sized hail was reported.	0
July 16, 2020	Ping pong ball size hail was reported near Old Town.	0
July 12, 2022	Half dollar size hail was reported near Bellegrove.	0
September 25, 2022	Quarter size hail was reported in Barton.	0
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-28. Severe Weather Hazard – Lightning Allegany County from January 2006 – April 2023		
4 Lightning events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	4	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	2	
Number of Days with Event and Property Damage:	3	$65,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Lightning**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Lightning (C). A sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage.		

Table 3-29. Severe Weather Hazard – Lightning Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
May 7, 1999	A thunderstorm producing very heavy rainfall, winds over 55 MPH, large hail, and frequent lightning moved across Allegany County between 7:30 and 8:30 PM EDT. A lightning strike started a house fire on Frederick Street in Cumberland at 7:45 PM EDT. One person was reported injured as a result of the fire. Lightning also struck the 1st Presbyterian Church, damaging electrical equipment.	$10,000
September 5, 1999	Lightning also downed two main power poles near Frostburg in Allegany County on the 5th, causing 4700 customers to lose power. The poles were downed at the intersection of Interstate 68 and Route 36, and crews had to shut down Interstate 68 between midnight and 6 AM on the 6th to repair them.	$5,000
June 25, 2000	In Allegany County, a 45-year-old man was struck by lightning while standing under a camper awning near Little Orleans. The victim was thrown against the camper by the strike and received a black burn mark on his right hand. Trees were downed and hail also fell at the campsite.	Not Available
May 14, 2002	In Allegany County, winds between 50 and 65 MPH were reported by a spotter in Frostburg. Across the county, numerous trees and power lines were downed. In Cumberland, an unattached gabled roof blew off a building on Bond Street. The debris damaged structures nearby. A wind gust of 58 MPH was recorded at the Cumberland Regional Airport. In Frostburg, a power line and a streetlight were damaged. Lightning started a fire at a home in Cumberland which damaged the roof and the second story.	$50,000
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-30. Severe Weather Hazard – Dense Fog Allegany County from January 2006 – April 2023		
61 Dense Fog events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	61	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	2	
Number of Days with Event and Property Damage:	3	$65,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Dense Fog**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Dense Fog (Z). Water droplets suspended in the air just above the Earth's surface reducing visibility to values equal to or below locally/regionally established values for dense fog (usually 1/4 mile or less) and impacting transportation or commerce. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Accidents, which resulted in injuries or fatalities, during a dense fog event, are reported using this event category. These injuries or fatalities should be listed as indirect.

Table 3-31. Severe Weather Hazard – Dense Fog Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 26, 2005	Locally dense fog developed early in the morning on December 26. Visibilities fell to one-quarter mile or less in local areas.	$0
January 24, 2006	Areas of dense fog occurred early in the morning of January 24.	$0
February 23, 2006	Areas of dense fog occurred during the early morning.	$0
October 18, 2006	Areas of dense fog formed early in the morning on the 18th. Visibilities were reduced below one-quarter mile in some areas.	$0
October 19, 2006	Dense fog occurred early in the morning of the 19th. Visibilities were reduced below one-quarter mile in some areas.	$0
May 11, 2007	Automated Observations from the Greater Cumberland Regional Airport reported dense fog with visibilities of one quarter mile or less at times. Areas of dense fog developed across central and western Maryland during the early morning hours of May 11th. Visibilities were reduced to one quarter mile or less at times.	$0
May 19, 2007	Automated Observations from the Greater Cumberland Regional Airport reported dense fog, reducing visibilities to one quarter mile or less. Clear skies, light winds and a moist ground combined to produce areas of dense fog across far western Maryland. Visibilities were reduced to a quarter mile or less at times during the early morning hours of May 19th.	$0
August 7, 2007	Automated Surface Observations reported dense fog, reducing visibilities to one quarter mile or less along and west of the Allegheny Front in Allegany County, MD. A warm and humid air mass over the region allowed dense fog to develop along the Allegheny Front in western Maryland. Automated Surface Observations reported dense fog, reducing visibilities to a quarter mile or less during the early morning hours of August 7th.	$0
November 5, 2007	Automated surface observations in Prince Georges County reported dense fog reducing visibilities to one quarter mile or less. The combination of	$0

Table 3-31. Severe Weather Hazard – Dense Fog Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	moisture and a mostly clear and calm night lead to dense fog development during the overnight and early morning hours along the western shore of the Chesapeake Bay from lower southern Maryland to Baltimore as well as along the Allegheny Front of western Maryland. Local airports and automated observations reported fog reducing visibility to a quarter mile or less.	
April 25, 2008	Areas of dense fog developed during the early morning hours of April 26th along the Allegheny Front and portions of the Blue Ridge. Visibilities were reduced to one quarter mile or less.	$0
November 14, 2008	Visibility was down to one quarter of a mile near Westminster. Plenty of low-level moisture off the Atlantic Ocean was drawn into the region ahead of a warm front resulting in areas of dense fog. The dense fog developed on the night of the 13th and continued into the early morning of the 14th.	$0
April 19, 2011	Visibility around one quarter of a mile was reported at Cumberland. A stationary boundary remained just to the south during the 19th and 20th. An easterly flow on the cool side of the front ushered in plenty of moisture from the Atlantic Ocean during this time. The moisture led to the development of dense fog late on the 19th into the morning hours of the 20th.	$0
July 9, 2011	Visibility was estimated to be around one quarter of a mile due to observations nearby.	$0
September 2, 2011	Visibility was reported to be around one quarter mile.	$0
October 7, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.	$0
October 8, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.	$0
October 9, 2011	Visibility was estimated around one quarter mile based on observations nearby.	$0
October 10, 2011	Visibility was estimated to be around one quarter mile.	$0
October 11, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.	$0
January 23 to January 24, 2012	Visibility was estimated to be around one quarter mile across portions of central and eastern Allegany County.	$0
February 5 to February 6, 2012	Visibility was reported to be around one quarter mile in Cumberland.	$0
March 1, 2012	Visibility was reported to be around one quarter mile.	$0
April 29, 2012	Visibility was around one quarter mile at Cumberland.	$0
October 1, 2012	Visibility was reported to be around one quarter mile at the Cumberland Airport.	$0
October 3, 2012	Visibility was reported to be around one quarter mile at Cumberland.	$0
November 21, 2012	Visibility was reported to be around one quarter mile at Cumberland Airport and by satellite.	$0
December 10, 2012	Visibility was reported to be around one quarter mile at Cumberland Airport.	$0

Table 3-31. Severe Weather Hazard – Dense Fog Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 18, 2012	Visibility was estimated around a quarter mile at Cumberland airport.	$0
January 12, 2013	Visibility was reported around a quarter mile at Cumberland Airport.	$0
January 13, 2013	Visibility was reported around a quarter mile at Cumberland Airport.	$0
August 4, 2013	Visibilities of around a quarter mile were estimated at Cumberland Airport	$0
August 20, 2013	Visibilities around a quarter mile were estimated at Petersburg.	$0
August 24, 2013	Visibilities around a quarter of a mile were estimated at Cumberland Airport and by satellite.	$0
January 11, 2014	Visibility of a quarter mile or less was measured at Cumberland Airport.	$0
November 26 to November 27, 2014	Visibilities of one-quarter mile or less were reported at ALW28 in Frostburg and AWOS CBE.	$0
November 26 to November 27, 2014	Visibilities of one-quarter mile or less were reported across the county.	$0
December 23, 2014	Observations from surrounding counties reported one-quarter mile visibilities.	$0
December 23, 2014	Surrounding counties reported visibilities of one-quarter mile.	$0
December 23 to December 24, 2014	Surrounding counties reported visibilities of one-quarter mile.	$0
December 24, 2014	HGR and MRB reported one-quarter mile visibilities.	$0
January 21 to January 22, 2015	CBE reported visibilities of one quarter mile or less multiple times throughout the night.	$0
March 10 to March 11, 2015	CBE reported one quarter mile or less visibilities.	$0
May 7, 2015	Visibilities of one quarter mile or less were reported at CBE.	$0
June 6, 2015	One quarter mile or less visibilities were reported at CBE.	$0
October 11, 2015	CBE reported reduced visibilities of one quarter mile or less.	$0
October 12, 2015	CBE reported reduced visibilities of one quarter mile or less.	$0
February 3 to February 4, 2016	CBE reported reduced visibilities of one quarter mile or less.	$0
May 27 to May 28, 2017	Visibility was estimated to be around one-quarter mile based on observations nearby.	$0
May 27, 2017	Visibility was estimated to be around one-quarter mile based on observations nearby.	$0
July 26, 2018	Visibility was around one quarter mile based on observations nearby.	$0
August 13, 2018	Observations from around the area indicate that visibility fell to a quarter mile or less in dense fog.	$0
September 29, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
September 29, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0

Table 3-31. Severe Weather Hazard – Dense Fog Allegany County from January 2006 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
October 3, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
October 8, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
December 2, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
December 28, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
February 6, 2019	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.	$0
July 9, 2019	Observations indicated that visibilities were reduced to a quarter of a mile or less in dense fog.	$0
July 24, 2019	Observations indicated that visibilities were reduced to a quarter of a mile or less in dense fog.	$0
October 22, 2019	An onshore flow led to increasing amounts of moisture underneath a strong temperature inversion, and this led to the development of dense fog. Visibility was reported to be around one-quarter mile.	$0
December 30, 2019	Moisture underneath a subsidence inversion resulted in areas of dense fog. Visibility was around one-quarter mile.	$0
January 4, 2020	Light winds beneath a subsidence inversion atop saturated ground led to the formation of fog across central MD. Visibilities were around a quarter of a mile.	$0
January 14, 2020	Moist air at low levels was trapped beneath a subsidence inversion and winds went calm as high pressure moved overhead, leading to the formation of fog across much of central and western Maryland. Visibilities were around a quarter of a mile.	$0
May 23, 2020	Visibility was around one-quarter mile.	$0
September 27, 2020	Dense fog occurred with 1/4 mile visibility or less recorded during the late night and early morning.	$0
December 21, 2020	Dense fog developed early in the morning, with widespread visibility of 1/4 mile or below. Fog dissipated towards noon.	$0
January 15, 2021	Light winds and residual moisture allowed fog to develop late on the night of January 15th. The fog dissipated early on January 16th.	$0
February 28, 2021	Light winds and excessive low level moisture allowed areas of dense fog to form during the evening of the 28th. The fog dissipated before dawn on the 1st.	$0
March 24, 2021	Light winds and plentiful low level moisture allowed areas of dense fog to form late on the 24th. The fog dissipated just after dawn on the 25th.	$0
May 17, 2021	Light winds and plenty of low level moisture allowed areas of dense fog to form before dawn. The fog dissipated shortly after sunrise.	$0
Source: National Centers for Environmental Information (NCEI), 2023.		

3.3.4 TORNADO

Table 3-32. Tornado Hazard – Tornado Allegany County from January 1996 – April 2023		
5 Tornado events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	5	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	2	$5,002,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Tornado**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Tornado (C). A violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. For a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance.

Table 3-33. Tornado Hazard – Tornado Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage**
June 2, 1998	A strong-to-violent tornado caused excessive damage in western Allegany County. The multi-vortex twister had estimated wind speeds of 210 mph - the highest in recorded Maryland history - when it ravaged a neighborhood of well-constructed single-family homes along a local plateau just north of Frostburg. After descending Big Savage Mountain, the twister produced a swath of destruction across a neighborhood just west of Frostburg. At least eight homes were destroyed and dozens others were damaged. Advance warning likely saved several lives and reduced casualties; in all, only 5 area residents sustained minor injuries. The tornado continued through Eckhart Mines and Clarysville, causing further damage and destruction to homes and other property. It then continued through undeveloped areas, then passed across Dans Mountain before damaging a few more residences along state route 53 just north of Cresaptown. In all, emergency management officials reported 29 homes destroyed and 125 damaged, with nearly half of the surviving homes receiving moderate to major levels of damage. Initial dollar estimates ranged from $4.5 to $5 million. Hundreds, perhaps thousands, of trees in forested and developed areas were snapped or uprooted.	$5 million
July 29, 2009	Damage to trees, telephone poles, and structures were surveyed near the intersection of Old Braddock Trail and Brookstree Lane. Dozens of trees were uprooted along Wagner Road as well as Oldtown Cemetery Road and Lower Town Creek Road. **Magnitude: F0.**	Not Available
July 29, 2009	A funnel cloud was observed in association with tree damage. **Magnitude: F0.**	Not Available

Table 3-33. Tornado Hazard – Tornado Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage**
April 28, 2011	The tornado began on a wooded hillside just south of the 23200 block of Pack Horse Road. Damage along the path length was largely to trees. Numerous trees were uprooted along the hillside. A large tree three feet in diameter partially fell on a residence on pack Horse Pack Road causing damage to one wall and a portion of the roof. The tornado damage extended north from Pack Horse Road into a wooded area evident by more uprooted trees. Farther along the path, damage to trees occurred behind a residence on Maniford Road SE adjacent to boundary of the Green Ridge State Forest. **Magnitude: F0.**	Not Available
June 1, 2012	The tornado touched down near the intersection of Orleans Road NE and Turkey Farm Road NE. The track was nearly one-mile long. The tornado snapped numerous trees and uprooted one large and several smaller trees. Electrified fencing had to be repaired and trees removed from Turkey Farm Road NE. **Magnitude: EF1.**	$2,000
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-34: Tornado Hazard – Funnel Cloud Allegany County from January 2006 – April 2023		
0 Funnel Cloud events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	0	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Funnel Cloud**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Funnel Cloud (C). A rotating, visible extension of a cloud pendant from a convective cloud with circulation not reaching the ground. The funnel cloud should be large, noteworthy, or create strong public or media interest to be entered.		

Table 3-35. Tornado Hazard – High Wind Allegany County from January 2006 – April 2023		
15 High Wind events		
Number of County/Zone areas affected:	2	
Number of Days with Event:	15	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	1	
Number of Days with Event and Property Damage:	5	$2,065,027.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**High Wind**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.		

Table 3-35. Tornado Hazard – High Wind Allegany County from January 2006 – April 2023
15 High Wind events
Based on NCEI definitions/criteria: High Wind (Z). Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 3-36. Tornado Hazard – High Winds Allegany County from January 2006 – April 2023			
Location	**Date**	**Event Narrative**	**Property Damage**
Countywide	January 14, 2006	Numerous trees and powerlines down. Widespread damages and power outages occurred during this event, with newspaper reports indicating tens of thousands without power for an extended period of time.	$1.6 Million
Countywide	February 22, 2007	Emergency Management Officials reported trees and power lines downed across central and eastern portions of Allegany County. Utility wires and trees were downed in Frostburg, MD, in Allegany County.	Not Available
Countywide	December 16, 2007	Allegany County Emergency Management reported trees and power lines down.	$3,000
Countywide	January 30, 2008	An automated surface observation in Frostburg measured a wind gust of 65MPH. Allegany County Emergency Management reported trees down from McCoole to just north of Cumberland.	$5,000
Countywide	February 10, 2008	Newspaper clippings reported numerous trees and power lines down across Allegany County.	$5,000
Countywide	February 12, 2009	A wind gust of 59 mph was measured in Frostburg. A wind gust of 50 knots was measured in Cumberland.	Not Available
Countywide	April 4, 2009	A wind gust of 50 knots was reported at Frostburg.	Not Available
Countywide	February 25, 2011	Wind gusts around 56 knots were estimated across central and eastern Allegany County.	Not Available
Countywide	October 29, 2012	Numerous tree damage due to both high winds and heavy snow occurred in the county. Downed trees and downed trees into homes and some businesses caused power outages. At the height of the storm, over 9000 were without in the entire county.	$452, 027
Extreme Western	November 19, 2016	Wind gusts around 60 mph were estimated based on observations nearby.	Not Available
Countywide	March 2, 2018	A wind gust of 60 mph as reported at Frostburg. The 911 call estimated about 55 calls related due to downed trees and power lines.	$0
Countywide	February 24, 2019	Wind gusts of up to 58 mph were measured, including at Frostburg. There were also reports of downed trees. Wind gusts of up to 61 mph were measured, with the highest gust reported near Cumberland. There were also multiple reports of downed trees and wires throughout the zone	$0

Table 3-36. Tornado Hazard – High Winds Allegany County from January 2006 – April 2023			
Location	**Date**	**Event Narrative**	**Property Damage**
Countywide	November 27, 2019	Low pressure intensified to the northeast and high pressure approached from the Midwest. A strong pressure gradient between these systems led to high winds across the higher elevations in western Maryland. Wind gusts around 60 mph occurred.	$0
Countywide	March 26, 2021	A powerful storm and cold front resulting in strong damaging winds across the area. Peak winds maxed out at 58 mph at Grantsville 5 W at 10:14 EST 3/26.	$0
Source: National Centers for Environmental Information (NCEI), 2023.			

3.3.5 EXCESSIVE HEAT & DROUGHT

Table 3-37. Excessive Heat – Excessive Heat Allegany County from January 2006 – April 2023		
4 Excessive Heat events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	4	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	
Number of Days with Event and Crop Damage:	0	
Number of Event Types reported:	1	**Excessive Heat**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Excessive Heat (Z). Excessive Heat results from a combination of high temperatures (well above normal) and high humidity. An Excessive Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established excessive heat warning thresholds. Fatalities (directly related) or major impacts to human health that occur during excessive heat warning conditions are reported using this event category. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.		

Table 3-38. Excessive Heat – Excessive Heat Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage**
August 1 to 3, 2006	Excessive heat conditions occurred on Tuesday, Wednesday, and Thursday, August 1-3, across much of Maryland. Afternoon heat index values ranged between 105 to as high as 115 degrees.	Not available.
July 22, 2011	Heat indices in excess of 110 degrees were estimated due to observations nearby.	Not available.
July 7, 2012	Heat index values around 105 degrees were reported at the Cumberland Airport.	Not available.
July 20, 2017	Heat indices around 105 degrees were reported.	Not available.
Source: National Centers for Environmental Information (NCEI), 2023.		

Table 3-39. Excessive Heat – Heat Allegany County from January 2006 – April 2023		
13 Heat events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	12	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	
Number of Days with Event and Crop Damage:	0	
Number of Event Types reported:	1	**Heat**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Heat (Z). A period of heat resulting from the combination of high temperatures (above normal) and relative humidity. A Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established advisory thresholds. Fatalities or major impacts on human health occurring when ambient weather conditions meet heat advisory criteria are reported using the Heat event. If the ambient weather conditions are below heat advisory criteria, a Heat event entry is permissible only if a directly related fatality occurred due to unseasonably warm weather, and not man-made environments.

Table 3-40. Excessive Heat – Heat
Allegany County from January 2006 – April 2023

Date	Event Narrative	Property Damage
July 21, 2011	Heat indices in excess of 105 degrees were reported at Cumberland.	$0
July 7, 2012	Heat index values around 105 degrees were reported at the Cumberland Airport.	$0
July 20, 2017	Heat indices around 105 degrees were reported.	$0
July 1, 2018, thru July 3, 2018	Heat indices around 100 degrees were reported.	$0
July 19, 2019, thru July 21, 2019	Heat index values exceeded 100 degrees.	$0
July 19, 2020	A ridge of high pressure developed over the eastern United States and western Atlantic, allowing a southwesterly flow to bring plenty of tropical air northward. High temperatures plus high humidity resulted in heat indices in the 100-110 degree range.	$0
August 12, 2021	Heat indices rose to between 100 and 105 degrees.	$0
August 13, 2021	Heat indices rose to between 100 and 105 degrees.	$0

Source: National Centers for Environmental Information (NCEI), 2023.

Table 3-41. Drought Hazard – Drought
Allegany County from January 1996 – April 2023

12 Drought events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	12	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	1	$1,670,000.00
Number of Event Types reported:	1	**Drought**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Drought (Z). Drought is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. Conceptually, drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield. There are different kinds of drought: meteorological, agricultural, hydrological, and social-economic. Each kind of drought starts and ends at different times.

Table 3-42. Drought Hazard – Drought Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
July 1997	A very dry month, containing one 7-day heat wave, exacerbated drought-like conditions across much of the fertile farmland of Maryland. The weather in July proved to be the death knell for much of the crop yields, including corn, hay, alfalfa, and soybeans. Agricultural states of emergency were declared in many areas west of the Chesapeake Bay.	Not available.
November 1998	In Allegany County, the Georges Creek which feeds into the Potomac River dried up, causing 2000 households and businesses to run out of water. County officials were forced to construct an emergency plastic pipeline from Frostburg to the towns of Lonaconing, Midland, and Barton, and asked the governor declare a local water emergency. The communities of Carlos and Shaft had to be connected to the Frostburg water supply by a 1.4-mile emergency chain of fire hoses.	Not available.
December 1998	In the past 127 years, only one other July through December on record (1930) received less precipitation than the last half of 1998. The Maryland Science Center in Baltimore reported a monthly total of 1.34 inches. Other monthly precipitation totals from affected counties included 0.6 inches in Allegany, 0.7. The North Branch of the Potomac River at Cumberland in Allegany County was near record low flow. The Georges Creek in Allegany County which feeds into the Potomac River remained dry for a second straight month, forcing 2000 households and businesses to continue receiving water from a temporary pipeline linked to the Frostburg flow. The Maryland Department of Environment declared a drought warning on December 16th, citing South Central Maryland as the driest area in the state. A statewide ban on open burning remained in effect across the entire state through mid-month because of extreme fire danger. The ban remained in effect across Washington, Frederick, and Allegany Counties through the end of December.	Not available.
May 1999	The Maryland Department of the Environment issued a drought warning in December and it remained in effect through May. May was the 7th month in the past 12 months that precipitation was below normal. From June 1998 through May 1999 precipitation was a staggering 14 inches below average, the 2nd driest 12 months on record. Additional rainfall totals included Allegany County at 2.6 inches. Western Maryland ground water levels fell from above normal to below normal during the month, and remained below normal elsewhere.	Not available.
June 1999	The drought warning issued by the Maryland Department of the Environment remained in effect through June. Additional June rainfall totals included Allegany County at 1.8 inches.	Not available.
July 1999	By the last week of July, the Palmer Drought Index, a measure of long term drought conditions, indicated Maryland was in an extreme drought. The drought warning issued by the Maryland Department of the Environment in December remained in effect through the month. The governor issued a satellite drought emergency on the 29th. July was the 14th month in the past 16 months that precipitation was below normal. From August 1998 through July 1999 precipitation was a staggering 16 inches below average, the 2nd driest 12-month period on record. Additional July rainfall totals included Allegany County at 1.1 inches. In the city of Cumberland, Lake Gordon and Lake Koon were both 11 inches below the spillway. Officials in Frostburg reported the Piney Dam was 8 inches low.	Not available.

Table 3-42. Drought Hazard – Drought Allegany County from January 1996 – April 2023		
Date	**Event Narrative**	**Property Damage ($)**
August 1999	Heavy rain fell over all but Western Maryland between the 24th and 26th, helping to fill surface reservoirs. Unfortunately, because most of the rain fell in the form of thunderstorm downpours, most of the moisture ran off into the rivers before it had the chance to seep into the aquifer supply. The drought warning issued by the Maryland Department of the Environment last December remained in effect through the month. Additional August rainfall totals included Allegany County at 2.5 inches. Piney Dam, Frostburg's main water supply, was 8 inches below normal pool. Cumberland's two reservoirs, Lake Koon and Lake Gordon were down 4 feet and 1 foot respectively. The Mount Savage reservoir was down 3 feet and officials had to store up its supply by hauling 38 tanker trucks of water.	Not available.
September 1999	Rainfall from two land falling hurricanes made a tremendous impact on the drought that plagued the region since the summer of 1998. The water shortage came to an end by mid-month in all but Allegany and Washington Counties. By the 30th, conditions in Western Maryland were upgraded from an extreme to moderate drought, and were near normal or slightly wet elsewhere.	Not available.
October 1999	The drought that affected much of the region since the summer of 1998 finally came to an end in Allegany and Washington Counties. At the beginning of the month, western Maryland was still in a moderate drought. From the 1st through the 11th, over 2 inches of much needed rain fell, bringing an end to the water shortage. The ban on open burning was finally lifted.	Not available.
Source: National Centers for Environmental Information (NCEI), 2023.		

3.3.6 WILDFIRE

Table 3-43. Wildfire Hazard – Fire Starts Allegany County from January 2000 – December 2022		
Year	**Number of Fires**	**Acres Burned**
2000	33	57.3
2001	40	947.9
2002	43	189.2
2003	16	12.5
2004	7	3.7
2005	26	20.7
2006	41	53.9
2007	22	27.4
2008	24	25.9
2009	36	121.8
2010	25	31.0
2011	9	14.3
2012	15	13.7
2013	4	1.3
2014	16	20.2
2015	14	49.4
2016	21	45.6
2017	11	64.3
2018	6	28.9
2019	10	23.4
2020	4	16.2
2021	10	18.6
2022	7	5.0
Average	**19.1**	**77.9**
Total	**440**	**1,792.2**
Source: Fire Starts and Acres Burned By County 2000 – 2022, Maryland Department of Natural Resources.		

Table 3-44. Wildfire Hazard – Fire Department Responses to Wildfire Allegany County from January 2000 – December 2022		
Year	**Total Incidents**	**Acres Burned**
2000	96	0
2001	185	0
2002	150	0
2003	49	5
2004	25	2
2005	86	7
2006	163	32
2007	120	27

Table 3-44. Wildfire Hazard – Fire Department Responses to Wildfire Allegany County from January 2000 – December 2022		
Year	**Total Incidents**	**Acres Burned**
2008	133	61
2009	188	35
2010	198	67
2011	130	20
2012	123	11
2013	80	4
2014	158	11
2015	191	56
2024 Plan Update		
2016	150	69
2017	108	19
2018	90	29
2019	95	31
2020	116	23
2021	122	32
2022	74	33
Average	**123.0**	**24.9**
Total	**2,830 incidents**	**574 acres**

Source: Maryland Fire Incident Reporting System (MFIRS) – Fire Department Responses 2000-2022.
*Note: Defined as "Natural Vegetation Fires (140-143)" in the NFIRS database.

3.3.7 EMERGING INFECTIOUS DISEASES

According to the Centers for Disease Control and Prevention (CDC), emerging infectious diseases are those whose incidence in humans has increased in the past two decades or threaten to increase in the near future. These diseases, which respect no national boundaries, can challenge efforts to protect the residents of Allegany County as prevention and control recommendations may not be immediately available. These diseases include:

- New infections resulting from changes or evolution of existing organisms;
- Known infections spreading to new geographic areas or populations;
- Previously unrecognized infections appearing in areas undergoing ecologic transformation;
- Old infections reemerging as a result of antimicrobial resistance in known agents or breakdowns in public health measures.

The Maryland Department of Health's Center for Infectious Disease Surveillance and Outbreak Response keeps a listing of reportable diseases known as "Selected Notifiable Conditions." These cases are included in Table 3-45 below.

Table 3-45. Cases of Selected Notifiable Conditions Reported, Allegany County, Maryland

Condition	2017	2018	2019	2020	2021	5-Year Average
Amebiasis	0	0	0	0	0	0
Anaplasmosis	0	0	0	0	0	0
Animal Bites	189	218	202	157	192	191.6
Anthrax	0	0	0	0	0	0
Babesiosis	0	0	0	0	0	0
Botulism	0	0	0	0	0	0
Brucellosis	0	0	0	0	0	0
Campylobacteriosis	41	51	32	47	53	44.8
Chancroid	0	0	0	0	-	0
Chikungunya	0	0	0	0	0	0
Chlamydia	279	242	263	234	-	254.5
Cholera	0	0	0	0	0	0
Coccidioidomycosis	1	0	0	0	0	0.2
Creutzfeldt-Jakob Disease	0	0	0	0	0	0
Cryptosporidiosis	3	1	2	6	10	4.4
Cyclosporiasis	0	0	0	2	1	0.6
Dengue Fever	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0
Ehrlichiosis	0	0	0	0	0	0
Encephalitis - non-Arbov.	1	1	0	0	0	0.4
Epsilon Toxin (C. perf.) A.	0	0	0	0	0	0

Table 3-45. Cases of Selected Notifiable Conditions Reported, Allegany County, Maryland						
Condition	**2017**	**2018**	**2019**	**2020**	**2021**	**5-Year Average**
Giardiasis	0	0	3	0	0	0.6
Glanders	0	0	0	0	0	0
Gonorrhea	30	41	22	47	0	28
H. influenzae - Invasive	2	1	1	0	1	1
Hantavirus Infection	0	0	0	0	0	0
Hantavirus Pulmonary S.	0	0	0	0	0	0
Hemolytic Uremic Syndrome	0	0	0	0	0	0
Hepatitis A (Acute-Symp)	0	0	1	1	0	0.4
Hepatitis B - Perinatal	0	0	0	0	0	0
Hepatitis B (Acute-Symp)	0	3	1	0	0	0.8
Hepatitis C - Perinatal	-	0	0	0	1	0.25
Hepatitis C (Acute-Symp)	7	2	0	1	4	2.8
Hepatitis D (Acute-Symp)	0	0	0	0	0	0
Hepatitis E (Acute-Symp.	0	0	0	0	0	0
Influenza Novel A Virus	0	0	0	0	0	0
Isosporiasis	0	0	0	0	0	0
Kawasaki Syndrome	0	0	0	0	0	0
Legionellosis	1	3	11	0	4	3.8
Leprosy (Hansen Disease)	0	0	0	0	0	0
Leptospirosis	0	0	0	0	0	0
Listeriosis	0	1	0	0	0	0.2
Lyme Disease	87	85	71	51	84	75.6
Malaria	0	0	0	0	0	0
Measles (Rubeola)	0	0	0	0	0	0
Meningitis, Aseptic	8	3	11	4	2	5.6
Meningitis, Fungal	0	0	0	0	0	0
Meningococcal Invasive	0	0	0	0	0	0
MERS-CoV, Mid East Res.	0	0	0	0	0	0
Microsporidiosis	0	0	0	0	0	0
Mumps (Infectious Parotitis)	0	0	0	0	0	0
Mycobacteriosis, Other.	4	9	7	6	6	6.4
Pertussis	0	2	0	0	0	0.4
Pertussis Vaccine Adverse reactions	0	0	0	0	0	0
Plague	0	0	0	0	0	0
Poliomyelitis	0	0	0	0	0	0
Psittacosis	0	0	0	0	0	0
Q Fever	0	0	0	0	0	0
Rabies – Animal	2	0	1	5	5	2.6

Table 3-45. Cases of Selected Notifiable Conditions Reported, Allegany County, Maryland						
Condition	**2017**	**2018**	**2019**	**2020**	**2021**	**5-Year Average**
Rabies – Human	0	0	0	0	0	0
Ricin Toxin Associated Ill..	0	0	0	0	0	0
Rubella - Congenital Syn..	0	0	0	0	0	0
Rubella (German Measle...	0	0	0	0	0	0
Salmonellosis - Other	1	8	10	5	4	5.6
Severe Acute Respiratory Syndrome	0	0	0	0	0	0
Shiga toxin producing E. Coli	0	4	0	3	1	1.6
Shigellosis	0	1	0	0	0	0.2
Smallpox & Other Ortho	0	0	0	0	0	0
Spotted Fever Rickettsio	0	0	2	0	0	0.4
Staphylococcal Enterotoxin	0	0	0	0	0	0
Strep Group A - Invasive	0	2	2	3	5	2.4
Strep Group B - Invasive	9	17	17	9	10	12.4
Strep pneumoniae - Invasive	10	4	5	6	1	5.2
Syphilis – Congenital	0	0	0	2	-	0.5
Syphilis - Primary and Se..	0	1	4	1	-	1.5
Tetanus	0	0	0	0	0	0
Trichinellosis	0	0	0	0	0	0
Tuberculosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0
Typhoid Fever – Acute	0	0	0	0	0	0
Typhoid Fever – Carrier	0	0	0	0	0	0
Varicella (Chickenpox)	0	0	0	0	0	0
Vibriosis (Non-Cholera)	0	1	0	0	0	0.2
Viral Hemorrhagic Fever	0	0	0	0	0	0
West Nile Virus	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0
Yersiniosis	0	0	1	0	2	0.6
Zika Virus Disease	0	0	0	0	0	0
Zika Virus Infection	0	0	0	0	0	0
Totals	**675**	**701**	**669**	**590**	**386**	**-**

* Data sources: Maryland's NEDSS and PRISM databases. Data is current as of February 16, 2023. These are active databases and counts may vary slightly over time, as well as differ slightly from counts published by the Centers for Disease Control and Prevention (CDC). HIV/AIDS data are not included here but are available at:

https://health.maryland.gov/phpa/OIDEOR/CHSE/pages/statistics.aspx. COVID-19 data are available at https://coronavirus.maryland.gov/. ** The case status classifications (confirmed, probable or suspect) included in these totals are specific to the condition, and depend in part onhttps://health.maryland.gov/phpa/OIDEOR/CHSE/pages/statistics.aspx.

Chapter 4: Flood

2024 Plan Updates

Chapter 4: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 4-2: Section 4.1.1 Flash Flood History & Risk has been updated. Included in this section is the definition for flash flood from the NCEI, historical occurrences of flash flood events (Tables 4-1 and 4-2), and future probability of this type of event.

Page 4-7: Section 4.1.2 Flood History & Risk has been updated. Included in this section is the definition for flood from the NCEI, historical occurrences of flood events (Tables 4-3 and 4-4), and future probability of this type of event.

Page 4-14: Section 4.1.2 text has been updated to include the most recent significant (i.e., with recorded property damage) flood event that have occurred in Allegany County; the event occurred September 1, 2021, and caused $200,000 in damages. Major impacts from this event are included.

Page 4-16: Section 4.2 Flood Risk and Mapping, Table 4-5 has been modified to include current definitions for FEMA flood zones.

Page 4-17: Map 4-1 has been updated to represent the most recent flood zones for Allegany County per the DFIRM effective April 3, 2020.

Page 4-18: Section 4.3 National Flood Insurance Program has been updated to include flood insurance policy information from the most recent food insurance report. This includes Tables 4-6 (number of policies) and 4-7 (number of claims).

Page 4-18: Section 4.3.1 Repetitive Loss Properties has been updated to include the latest definitions of repetitive loss and severe repetitive loss properties. The total amount, type, and general location of repetitive loss properties in Allegany County has been updated. It is suggested that any newly identified repetitive loss properties be added to the flood buyout property list, as described in the text and in Table 4-8.

Page 4-21: The Dam Failure hazard has been added as Section 4.4 to this chapter. The section describes dam failure history, risk, vulnerability assessment, identification of impacted resources, mitigation measures, and future conditions. Identified in the section are all dam/levee locations in Allegany County per the National Inventory of Dams. Information about high hazard potential dams, including the geographic extent of failure, is included in Tables 4-7 and 4-8. Dam locations are also mapped on page 4-27.

Page 4-28: Section 4.5 County Perspective was updated to include risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the flood hazard. This section has been reviewed to ensure information is up to date.

Page 4-29: Section 4.6 Municipal Perspective has been reviewed and updated to include text related to recent flood events impacting municipalities.

Page 4-30: Section 4.7 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts flood has on people, systems such as emergency services and utilities, transportation networks, and cultural resources such as historic structures. Vulnerable populations have also been identified in this section.

Page 4-31: Section 4.8 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 4-33: Added Section 4.9 Future Conditions. This section examines the impacts that climate change is projected to have on frequency and intensity of flood events. The section also incorporates findings and projections from the 3rd National Risk Assessment to demonstrate how flooding impacts are expected to change in the next thirty years in Allegany County.

CHAPTER 4 FLOOD (RIVERINE & FLASH)

4.1 Flood Hazard Profile

Flooding is the result of heavy or continuous rains exceeding the absorptive capacity of soil and the flow capacity of rivers, streams, and coastal areas. These conditions cause water to overflow their banks. The lowland-adjacent lands most subject to flooding are known as floodplains.

Floods present a serious risk to people and property. Heavy rains can result in flash floods, dumping several inches of rain in such a brief period of time that areas not usually subjected to high waters are devastated. Flash floods occur rapidly, as floodwaters rush down with little warning. Riverine flooding is slower and may occur after several days of rain before waters overflow banks and inundate an area.

Tropical systems as a hazard are not identified separately, however remnants of these systems are captured within flood hazard risk data and vulnerability. Due to Allegany County's location in the western portion of the State, the County is not vulnerable to coastal hazards in terms of storm surge and high winds, as is the case with Maryland's coastal shoreline areas, which are most vulnerable to direct impacts from coastal hazards. In fact, according to the Maryland State Hazard Mitigation Plan, Section 3.9.9 Coastal Hazard Risk Map, Allegany County is rated as the County with the lowest risk to coastal hazards of all Maryland counties. As such, coastal hazards are not profiled separately within this plan. That being said, remnants of tropical storms that impact the State of Maryland, in the form of precipitation events, have resulted in riverine and urban flooding in Allegany County and are included herein. The intensity and severity of precipitation events, from the remnants of tropical storm systems, as well as other severe storm events, is expected to increase overtime due to climate change. Planning for both current and future flood events is crucial and is a priority for Allegany County.

As part of the update process, data was gathered for Allegany County from the National Centers for Environmental Information (NCEI) specific to "flash flood" and "flood." Data for flash flood and flood events within the database starts in January 1996 and continues through to April of 2023.

4.1.1 Flash Flood History & Risk

The NCEI defines flash flooding as "a life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to shorter-term flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash flooding, such as

dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Conversely, flash flooding can transition into flooding as rapidly rising waters abate."

The NCEI includes records of 49 flash flood events occurring between January 1996 and April of 2023. Since the 2018 Plan, three additional flash flood events have been recorded. In some instances, multiple recorded flash flood events occurred on the same day. For example, in 2011, ten flash flood events were recorded in the month of May. Several of which occurred on the same day. These events were recorded as ten localized events resulting in flooded roadways and some basement flooding. Most recently, six flash flood events occurred on August 2, 2018.

Table 4-1. Flash Flood Events Overview Allegany County from January 1996 – April 2023		
49 Flash Flood events		
Number of Days with Event	29	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	8	$63,215,000
Number of Days with Event and Crop Damage:	1	$25,000
Number of Event Types reported:	1	**Flash Flood**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Flash Flood (C). A life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to shorter-term flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash flooding, such as dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Conversely, flash flooding can transition into flooding as rapidly rising waters abate. The Storm Data preparer uses professional judgment in determining when the event is no longer characteristic of a Flash Flood and becomes a Flood.

Table 4-2. Flood Hazard – Flash Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
January 19 to 22, 1996	Snowmelt combined with 1 to 3 inches of rain (some locations received 5 inches) to produce, in some cases, catastrophic river flooding. The flooding was the worst in the region since 1985. Record flooding occurred on Wills Creek near Cumberland (MDZ002), damaging all dwellings in the town of Locust Grove. The largest losses were sustained just outside of Cumberland. Water line breaks occurred in LaVale (MDZ002). Three counties in central Maryland were declared under a federal state of emergency: Washington, Allegany, and Frederick.	$60,000,000
June 11, 1996	One of these storms ravaged western Allegany Co, flooding roads in and near Frostburg and Cumberland. Substantial damage was reported in Mt. Savage, where mud slides closed roads and runoff from higher terrain flooded several homes.	$50,000

Table 4-2. Flood Hazard – Flash Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
September 6, 1996	No report.	$250,000
May 7, 1999	Lightning also struck the 1st Presbyterian Church, damaging electrical equipment. Between 1.25 and 2.00 inches of rain fell across the county in less than one hour, causing water levels to rise rapidly. A co-op observer in Cumberland reported 1.15 inches of rain fell in only 10 minutes around 8:00 PM EDT. This deluge of water flooded basements and led to high water closures on several roads in Cumberland and across the county. Greene Street and Henderson Avenue were also impassable after the storm. Roads in the western end of the county required maintenance after mud and debris settled on road margins after being washed onto the roadway.	$15,000
July 31, 2000	Roads and streams were flooded. Across the western portion of Allegany County, several roads were flooded, and streams overflowed their banks after heavy downpours. Near Lonaconing, trees were downed along Route 36 at the intersection of George's Creek. A total of 1.85 inches of rain was recorded in Cumberland and over 3 inches fell in Westernport.	Not Available
August 6, 2000	Flooding resulted after a total of 3.19 inches of rain fell in Frostburg and Pinto and 2.48 inches fell in Cumberland. In Westernport, Ross Street, Riordan Road, and Lincoln Drive were damaged by rapidly moving water and 46 basements were flooded. Main street became a makeshift river and after the water subsided piles of mud debris had to be removed. Rising water threatened Westernport Elementary School. In Barton, 2 streets were damaged, and 25 basements were flooded. In Lonaconing, 14 basements were flooded. Flooded basements were reported in Frostburg and a toll bridge and Bowery Street were submerged. Flooding was also reported near the junction of the Savage River Dam and the Potomac River. Across the County, Route 135 and old Route 36 were closed by high water.	$250,000
September 11, 2000	Numerous roads, creeks, and structures were flooded. A thunderstorm with torrential rainfall became stationary over the western portion of Allegany County during the evening of the 11th. Serious flash flooding developed in less than an hour. Nearly $2 million in flood damage was reported. Hardest hit communities included Cumberland's north and west side, LaVale, communities along Goose Creek, the Haystack Mountain area, Westernport, and Barton. Across the county, three businesses and a residence were destroyed by flood waters. A total of 27 homes and businesses received major damaged and 141 other structures reported minor damage.	$2,000,000
June 7, 2001	Several roads and creeks were flooded, and some structures were damaged. An area of showers and thunderstorms with very heavy rainfall moved across western and central Maryland during the early morning hours of the 7th. The heaviest rain fell across western Allegany County where flash flooding was reported. The hardest hit area included Westernport, McCoole, and Barton.	$150,000
June 22, 2001	Flooding was reported in Rawlings and on Route 220. During the afternoon of the 22nd, numerous showers and thunderstorms developed just east of the In Allegany County, the heaviest rain fell across the southwestern portion of the county. Several basements were flooded in Rawlings and parts of Route 220 were covered in water. Heavy rainfall downed a tree onto a power line in Frostburg.	Not Available

Table 4-2. Flood Hazard – Flash Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
August 3, 2001	Several roads were closed by flooding after George's Creek and other waterways overflowed. Radar estimated that three inches of rain fell along Dans Mountain near the border of Grant County. This caused George's Creek to overflow its banks and flood Old Route 936 between Midland and Shaft.	Not Available
May 27, 2002	Interstate 68 was closed by flooding and an apartment building was evacuated after Elk Lick Run overflowed. In Allegany County, significant flooding occurred just east of Cumberland along the west slope of Martin Mountain after Elk Lick Run overflowed its banks. Flood waters damaged property in a 2.5 mile area along Baltimore Pike (Route 144) from Rocky Gap Road to Hinkle Road near Interstate 68. An apartment complex on Baltimore Pike was surrounded by flood water. Twenty people had to be evacuated and were eventually displaced after 12 rental units sustained major flood damage. Twenty homes nearby were significantly damaged by flooding, including one which was moved off its foundation by the rushing water. Up to 15 private driveway bridges across Elk Lick Run were damaged and a parking lot was washed away. Three feet of creek water spilled onto Interstate 68 which forced officials to shut down the road for over an hour. Four to five inches of rain was believed to have fallen in this area in only 2 hours.	$500,000
May 29, 2002	Roads and basements were flooded. A thunderstorm with very heavy rainfall moved through the northern portion of Allegany County between 6 and 8 AM. Flood waters closed Korrigum and Cash Valley roads and Route 35. Several other side streets were also flooded. Over 30 homes reported flooded basements.	Not Available
September 27, 2003	Route 220 was closed by flooding from near Cumberland to Bedford. Streams were out of their banks in LaVale, and 30 basements were flooded across the county. Rainfall totals included 2.50 inches in Mt. Savage, 2.10 inches in Frostburg, and an unofficial reading of up to 4 inches in LaVale.	Not Available
November 19, 2003	A few roads closed due to high water. Widespread power outages were reported due to downed trees and power lines. The heavy rainfall led to flash flooding across the Potomac Highlands and Northeast and Central Maryland.	Not Available
June 25, 2004	Water covering three roads in the county.	Not Available
September 8, 2004	Allegany and Washington Counties were especially hard hit according to emergency personnel. 7 inches of rain fell in the western Panhandle of Maryland. In Allegany County Georges Creek rose out of its bank between Frostburg and Westernport. Route 135 was closed for buckling due to high water. Several bridges were under water and around 20 basements were flooded.	Not Available
September 17 to 18, 2004	The remnants of Hurricane Ivan affected the Mid-Atlantic Region on the 17th and 18th. Washington and Allegany Counties once again bore the brunt of the flooding as small streams and creeks rose out of their banks.	Not Available
March 28 to 29, 2005	A fairly significant severe weather event occurred on March 28. This was due to a strong low pressure system that moved west of the area leaving Maryland with abundant moisture and an unstable air mass.	Not Available
May 28, 2010	Roads were closed due to flash flooding around Mount Savage and Frostburg	Not Available

Table 4-2. Flood Hazard – Flash Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
December 1, 2010	Several basements were flooded in Cumberland. A rain gauge nearby recorded 2.39 inches.	Not Available
May 17, 2011	Flash flooding was occurring over Dickerson Hollow Road and Murleys Branch Road. A nearby spotter measured 1.15 inches of rain. Baltimore Pike Fire Hall was experiencing flash flooding on its site. A nearby spotter measured 3.5 inches of rain.	$0
May 18, 2011	Numerous roads were closed, and basements and yards were flooded in LaVale and Mount Savage.	$0
May 27, 2011	• Lexington Avenue was closed due to flash flooding. • At least six inches of water was flowing down Louisiana Avenue in Cumberland. A rain gage near the event measured a total of 1.75 inches. • At least 4 flooded basements in the area. Spotter reported 1 inch of rain in about 10 minutes. • Car stranded in water on Virginia Avenue. A nearby spotter observed 1.18 inches of rain in 30 minutes leading up to the event. • Water was over the roadways of Industrial Blvd and Maryland Ave. • Water was deep and swift enough to wash the payment off Williams Street between the 100 and 700 blocks.	$0
September 11, 2013	There were water rescues ongoing on highway 40 near Shaw Street.	$0
June 12, 2014	There was street flooding on Winchester Road, Warrior Drive and Route 220. There was water as high as the wind shields of cars.	$0
June 12, 2014	There were multiple water rescues ongoing in the southern portion of Cresaptown near Route 220. Route 220 was closed at Potomac Park and between I-68 and Highway 636 due to high water.	$0
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August 2, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. Torrential downpours combined with convection training over the same areas led to some flooding and flash flooding. Some of the flooding lingered into August 3rd. • The stream gauge on Georges Creek near Westernport quickly rose above the flood stage of 8 feet, cresting at 8.65 feet. Water reached the underside of the railroad bridge at downtown Westernport. • Numerous roads were blocked by high water in Westernport. Some roads were washed out. • A mudslide was reported along MD-36 near Barton. • Buskirk Hollow Road Southwest was washed out near Elklick Road. • Water and debris were reported over the road in multiple spots in the Bowling Green and Potomac Park areas, with a rockslide reported in one location. • Ten inches of water was into a house on McKinley Street.	$0

Table 4-2. Flood Hazard – Flash Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
September 1, 2021	The remnants of Ida produced widespread flooding along with instances of flash flooding across the area. Tropical moisture infiltrated the area and there were moderate amounts of instability as well. This combined with the lift provided from the remnants of Ida led to heavy rainfall during this time. Rainfall amounts averaged around 1-3 near and east of Interstate 95, with amounts around 4 to 8 inches across portions of northern and central Maryland. Excess runoff from the heavy rainfall led to river flooding as well. • There were five reports of roads closed in western Allegany County, mainly near Georges Creek and Mount Savage. One swift water rescue occurred due to an individual stuck in flood waters.	$0
August 4, 2022	Numerous showers and thunderstorms developed during the afternoon and evening of the 4th. Slow storm movement led to some instances of flooding and flash flooding. • Bald Knob Road was reported near Blank Road. • Barrelville Road was reported to be flooded near Mount Savage Road.	$0
Source: National Centers for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 49 flash flood events occurring in the County between 1996 and 2023. Therefore, Allegany County experiences 1.81 flash flood events per year.

4.1.2 Flood History & Risk

In addition to flash floods, the NCEI includes a "flood" category, which is defined as "any high flow, overflow, or inundation by water which causes damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, that poses a threat to life or property."

As part of the update, data from the NCEI yielded a total of 36 "flood" events from January 1996 to April 2023. As is the case for flash flood events, there are instances where multiple flood events occurred on the same date. These are included in the event narratives in Table 4-4, but only one record (i.e., table row) is included for each date.

Table 4-3. Flood Events Overview Allegany County from January 1996 to April 2023		
36 Flood events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	6	$536,000

Table 4-3. Flood Events Overview Allegany County from January 1996 to April 2023		
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Flood**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Flood (C). Any high flow, overflow, or inundation by water which causes damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, that poses a threat to life or property. If the event is considered significant, it should be entered into Storm Data, even if it only affected a small area. Refer to the Flash Flood event (Section 14) for guidelines for differentiating between Flood and Flash Flood events.

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
November 7, 1997	Rainfall averaging 2 to 4 inches, with localized totals between 4 and 6 inches at higher elevations, caused minor flooding of creeks and small streams. Dozens of secondary roads were closed in the area, most due to swollen creeks but a few others from high standing water. Rain tapered off during the early evening in Allegany Co.	Not Available
May 4, 1998	1 1/2 and 2 inches of rain in less than 3 hours onto saturated ground. In Midland, Neff's Run flooded, causing damage to the flood wall and washing away several gabion baskets. Damage to the baskets was estimated at $100 thousand. A section of state route 936 was closed, and a few trees were knocked down by the swollen creek. Elsewhere, road and basement flooding was noted in Frostburg, McCoole, and Lonaconing.	$100,000
January 1, 2003	In Allegany County, high water caused basement flooding and a handful of mud slides and rock slides. In Cumberland, a total of 1.30 inches of rain was recorded.	Not Available
May 16 to 17, 2003	The system dropped between 2 and 4 inches of rain across western and central Maryland which caused several low lying areas to flood. In Allegany County, twenty sewage pumping stations overflowed after being inundated by water. Residents in 3 communities had to boil their water for a few days following the flood.	Not Available
September 19 to 23, 2003	On September 18, 2003, remnants of Hurricane Isabel caused wind gusts of 50 to 60 mph. Allegany County was on the fringe of the storm. Higher terrain saw the most wind. Two to four inches of rain fell across central and western Maryland. This was not enough to cause flash flooding but when added to previous rains; it was enough to bring the Potomac River out of its banks. Route 135 was closed due to river flooding in Luke. Officially, the river crested in Luke 1.7 feet below flood stage. Cumberland and Hancock crested just 4 feet below flood stage.	$130,000
April 13, 2004	Heavy rainfall on the 12th and 13th led to rises on area streams and rivers. The one to two inches of rain produced nuisance flooding in the Oldtown area. A privately owned low water bridge was affected.	Not Available
September 8, 2004	The remnants of Hurricane Frances produced damaging winds, tornadoes and flooding in the Mid-Atlantic Region on the 8th. Allegany and Washington Counties were especially hard hit according to emergency personnel. 7 inches of rain fell in the western Panhandle of Maryland. In Allegany County Georges	$100,000

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	Creek rose out of its bank between Frostburg and Westernport. Route 135 was closed for buckling due to high water. Several bridges were under water and around 20 basements were flooded. Students were held in schools for an extra 1 « hours due to inclement weather on the 8th and some schools were closed on the 9th.	
July 13, 2005	Several streets were closed, and basements were flooded in Cumberland, Maryland. Roads were closed at Greene Street and Virginia Avenue due to high water. The storm total rainfall was measured at 3.0 inches by a trained storm spotter.	Not Available
April 22, 2006	Flooding occurred along the banks of the C and O Canal. There were several reports of flooding and flash flooding due to the heavy rainfall across portions of the region.	Not Available
April 15, 2007	A Trained Spotter reported flooding of Town Creek in Flintstone, MD.	Not Available
June 13, 2007	Greene Street and Kelly Road were both closed for more than an hour when they flooded at the railroad trestles. A car was stuck in high water in the Virginia Ave. subway at Industrial Blvd. Numerous reports of flooded basements were also received by Emergency Officials.	$1,000
March 4, 2008	A trained spotter reported Route 144 (National Pike) covered with water. There were also 5 flooded basements.	$5,000
May 4, 2009	Observed rainfall amounts of 2 to 3 inches caused streams and tributaries to flow out of their banks. In Bowling Green, 12 basements were flooded.	Not Available
March 13, 2010	Route 36 was flooded in several locations by Jennings Run, particularly along Parkersburg Road. Rain gauge in the area observed 1.12 inches of precipitation.	Not Available
April 19, 2011	Basements were flooded due to heavy rain.	0
June 2, 2016	Many streets including Spruce Street, Walnut Street, Rock Street and Stony Run Road were all closed due to flooding.	0
June 3, 2016	Winchester Road was closed due to flooding between the town of LaVale and Cresaptown.	0
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May 27, 2018	A cold front sagged into Maryland during the afternoon of May 27th. Heavy rain trained to the northeast of Baltimore early in the afternoon, causing flash flooding. Then, later in the afternoon, the line completely stalled just west of Baltimore, producing 6-12 inches of rain in a very short period of time. Catastrophic flash flooding occurred in the Ellicott City and Catonsville areas, with significant flooding also observed in other nearby areas. Stream flooding continued through the next morning. Flooding of unknown depth was reported on Bedford Street in Cumberland.	$0
July 24, 2018	Following the passage of a coastal low, bands of moisture continued to pull northward across the same areas that had already experienced heavy rain. Heavy rainfall fell in some areas, especially in Baltimore and Carroll Counties, with widespread flooding and flash flooding throughout the period. Over half a dozen roads reported flooded and closed in Cumberland.	$0

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
July 31, 2018	Isolated heavy rain occurred in Allegany County, Maryland during the evening of July 31st. Over three inches was reported, with a couple isolated instances of flooding. • Bear Hill Road flooded and closed due to heavy rain. • Portions of Town Creek Road were flooded and closed.	$0
August 1, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. An isolated incident of flooding occurred due to locally heavy rainfall. The USGS stream gage on Sideling Hill Creek near Bellegrove exceeded the 7.5 foot flood stage during the indicated period. The peak level of 7.88 feet occurred at 1:45am EST. Agricultural flooding occurred, along with water approaching Allegany Line Road.	$0
August 2, 2018	A southerly flow pumped in plenty of moisture from the Atlantic while a slow moving cold front approached from the west. Copious amounts of moisture ahead of the boundary led to showers and thunderstorms. Torrential downpours combined with convection training over the same areas led to some flooding and flash flooding. Some of the flooding lingered into August 3rd. • MD-36 Mount Savage Road Northwest was closed due to flooding over Jennings Run near MD-638 Parkersburg Road Northwest. • Hardwood Drive Southwest was closed due to flooding over Preston Run.	$0
September 6, 2018	An isolated flooding incident occurred from locally heavy rainfall. US-220 McMullen Highway southwest was blocked by high water and debris.	$0
September 9, 2018	Low pressure tracked to the west while a nearly stationary boundary was to the south. Warm and moist tropical air overran the surface cooler air in place, resulting in a moderate to heavy rainfall. Excess runoff from the rainfall led to flooding. One and a half to three inches of rain fell across northern Maryland late on the 8th into the 9th, followed by another one to three inches on the 9th into the 10th. This combination produced fairly widespread flooding, including of the mainstem rivers, which continued through the 11th and into the 12th. • MD-36 Mount Savage Road northwest was closed due to flooding near MD-638. • The river level surpassed flood stage at Georges Creek at Westernport, cresting at 8.83 feet on September 9th at 3:45 PM EST. Water reached the underside of the railroad bridge at downtown Westernport. • The USGS stream gage on Wills Creek near Cumberland exceeded the 10 foot flood stage during the indicated period. This caused a flood of a car wash at Motor City, with water in parking lots in the same area. The peak level of 11.57 feet was observed at 4:45pm EST on the 9th. • The Oldtown Toll Bridge was closed due to high water.	$0
September 10, 2018	Country Club Road was closed near Christie Road due to flooding.	$0

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
September 27, 2018	Showers and thunderstorms associated with a cold front produced locally heavy rainfall in Frederick County on the 26th. Runoff from this heavy rain moved into larger rivers, causing flooding on a portion of the Potomac into the 27th. The river level surpassed flood stage at Georges Creek at Westernport, cresting at 8.09 feet on September 27th at 10:00 PM EST. Water reached the underside of the railroad bridge at downtown Westernport.	$0
September 28, 2018	A warm front moved through the area during the morning hours of the 28th. Warm and moist air associated with a tropical air mass overran the relatively cooler air in place, resulting in heavy rainfall. Also, the steering flow aloft was weak so showers and thunderstorms were slow to move. This enhanced the flooding threat. The resulting flooding moved into larger streams and rivers and continued through the 30th. The river level surpassed the flood stage of 25 feet at Paw Paw along the Potomac River. The river level crested at 25.90 feet at 6:15 PM EST September 28th. ||A parking area adjacent to the highway bridge was flooded. The roadway to the C&O Canal parking area flooded, as did the lowest end of the Purslane Run hiker/biker area.	$0
December 16, 2018	A potent upper-level low and associated area of surface low pressure approached the region from southwest on the 15th. Strong forcing for ascent and ample moisture transport in advance of the upper-level low led to a prolonged period of rain across the region. Eventually low pressure transferred to the coast before precipitation wound down on the 16th. Widespread rainfall totals of 2-4 inches were observed across the area. The river gage on the Potomac River at Paw Paw exceeded the 25 foot flood stage during the indicated period. The roadway to the C&O Canal parking area flooded, as did the lowest end of the Purslane Run hiker/biker area, and a parking area adjacent to the highway bridge. The peak level of 25.33 feet occurred at 1:00 PM.	$0
August 12, 2020	Showers and thunderstorms developed, and with little steering flow aloft this caused the storm motion to be slow. The slow storm motion resulted in instances of flooding and flash flooding. About a foot of flowing water over the intersection at E Oldtown Rd. and Blackston Ave.	$0
June 3, 2021	Showers and thunderstorms developed, and due to higher amounts of instability and moisture, heavy rain led to instances of flooding and flash flooding in northeastern Maryland. North Main Street was closed due to flooding in Port Deposit.	$0
August 28, 2021	Several rounds of showers and thunderstorms developed ahead of an approaching cold front on August 27th-28th, primarily during the afternoon/evening hours each day. Heavy rainfall occurred with these storms which lead to several instances of flooding across the area. • Calla Hill Rd. closed due to flooding.	$0

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	• Several roads in and around Frostburg closed due to flooding.	
September 1, 2021	The remnants of Ida produced widespread flooding along with instances of flash flooding across the area. Tropical moisture infiltrated the area and there were moderate amounts of instability as well. This combined with the lift provided by the remnants of Ida led to heavy rainfall during this time. Rainfall amounts averaged around 1-3 near and east of Interstate 95, with amounts around 4 to 8 inches across portions of northern and central Maryland. Excess runoff from the heavy rainfall led to river flooding as well. • Several roads closed due to high water. • Several roads closed due to flooding. • Several roads closed in and near Mount Savage due to high water. • MD 36 closed at Jennings Run due to flooding. • The water level along Georges Creek at Westernport rose above flood stage, cresting 9.41 feet at 1:45 PM EST on the 1st of September. Water overflowed out of Georges Creek into low-lying areas in the town of Westernport. • The water level along the Wills Creek in Cumberland rose above major flood stage, cresting at 14.10 feet at 7:15 PM on the first of September. Several businesses at Motor City and outside the levee protection north of Cumberland were flooded along with at least a couple homes in Locust Grove. Water approached low spots on Route 36, possibly affecting one lane. • Wills Creek out of banks and flowing onto nearby roads between La Vale and Corriganville. • Part of the wall of the foundation of a home on Crocus Avenue collapsed due to flooding. • Lower portion of Ellerslie evacuated due to rising waters and numerous water rescues on Wills Creek. • The water level along the Sideling Hill Creek at Bellegrove rose above flood stage, cresting at 9.17 feet at 11:30 PM EST on the 1st of September. Lowlands near the creek were flooded and a low spot on Allegany Line Road was also flooded. • The water rose above flood stage along the North Branch Potomac River at Cumberland, cresting at 18.34 feet at 9:45 PM EST on the 1st of September. A low spot on Airport Road in Wiley Ford, West Virginia was flooded. A livestock field southeast of the Cumberland Regional Airport also flooded.	$200,000
September 2, 2021	The water level along the Town Creek in Oldtown rose above flood stage of 14 feet, cresting at 15.11 feet on the 2nd of September at 2:30 AM EST. Water overflowed thee banks just downstream of the Pack Horse Road bridge.	$0
September 23, 2021	A slow moving cold front approached the area on the 22nd before passing through on the 23rd. A deep southerly flow allowed tropical moisture to move into the area ahead of the boundary. This led to heavy rainfall as the cold front approached, and several instances of flooding along with isolated instances of flash flooding occurred.	$0

Table 4-4. Flood Events, January 1996 to April 2023		
Date	**Event Narrative**	**Property Damage ($)**
	New Bridge Road closed at Horseshoe Road due to Octoraro Creek flowing onto the intersection/bridge.	
May 6, 2022	A line of thunderstorms crossing a warm front caused several instances of flooding across MD from May 6th into May 7th. Residual river flooding continued through May 9th due to excessive runoff. Several roads were submerged in flood waters in the Jennings area, especially along Jennings Rd. and Millers Rd.	$0
May 7, 2022	The stream gage on Sideling Hill Creek near Bellegrove reached flood stage during the specified timeframe, reaching a peak crest of 8.02 ft at 3:45 PM EST on May 7th. At this level lowlands near the creek begin to flood. Also, a low spot on Allegany Line Road is likely also flooded.	$0
Source: National Centers for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 36 flood events occurring in the County between January 1996 and April 2023. Therefore, Allegany County experiences 1.33 flood events per year. Combining flash flood and flood, the County and its municipalities can expect to experience about three flood events per year.

Significant flood (including flash flood) events occurring in Allegany County include the following:

In 1996, Allegany County was drastically affected by two disastrous flood events that occurred in the months of January and September. These two events, one in January from snow melt accompanied by heavy rain and the other in September from rainfall associated with the passage of Hurricane Fran. The two basins hit hardest by the 1996 floods were the Georges Creek and Wills Creek basins, both of which had numerous stretches where urban development encroached not only on the floodplain but also in the stream channel. In the Georges Creek Basin, much of the floodplain and floodway area was occupied by homes dating from the late 1800's to the early 1900's. In the Jennings Run/Wills Creek Basin, a combination of older residential and modern commercial development was scattered along the floodplain of both streams.

Flood depths recorded in the Wills Creek Basin and along Georges Creek were in excess of the percent-annual-chance flood level. Stream velocity recorded on both Wills Creek and Georges Creek at the U.S.G.S. gauging stations were in excess of 10 ft/second, indicative of the steep slopes of the stream channels. Excessive flood depths and stream velocities pose an even greater threat to life, property and utility systems than water levels alone would dictate.

Figure 4-1: January 1996 Flood Event. Swift waters caused substantial amounts of damage to structures within the Town of Midland (photo).

Photo Source: Allegany County Department of Emergency Services

In the aftermath of the two flood events, damage assessment teams noted that several hundred homes had been affected to some extent and dozens of businesses had suffered flood damage. Public facilities, including roads, water and sewer lines, pump stations and public buildings had suffered damage resulting in more than $19 million in public expenditures just to restore these facilities to a pre-flood condition.

Another significant flood event occurred when Hurricane Frances swept through Allegany County in mid-September 2004. A week later Hurricane Ivan followed causing an already swollen Jennings Run to breach its stream banks. Flowing water coursed around houses, into basements and through backyards along Mount Savage Road. As a result, Allegany County identified six homes as part of the potential acquisition projects. Several additional flash and riverine flood events have occurred within Allegany County including a riverine flood event on May 4, 2009, which caused flooding in the Potomac Park community. Twelve residential structures experienced basement flooding. In March 2010, Jennings Run overflowed its banks causing several sections of Route 36 to flood as well as Parkersburg Road. Also, a flash flood event in May 2010, caused road closures in the Mount Savage area.

On June 12, 2014, a flash flood event occurred, causing significant damage to several areas throughout the County. According to the Cumberland Times-News, some areas in the county reported up to five inches of rain and the worst flood damage occurring in Cresaptown and at Cumberland's Greene Street underpass. Several schools, churches, Rocky Gap State Park, a volunteer fire department, along with many roads and bridges required repair. Among the most serious damages in the County were those to the Cresaptown Volunteer Fire Department and Calvary Baptist Church and Calvary Christian Academy. Additionally,

approximately 175 residents were impacted, and several homes were deemed uninhabitable. Allegany County reported $1.7 million dollars in flood damage.

Figure 4-2: June 12, 2014, Flood Event

Route 220 in Cresaptown. Calvary Baptist Church can be seen on right side of picture. Calvary Christian Academy is located behind the church.

Photo Source: Washington Post

A total of 19 flood events occurred during the most recent five-year planning cycle (2018 to present). The event with the most recorded property damage during this timeframe occurred on September 1, 2021. The flooding was caused by remnants of Hurricane Ida and damage was estimated to be $200,000 in Allegany County. Impacts included the following:

- Several roads closed due to flooding/high water near Mount Savage and MD 36 near Jennings Run.
- Water overflowed out of Georges Creek into low-lying areas in the Town of Westernport.
- The water level along the Wills Creek in Cumberland rose above major flood stage. Several businesses at Motor City and outside the levee protection north of Cumberland were flooded along with a couple homes in Locust Grove.
- Wills Creek overflowed its banks onto nearby roads between LaVale and Corriganville.
- Part of a residential foundation on Crocus Avenue collapsed due to flooding.
- Lower portion of Ellerslie evacuated due to rising waters and numerous water rescues occurred on Wills Creek.
- The water level along the Sideling Hill Creek at Bellegrove rose above flood stage. Lowlands near the creek were flooded and a low spot on Allegany Line Road was also flooded.
- The water rose above flood stage along the North Branch Potomac River at Cumberland. A low spot on Airport Road in Wiley Ford, West Virginia was flooded. A livestock field southeast of the Cumberland Regional Airport also flooded.

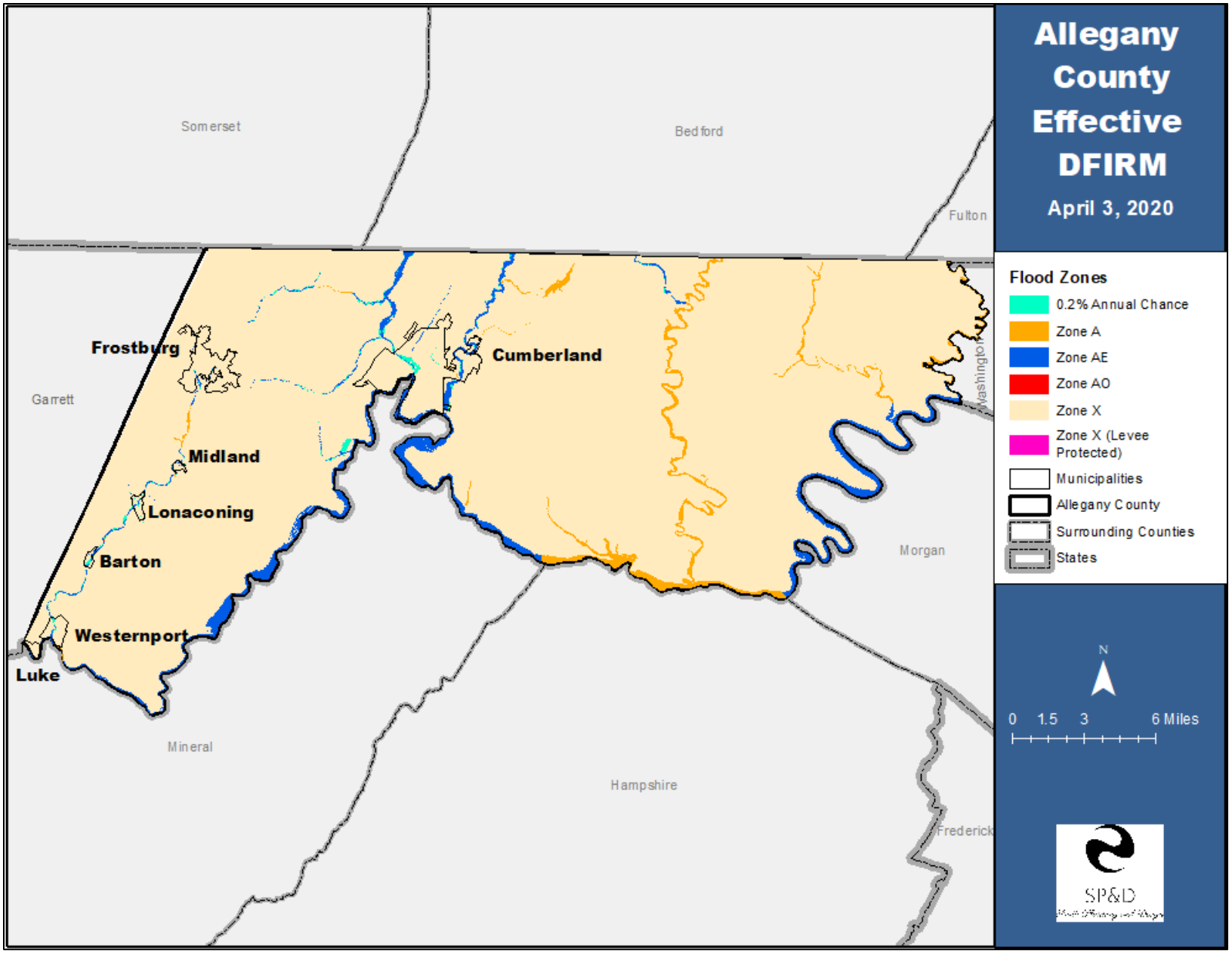
4.2 Flood Risk and Mapping

Allegany County is highly susceptible to riverine and flash flooding – a Digital Flood Insurance Rate Map (DFIRM) is utilized to help depict this flood risk. The DFIRM is the basis for floodplain management, mitigation, and flood insurance activities conducted by the National Flood Insurance Program (NFIP). The DFIRM categorizes floodplains into Flood Zones (A, AE, VE, X and X500), which are geographic areas that FEMA has defined according to the various levels of flood risk. These flood zones are described on table 4-5 below.

Table 4-5. FEMA Flood Zones

Flood Zone		Description
High Risk Areas		
1 Percent-Annual-Chance Flood Hazard Area	A	Areas with a 1 percent-annual-chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
	AE	The base floodplain where base flood elevations are provided for a 1 percent-annual-chance flood event. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
	AO	Areas subject to inundation by 1 percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.
Moderate Risk Area		
X (Shaded) 0.2% or 500-yr.		Moderate flood area(s), shaded area(s) shown on FIRM, are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood.
Low Risk Area		
X (Un-shaded)		The areas of minimal flood hazard, which are areas outside the SFHA and higher than the elevation of the 0.2 percent-annual-chance flood, are labeled Zone X (un-shaded).
Source: FEMA - https://snmapmod.snco.us/fmm/document/fema-flood-zone-definitions.pdf		

New FEMA flood maps became effective on April 3, 2020, for Allegany County. Residents are encouraged to examine the maps online at https://msc.fema.gov/portal/home, to determine if their property is in a low to moderate, or high-risk flood zone. Major changes to the new maps include updated photographic base maps that improve the accuracy of floodplain determinations compared to the prior vector street map, and compatibility with GIS. The improvements in spatial accuracy provided by the new base map, and the availability of electronic floodplain information greatly enhance the ability to use the maps for planning, permitting, and insurance applications.



Map 4-1. Effective DFIRM, Allegany County, MD. Source: FEMA.

4.3 National Flood Insurance Program

The National Flood Insurance Program (NFIP) is managed by FEMA and is delivered to the public by a network of more than fifty insurance companies and NFIP Direct. The NFIP provides flood insurance to property owners, renters and businesses – having this coverage helps them recover faster after a flood event. Flood insurance is available to anyone living in one of the almost 23,000 participating NFIP communities. Homes and businesses in high-risk flood areas with mortgages from government-backed lenders are required to have flood insurance.

A total of 104 flood insurance policies are active within Allegany County as of August 2023. These active policies have a total annual premium value of $123,039. On average, property owners with a flood insurance policy pay $1,183 per year, or $98 a month. The County's participation in the program is voluntary, however compliance is mandatory. More information regarding Allegany County's strategies for complying with the NFIP and current capabilities can be found in *Appendix C*.

The NFIP report also shows that as of August 2023, a total of 226 claims have been paid since 1979. Of the 226 total claims, 151 resulted in payments totaling $2,248,176.28. This represents an average of $14,888.58 per claim. The remaining 75 claims were closed without payment.

4.3.1 Repetitive Loss Properties

Considering the number of flood insurance policies and the amount of claims that have been reported, identifying areas of repetitive loss within a community is a good indicator in determining areas of high flood damage vulnerability. While flood damage is not necessarily limited to these areas, repetitive loss data provides location indicators for areas where structures are experiencing recurring and costly flooding damage.

The FEMA NFIP defines a **repetitive loss property** as:

- Properties are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978."

The FEMA NFIP defines **severe repetitive loss properties** as:

- A property that has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or,
- A property for which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims

exceeding the market value of the building.

The 2023 Hazard Mitigation Assistance Program and Policy Guide (page 304) defines repetitive loss and severe repetitive loss properties differently, and these definitions are as follows:

A **repetitive loss property** is a structure covered by a contract for flood insurance made available under the NFIP that:

a) Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event and
b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

A **severe repetitive loss property** is a structure that:

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

As part of Allegany County's Flood Insurance program, FEMA maintains a record of properties having repetitive flood insurance claims. During the previous planning cycle, twenty-one repetitive loss properties were identified in the County.

Based on the FEMA NFIP and FMA definitions for repetitive loss properties and severe repetitive loss properties, as of August 2023, there are a total of twenty one (21) repetitive loss properties, two (2) of which are severe repetitive loss properties. Of these properties, seventeen (17) are single family residential, one (1) is business nonresidential, one (1) is other residential, one (1) are other nonresidential, and one (1) is 2-4 family residential. Four (4) structures are identified as "mitigated" and four (4) are NFIP insured.

The County actively seeks to mitigate flood risk via the acquisition of repetitive flood prone properties. According to the Mitigation Action Progress Report completed for this plan update, the County is still on schedule for including the 21 repetitive loss properties (identified in the 2018 plan) on the buyout list but has been delayed in prioritization and

purchase of properties on the list. As of this plan update, the listing includes 82 total properties, including the 21 repetitive loss properties added to the list in 2018.

In the last five year planning period, the County has worked on a grant funded project entitled Garden City Mobile Home Park located on Winchester Road in LaVale. The goal of this project is to buyout and relocate a total of 25 mobile homes from the floodplain. This will relocate individuals into another area where they will not be impacted by flood water. Other properties that are a part of the flood buyout list have been placed on hold while the County focuses on the Garden City project described above. Additional repetitive loss properties will be considered for relocation once the current project has been closed out.

During this plan update, the 21 identified repetitive loss properties were reviewed to determine if any of these properties were part of the flood buyout listing. Those repetitive loss properties not on the flood buyout waiting listing will be recommended for inclusion on the flood buyout waiting list as part of a continuous mitigation strategy that has been included in both past and present updates to the hazard mitigation plan. Table 4-6 provides a general location of the properties currently on the flood buyout waiting list.

Table 4-6. 2023 Flood Buyout Listing

Watershed	Community	Number of Structures
Warrior Run	Cresaptown-Winchester Road	1
Georges Creek	Midland/Gilmore	2
Georges Creek/Jackson Run	Lonaconing	11
Georges Creek	Barton	14
Georges Creek	Westernport	6
Jennings Run	Mt. Savage	3
Georges Creek	Frostburg	2
Town Creek	Flintstone	1
Potomac River Lower North Branch	Rawlings	3
Wills Creek	LaVale	6
Potomac River Lower North Branch/Evitts Creek	Cumberland	6
Fifteen Mile Creek	Little Orleans	1
Potomac River Lower North Branch	Oldtown	2
	Total	**58**

Source: Allegany County Land Development Services.

The Towns of Barton and Lonaconing located along Georges Creek contain 25 of the 58 properties on the flood buyout waiting list. Westernport, LaVale, and Cumberland contain 6 properties each on the flood buyout waiting list.

4.4 Dam Failure

Dams present risks but they also provide benefits including irrigation, flood control, and recreation. Dams have been identified as a key resource of our national infrastructure that is vulnerable to terrorist attack. States have the primary responsibility for protecting their populations from dam failure. Of the approximately 94,400 dams in the United States, State governments regulate about 70 percent. About 27,000 dams throughout the U.S. could incur damage or fail, resulting in significant property damage, lifeline disruption (utilities), business disruption, displacement of families from their homes, and environmental damage. Flooding as a result of dam failure is the primary concern of this risk profile.

4.4.1 Risk and History

According to damsafety.org, hundreds of dam failures have occurred throughout U.S. history. These failures have caused immense property and environmental damage and have taken thousands of lives. As the nation's dams age and population increases, the potential for deadly dam failures grows. Allegany County does not have a significant history of dam failures, but the risk of a dam failure is not non-existent. According to the National Performance of Dams Program, which maintains a database of failures for all dams listed in the National Inventory of Dams, 34 dam-related incidents have occurred in the entire state of Maryland since 1929; none of which have occurred in Allegany County.

According to FEMA, dams can fail for several reasons, including: overtopping caused by floods, acts of sabotage, upstream dam failure (i.e., the failure of another nearby dam), structural failure of materials used in dam construction, or earthquakes.[i] FEMA acknowledges three primary types of risk associated with high hazard potential dams, which include the following:

Incremental Risk: The risk (likelihood and consequences) to the pool area and downstream floodplain occupants that can be attributed to the presence of the dam should the dam breach prior or after overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but loss of the pool can result in significant consequences in the pool area upstream of the dam.

Non-Breach Risk: The risk in the reservoir pool area and affected downstream floodplain due to 'normal' dam operation of the dam (e.g., large spillway flows within the design capacity that exceed channel capacity) or 'overtopping of the dam without breaching' scenarios.

Residual Risk: The risk that remains after all mitigation actions and risk reduction actions have been completed. With respect to dams, FEMA defines residual risk as "risk remaining at any time" (FEMA, 2015, p A-2). It is the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue.

According to a 2019 study by the Global Risk Institute nearly a third of dam failure is due to overtopping, an event whose likelihood increases as the potential for severe storms increases. The shear strength of a dam decreases with age, and as more of the reservoir fills with sediment, the capacity for flood storage is reduced. A dam failure can damage downstream assets such as thermoelectric plants, water and wastewater treatment plants, airports, bridges, highways, as well as other dams. The failure of such critical infrastructure can lead to a cascading failure of other critical services such as hospitals, emergency response, and supply chains. Immediate losses can include damage to life and property, but a dam failure can also lead to longer term losses related to access to water, flood control, electricity and transportation services, that go beyond remediation and reconstruction costs.

4.4.2 Vulnerability Assessment

Allegany County could be affected by the failure of ten dams or levees within the county. Of these dams, six (6) have a hazard potential classification of "high," one is "significant" and three are "low" hazard potential classification. These dams are identified in Table 4-7. In Maryland, the MDE Dam Safety Division/Program* is responsible for improving dam safety throughout the state and works with local officials and dam owners. According to the Division, hazard potential classifications are based on the negative impacts should the dam fail, and are described as follows:

- **High Hazard** (85 dams in the State*): Probable loss of life; major increases in existing flood levels at houses, buildings, major interstates and state roads .
- **Significant Hazard** (125 dams in the State*): Possible loss of life, significant increased flood risks to roads and buildings with no more than two houses.
- **Low Hazard** (330 dams in the State*): Unlikely loss of life; minor increases to existing flood levels at road and buildings.

Table 4-7. Dams Located in Allegany County, Maryland

Dam Name	Dam Type	Primary Purpose	Emergency Action Plan	Owner Name	Hazard Potential Classification
Rocky Gap Dam	Earth	Recreation	Yes	MD DNR	High
Koontz Run Reservoir Tanks	Earth	Water Supply	Yes	Lonaconing Water Co.	High

Table 4-7. Dams Located in Allegany County, Maryland					
Dam Name	**Dam Type**	**Primary Purpose**	**Emergency Action Plan**	**Owner Name**	**Hazard Potential Classification**
Lonaconing Reservoir	Earth	Water Supply	Yes	Lonaconing Water Co	High
Midland-Gilmore Reservoir	Earth	Water Supply	Yes	Lonaconing Water Co	High
Dry Run Detention Dam and Culvert	Earth	Flood Risk Reduction	Yes	City of Cumberland	High
Upper Potomac Industrial Park Levee	Earth	Flood Risk Reduction	Yes	Allegany County	High
Don Pleasants Dam	Earth	Recreation	Yes	Pleasants Excavating Co, Inc.	Significant
Industrial Dam (Blue Bridge)	Gravity, Earth	Flood Risk Reduction, Water Supply	Not Required	City of Cumberland	Low
Roeder Farm Pond	Earth	-	Not Required	Charles and Mary Lennox	Low
Newpage Westvaco Dam	Earth	Water Supply	Not Required	Verso Corporation	Low
Source: MDE Dam Safety Program Database & National Inventory of Dams, https://nid.sec.usace.army.mil/#/					

All of the 7 high hazard potential and significant hazard potential dams located in Allegany County have an Emergency Action Plan (EAP). EAPs are required to establish procedures that warn the population at risk to reduce the potential for loss of life and property damage in the event that a dam failure is imminent. The locations of these dams are mapped on page 4-27 and high hazard dams are denoted in red. More information about the high hazard potential dams listed above is included on Table 4-8 below, including current condition and the likely geographic extent of impact should the dam fail. The City of Cumberland and the Town of Lonaconing are the only municipalities likely to be directly impacted from a dam failure event due to the presence of the Dry Run Detention Dam and Culvert and Industrial Dam located within the City, and the Lonaconing Reservoir located near the Town.

Table 4-8. High Hazard Potential Dams – Condition and Potential Impact Area		
Dam Name	**Condition***	**Nearest City/Town (in miles)**
Rocky Gap Dam	Satisfactory	Dickens
Koontz Run Reservoir Tanks	Satisfactory	Lonaconing (population of 989)
Lonaconing Reservoir	Poor	Lonaconing (population of 989)
Midland-Gilmore Reservoir	Poor	Charlestown (located in Lonaconing, pop. 989)
Dry Run Detention Dam and Culvert	Poor	Cumberland (population of 18,736)
Upper Potomac Industrial Park Levee	Fair	Bowling Green (population of 1,289)
Source: MDE Dam Safety Program Database & National Inventory of Dams, https://nid.sec.usace.army.mil/#/		

Table 4-8. High Hazard Potential Dams – Condition and Potential Impact Area		
Dam Name	**Condition***	**Nearest City/Town (in miles)**
** Satisfactory - No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines.* *Fair - No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action. Note: Rare or extreme event is defined by the regulatory agency based on their minimum* *Poor - A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.*		

4.4.3 Impacts to People, Systems, and Resources

Dam failure and associated flooding has the potential to impact people, structures, and critical resources in Allegany County. Table 4-9 highlights the most likely impacts the County and its communities will face based on previously observed impacts (i.e., none) combined with forecasting for future conditions.

Table 4-9: People, Systems, and Resources Vulnerable to Dam Failure Hazards	

People (including underserved communities and socially vulnerable populations)	• Residents and businesses within the dam inundation areas, as identified in individual dam EAPs, would be directly impacted by flooding caused by dam failures.
	• Availability of clean water could be a major issue in the event of the failure of a high hazard potential dam with the primary purpose of water supply, including:
	  ○ Koontz Run Reservoir Tanks
	  ○ Lonaconing Reservoir
	  ○ Midland-Gilmore Reservoir
	  ○ Residents of the Town of Lonaconing are most likely to be negatively impacted from the failure of one of their water supply dams, listed above.
	• The City of Cumberland and the Town of Lonaconing are the only municipalities likely to be directly impacted from a dam failure event. The Dry Run Detention Dam and Culvert and the Industrial Dam are located within or near the City of Cumberland, and the Lonaconing Reservoir is located just outside the Town.

Systems (including networks and capabilities)	• Several high hazard dams in the County serve the purpose of flood risk reduction. Failure of these dam types would be worsened in conjunction with a severe storm event bringing heavy rain.
	• High hazard potential dams with the primary purpose of flood risk reduction include the following:
	  ○ Dry Run Detention Dam and Culvert
	  ○ Upper Potomac Industrial Park Levee
	• Structures located within dam inundation areas may experience damage due to flooding.

Table 4-9: People, Systems, and Resources Vulnerable to Dam Failure Hazards	
	○ It should be emphasized that almost all dams in the County, with the exception of the Upper Potomac Industrial Park Levee and the Dry Run Detention Dam and Culvert are located in rural areas, with minimal population, or existing floodplains
Natural, Historic, and Cultural Resources	• Per Maryland's Historical Trust National Register of Properties, the following historical/cultural structure could be impacted by dam failure: ○ The Bluebridge, located on Johnson Street sits atop the Potomac River and atop the Industrial Dam. This dam is for recreation and is classified as low hazard potential. The likelihood of impact to this historic structure is minimal. ○ Note: The City of Cumberland would remove the dam as part of its river park project. • Activities that have value to the community could potentially be impacted by dam failures, however the identified dams are located in isolated areas and floodplains. Therefore, community activities would be unlikely to occur in these areas.

4.4.4 Mitigation Strategies

According to the Association of State Dam Safety Officials (ASDSO), the following actions can be taken to address high hazard potential dams, or dams in poor condition, and increase overall dam safety:

- Support the improvement of state dam safety programs.
- Increase collaboration.
- Advance and expand the technical expertise of dam and levee safety practitioners through training and education programs.
- Reduce the potential for dam failure by promoting innovative approaches to fund dam rehabilitation.
- Reduce the consequences of dam failure by increasing public awareness, planning and preparedness.
- Advocate for laws, policies and government programs that serve to improve the safety of dams and reduce the risk to the public.
- Support and strengthen a coordinated effort to improve the safety of levees.

The ASDSO's Strategic Plan 2022-2027 is available online, here.

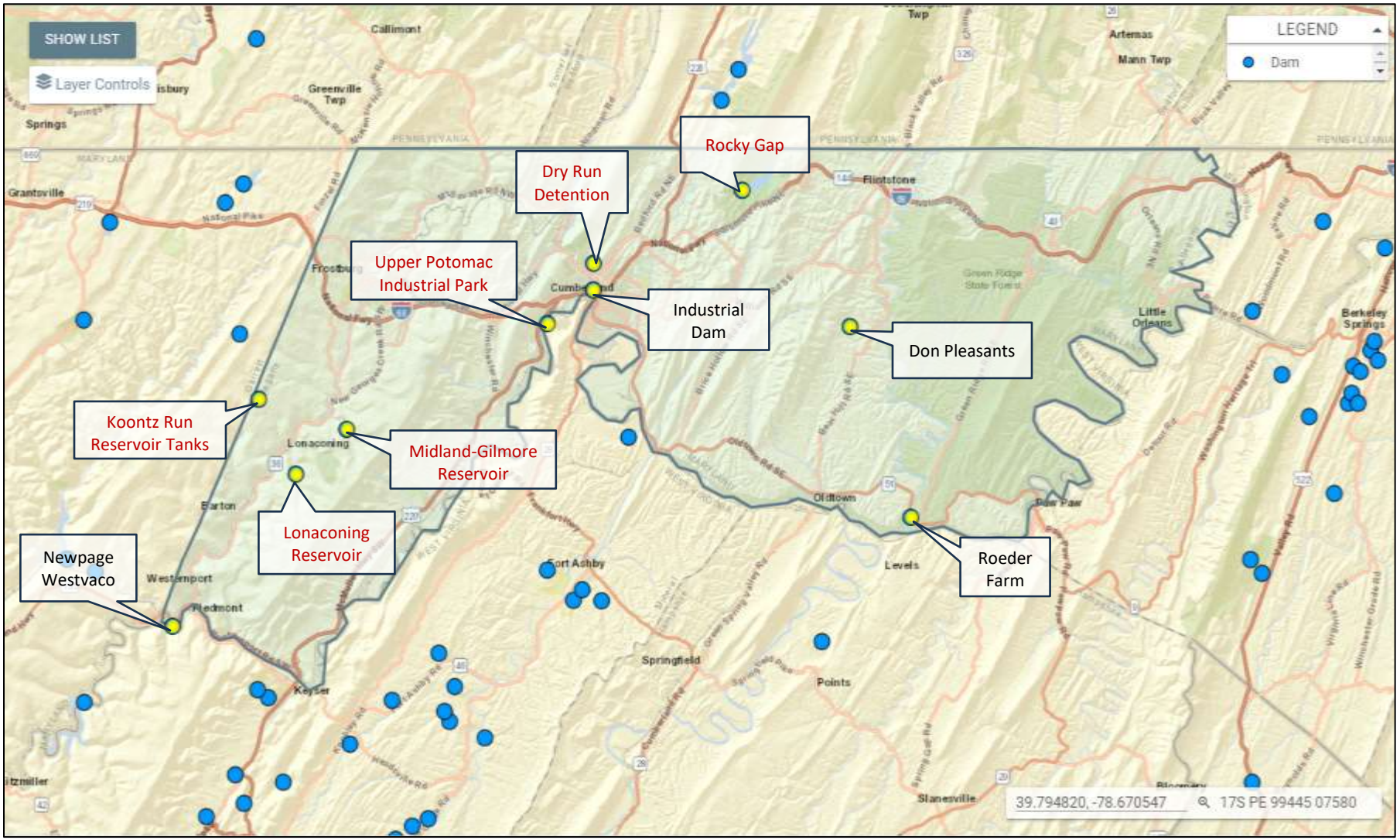
** Maryland Dam Safety Division Contact Information is available here, or residents can contact the local Department of Emergency Services, here.*

4.4.5 Future Conditions

Provided that adequate engineering and maintenance measures are in place, high hazard dam failures are very unlikely in Allegany County based on the lack of past incidents. The presence of structural integrity and inspection programs significantly reduces the potential for major dam failure events to occur, but significantly older dams (as identified in Tables 4-7 and 4-8) are more likely to experience problems.

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

Dam Emergency Action Plans drafted in accordance with the Federal Guidelines for Dam Safety identify the risk related information include the inundation area and the time lapse between failure and flooding reaching specific destinations downstream. These plans are also reviewed and approved by MDEM. While the County and its municipalities have minimal potential to be affected by dam failure, the possibility exists and therefore it is essential to have emergency planning procedures.



Map 4-2. Dam/Levee Locations in Allegany County, Maryland. Source: National Inventory of Dams.

4.5 County Perspective

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for flood as "medium." Allegany County HMPC members ranked the flood hazard as "high."

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the flood hazard as eighth.

Additionally, the public ranked the dam failure hazard during this plan update. Dam failure was ranked as eleventh (the hazard of least concern) by the public. The 2021 State Hazard Mitigation Plan ranks dam failure as "medium-low" risk for Allegany County.

Most of Allegany County is located in the Ridge and Valley province of the Appalachian Mountains, with the exception of a small area west of Dans Mountain located in the Allegheny Plateau. Therefore, the County is drained by streams generally having their headwaters on steep, sandstone ridges. For the most part, major streams flow through narrow shale and limestone valleys, which are generally parallel to the ridge tops with smaller tributaries draining the ridges. These streams, all of which drain into the Potomac River, are subject to rapid runoff from rainfall and snow melt. With periodic tropical storms/hurricane related rains and persistent frontal systems, rainfall events of 3"-4" of rain or 24" of snow are not uncommon and the runoff from these events can result in severe flooding in major streams and small tributaries alike.

Allegany County experiences both flash and riverine flooding. Flash floods occur suddenly with tremendous force, usually as a result of torrential rainfall or thunderstorm event over a short period of time. Riverine flooding in Allegany County is typically associated with snow melt or persistent rain from a strong frontal system, tropical storm, or remnants of hurricanes that have made their way in-land.

4.5.1 Mitigation History

Following the creation of the Governor's Flood Mitigation Task Force for Western Maryland, FEMA selected Allegany County as one of seven communities nationwide to begin a pilot project to work towards the goal of becoming a disaster resistant community. In 1998, as part

of the initiative entitled "PROJECT IMPACT," Allegany County set up a number of workgroups to develop a program to meet its goal of disaster resistance. The workgroups developed objectives, projects and partnerships to aid them in meeting their ultimate goal – acquisition projects.

While the PROJECT IMPACT initiative is no longer funded by FEMA, Allegany County has continued to carry-out flood mitigation projects within its jurisdiction. One of the original workgroups developed under the PROJECT IMPACT initiative meets on a biannual basis to provide a forum for discussion and a framework for project development and prioritization. The Deputy Director of Public Works chairs this workgroup. Projects and issues considered by this workgroup include acquisition projects, infrastructure improvements, watershed studies and community concerns.

4.6 Municipal Perspective

Figure 4-3: September 1996 Flood Event. Railroad trestles located along Georges Creek interfered with water flows causing the water to divert in alternate directions. (Photo: Town of Midland)

Photo Source: Allegany County Department of Emergency Services

The residents in the Towns of Midland, Lonaconing, Barton and Westernport were greatly impacted by the two major 1996 flood events as well. Georges Creek overtopped its stream banks, flooding all the homes located along the stream. Portions of Route 36 were closed due to the flooding and schools were closed until the stream receded. The City of Cumberland was affected by the same events when Wills Creek caused flooding in several areas. Additionally, numerous residential structures were destroyed in the small community of Locust Grove and several businesses in Motor City area were affected by the flooding.

In September 2000, flooding occurred primarily in the City of Cumberland and the suburb of LaVale as a result of a localized cloud burst. In some places as much as five inches of rain fell within one hour. Storm water systems simply could not handle such a large volume of water in so short a time span. Residences were subsequently flooded with damage primarily in the minor damage category. Following the event, the City of Cumberland made some upgrades to their storm water system, however storm systems are still limited in the amount of water that they can be designed to convey.

In 2007, the City of Cumberland was affected by flooding again, which caused several basements to flood and roadways to be closed. Greene Street and Kelly Road were closed due to flooding caused by railroad trestles. Additionally, a vehicle was trapped under the subway located along Virginia Avenue.

In June 2016, the Town of Westernport experienced flooding due to heavy rainfall. The flooding caused roads to buckle and sinkholes to form. Numerous homes experienced basement flooding and stormwater drain backup due to excessive amounts of rainfall in a short timeframe. Most recently, in the 2021 flood event described in section 4.1, the City of Cumberland, Town of Lonaconing, and communities of LaVale, Corriganville, and Ellerslie were impacted.

4.7 Impacts to People, Systems, and Resources

Flood impacts people, structures, and critical resources in many ways, and has been described in this chapter primarily through the historical event narratives of flooding throughout the County. Table 4-10 highlights the most likely impacts the County and its communities will face based on previously observed impacts combined with forecasting for future conditions.

Table 4-10: People, Systems, and Resources Vulnerable to Flood Hazards

People (including underserved communities and socially vulnerable populations)	• Residents and businesses in and around floodplain and/or steep slopes are at increased risk of impacts. In the past this included, but is not limited to, Georges Creek, Wills Creek, and the Potomac River. • Floods cause minor to significant property damage or loss. This is exacerbated if flooding occurs to a property without flood insurance. • Property owners face the dilemma of costly structural mitigation or displacement or buyout in severe repetitive cases. • Socially vulnerable groups, particularly those without means to move (whether physically, financially, or medical) are prone to repetitive flooding. ○ Allegany County has many socially vulnerable groups, including aged populations, isolated rural communities, communities with limited access to broadband, those with medical needs, and people with limited means of transportation. • Business disruption and loss of revenue. This is described in estimates included in Allegany County's Flood Risk Report. • As was the case with flooding in 2021, residents of impacted communities may need to be evacuated due to flooding and/or water rescues by emergency responders may be necessary.
Systems (including networks and capabilities)	• Temporarily submerged roads or blown out bridges create an evacuation issue. • Frequently submerged infrastructure experiences damage over time, which can create closures in the long term.

Table 4-10: People, Systems, and Resources Vulnerable to Flood Hazards	
	• Communication breakdowns, emergency or otherwise, are possible. • Impervious surfaces combined with steep slopes common throughout the County exacerbate flooding. • Emergency responders may be cut off from communities and people due to roadway inundation. • Public perception and faith in first responders could be questioned due to slow responses caused by flooding. • Repetitive Flooded Roadways have been inventoried by the County since 2012. **These roadways are included in Table 4-11 and 4-12.**
Natural, Historic, and Cultural Resources	• Damage to beneficial protective habitats caused by frequent flooding. • Flooding from heavy rainfall can lead to a type of soil movement known as a landslide, which often occurs on steep slopes. This has occurred throughout the County on both private property and along road and railways. • Pollutants can enter waterways after a flood event, leading to a decline in overall water quality. Regular water quality reports for the County's water supplies are available on Allegany County's website. • Historic structures within or adjacent to the Special Flood Hazard Area are vulnerable to flood damage. • In some circumstances, structures and neighborhoods may be deemed as not having any historical value if flooding is frequent or destructive enough. Such is the case when the Maryland Historical Trust ruled that flooding which occurred in 1984 eliminated any historical value that the community of Locust Grove possessed.

Table 4-11: Repetitive Roadway Flooding Issues – County	
LOCATIONS	
Mason Road, Cumberland	Iron Rail Street, Mt Savage
Bear Hill Road @ Pumpkin Center, Oldtown	Waterside Street, Mt Savage
Forest Grove Road, Cumberland	Foundry Row Road, Mt Savage
Oldtown/Orleans Road @ Low Water Bridge, Little Orleans	Greenspring Road, Oldtown
Wallizer Road, Flintstone	Hazen Road, Cumberland
*Bowling Green Area between Milnor Avenue and Moss Avenue	Cresap Mill Road, Oldtown
Source: Allegany County Department of Public Works	

Table 4-12: Repetitive Roadway Flooding Issues – Municipal	
Location	**Issue: SWM &/or Elevation**
Washington Street, Westernport	Elevation
Main Street, Westernport	Elevation & SWM
Church Street, Westernport	Elevation & SWM
Franklin Street, Westernport	Elevation & SWM
Maryland Avenue, Westernport	Elevation & SWM
McKinley Street, Westernport	SWM
Green Street, Westernport	SWM
Sperry Street, Cumberland	SWM

Table 4-12: Repetitive Roadway Flooding Issues – Municipal	
Location	**Issue: SWM &/or Elevation**
Kelly Road, Cumberland	SWM
*Corner of Maryland Avenue at Williams Street, Cumberland	SWM
*Fayette Street, Cumberland	SWM
*Green Street at the Dingle Area and at the Underpass, Cumberland	SWM
*Virginia Avenue at the "Subway," Cumberland	SWM
Jackson Mountain Rd, Lonaconing	SWM
Intersection of Island and Union Street, Lonaconing	Elevation
Railroad Street, Lonaconing	Elevation
RT 135 (State Road)	Elevation & SWM
Source: Allegany County Municipalities	

4.8 Mitigation Capabilities

The two major 1996 flooding events brought home the realization that Allegany County could no longer continue the cycle of "flood-rebuild-contain" which had been prevalent since large scale stream channeling projects began in the 1930's. To that end, Allegany County utilizes Floodplain Management Regulations, Subdivision Regulations, and Stormwater Management Ordinances in an effort to mitigate potential flooding.

Chapter 325: Floodplain Management regulations, effective April 3, 2020, were adopted to establish measures to minimize flood damage to public and private property and to establish procedures by which these measures are to be administered and enforced. According to the floodplain management regulations, a land use permit is required for all proposed development in the 1 percent-annual chance floodplain. The regulatory floodplains are those areas of Allegany County which are subject to the 1 percent-annual-chance flood and are delineated on the DFIRMs prepared by FEMA (refer to section 4.2 Flood Risk and Mapping).

In general, development may not occur in the floodplain where alternative locations exist. If the structure cannot be constructed outside of the 1 percent-annual-chance floodplain, the applicant must demonstrate that new structures cannot be located out of the floodplain and that encroachments onto the floodplain are minimized before a permit can be issued.

Elevation requirements defined in the Floodplain Management regulations state that all new and substantially improved residential and non-residential, including manufactured homes, shall have the lowest floor elevated to or above the Flood Protection Elevation (the elevation of the base flood plus one-foot freeboard). Basements are not permitted. Additions which increase the first floor size and are less than substantial improvements (less than 50% of the present market value) shall also have the lowest floor elevated to or above the Flood Protection Elevation (FPE). The elevation of the lowest floor shall be certified by a registered surveyor or professional engineer licensed to practice in Maryland, on the elevation

certificate, after the lowest floor is in place. Enclosures below the FPE must be constructed with water-equalizing vents. Improvements which are less than substantial shall be constructed to minimize damage during flooding or shall be elevated to the greatest extent possible.

In regard to flood protection setbacks, the Floodplain Management regulations state:

> *"A minimum one-hundred-foot flood protection setback shall be maintained from the edge of the banks of any watercourse delineated as having a floodplain on the Floodway Map or FIRM, except where the setback may extend beyond the floodplain. To prevent erosion, natural vegetation shall be maintained in this area. Where natural vegetation does not exist along the watercourse and conditions for replanting are suitable, high priority shall be given to planting trees in the setback area to stabilize banks and to enhance aquatic resources. Also, a minimum fifty-foot flood protection setback shall be maintained from the top of the bank of any stream which has no designated floodplain and has a basin larger than four hundred (400) acres. A twenty-five-foot setback shall be maintained from the centerline of all other streams and drain ways, including intermittent streams. Natural vegetation shall be maintained and, if needed, trees planted."*

According to Chapter 360: Part 1 Subdivision Regulations, the purpose for the regulations is to establish measures and requirements for the subdivision of parcels of land and to establish procedures by which these requirements and measures are to be administered and enforced. The Subdivision Regulations states that "subdivisions must be created in conformance with the provisions of the County Chapter 360, Part 4, Zoning; Chapter 360, Part 2, Sediment and Erosion Control; Chapter 360, Part 3, Stormwater Management; Chapter 325, Floodplain Management; and any other local or state laws."

Furthermore, the regulations establish design standards for subdivisions, which must depict areas within the mapped 1 percent-annual-chance flood zone within 25 feet of streams, drainways or designated wetlands or within designated habitat areas of threatened and endangered species. These areas are to be cross hatched on the map and may be included in lots but not building sites. Where stream basins are larger than 400 acres above the site being subdivided, the stream setback is 50 feet from stream banks.

Additionally, when required by the County Engineer, subdivisions are to have a planned development for stormwater management and drainage that shall provide storm drains, culverts, drainageways, ponds or other stormwater management works adequate to collect, store and dispose of all water originating on or flowing across the property, without inundating or damaging roads, lots, buildings or other properties. Such drainage works shall

meet the standards and requirements of Part 3, Stormwater Management. A stabilized drainageway shall be provided outside road shoulders, conforming to the standards of cross-section and construction adopted by the county.

According to the Stormwater Management Regulations, "the purpose of this regulation is to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures that control the adverse impacts associated with increased stormwater runoff. The goal is to manage stormwater by using environmental site design (ESD) to the maximum extent practicable (MEP) to maintain after development as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding, and use appropriate structural best management practices (BMPs) only when necessary. This will restore, enhance, and maintain the chemical, physical, and biological integrity of streams, minimize damage to public and private property, and reduce the impacts of land development."

More flood related community capabilities can be found in the updated NFIP Community Questionnaire worksheets as part of *Appendix C*. These worksheets include the County's capabilities related to floodplain identification and mapping, floodplain management, and flood insurance.

4.9 Future Conditions

The frequency of flooding, flash flooding, and heavy rain events are likely to increase due to climate change. Areas that currently experience regular flooding due to proximity to rivers and/or steep slopes are likely to see conditions change or worsen, and some areas that historically flood very little or not at all are likely to start flooding with greater frequency due to the increased amount and intensity of storm events.

According to a 2021 study published in Nature "when it comes to riverine flooding, climate change is likely exacerbating the frequency and intensity of extreme flood events but decreasing the number of moderate floods."[ii] Flash flooding will continue to increase as there are more extreme precipitation events. Warmer temperatures increase evaporation, putting more moisture into the atmosphere that then gets released as rain or snowfall.
The 3rd National Risk Assessment: Infrastructure on the Brink quantifies risk as "the unique level of flooding for each infrastructure type relative to operational thresholds, as established by the federal government and other authoritative bodies."[iii] Operational flood risk at the local level denotes when a facility is flooded to the point where it can no longer function as intended or becomes unsafe. At a high level, the assessment finds the following true today and likely in the coming decades:

- Risk to residential properties is expected to increase by 10% over the next 30 years, with 12.4 million properties at risk today (14%) and 13.6 million at risk of flooding in 2051 (16%).
- Additionally, 2.0 million miles of road (25%) are at risk today and that is expected to increase to 2.2 million miles of road (26%) over the next 30 years (a 3% increase over the next 30 years).
- Commercial properties are expected to see a 7% increase in risk of flooding from 2021 to 2051, with 918,540 at risk today (20%) and 984,591 at risk of flooding in 30 years (21%).
- Currently, 35,776 critical infrastructure facilities are at risk today (25%), increasing to 37,786 facilities by 2051 (26% and a 6% increase in risk).
- Compounding that risk, 71,717 pieces of social infrastructure facilities are at risk today (17%), increasing to 77,843 by 2051 (19% and an increase of 9% over that time).

In Maryland, there are 112,187 residential properties, 11,990 miles of roads, 8,445 commercial properties, 379 infrastructure facilities, and 826 social facilities with operational flood risk today. According to riskfactor.com, in Allegany County, there are 9,086 properties that have greater than a 26% chance of being severely affected by flooding over the next 30 years. This represents 26% of all properties in the County.

In addition to damage to properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Overall, Allegany County has a "severe" risk of flooding over the next 30 years, which means flooding is likely to impact day-to-day life within the community. This is based on the level of risk the properties face rather than the proportion of properties with risk. This risk is depicted in Figure 4-4, following.

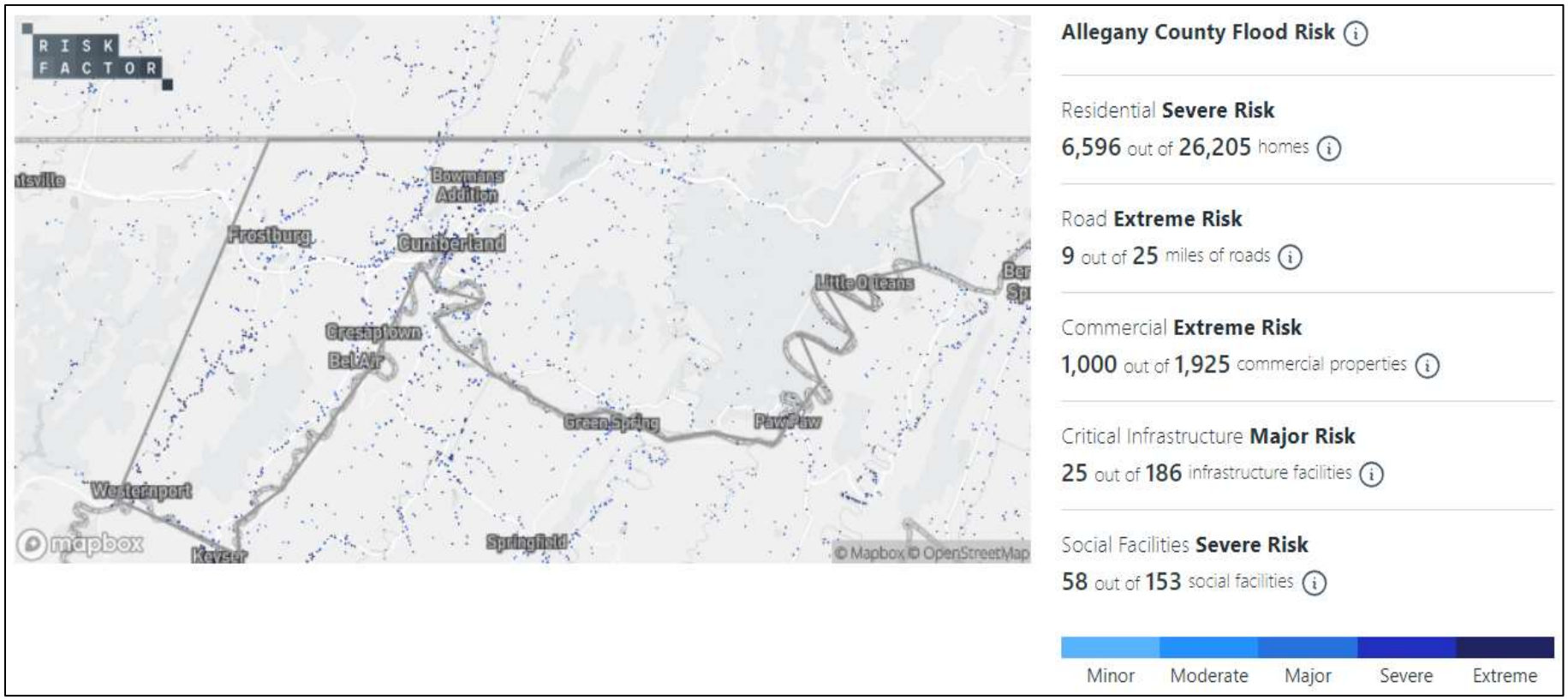


Figure 4-4. Allegany County Flood Risk. Source: www.riskfactor.com

[i] www.fema.gov/sites/default/files/2020-08/fema_dam-safety_aware-community_fact-sheet_2016.pdf
[ii] Brunner, M.I., Swain, D.L., Wood, R.R. et al. An extremeness threshold determines the regional response of floods to changes in rainfall extremes. Commun Earth Environ 2, 173 (2021). https://doi.org/10.1038/s43247-021-00248-x
[iii] The 3rd National Risk Assessment: Infrastructure on the Brink, 2021

Chapter 5: Winter Storm

2024 Plan Updates

Chapter 5: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 5-2: The hazard risk score of "high" for winter storm, assigned in Chapter 3: Hazard Identification and Risk Assessment, has been added. The 2021 State Hazard Mitigation Plan ranking has also been added.

Page 5-3: Section 5.1.1 Heavy Snow History & Risk has been added. Included in this section is the definition for heavy snow from the NCEI, historical occurrences of heavy snow events (Tables 5-1 and 5-2), and future probability of this type of event.

Page 5-5: Section 5.1.2 Winter Storm History & Risk has been added. Included in this section is the definition for winter storm from the NCEI, historical occurrences of winter storm events (Table 5-3), and future probability of this type of event.

Page 5-6: Section 5.1.3 Winter Weather History & Risk has been added. Included in this section is the definition for winter weather from the NCEI, historical occurrences of winter weather events (Table 5-4), and future probability of this type of event.

Page 5-7: Section 5.1.4 Ice Storm History & Risk has been added. Included in this section is the definition for ice storm from the NCEI, historical occurrences of ice storm events (Tables 5-5 and 5-6), and future probability of this type of event.

Page 5-8: Section 5.1.5 Extreme Cold/Wind Chill History & Risk has been added. Included in this section is the definition for extreme cold/wind chill from the NCEI, historical occurrences of extreme cold/wind chill events (Tables 5-7 and 5-8), and future probability of this type of event. The same information was also included for cold/wind chill (Tables 5-9 and 5-10).

Page 5-13: Section 5.2 County Perspective was updated to include risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the winter storm hazard. This section has been reviewed to ensure information is up to date.

Page 5-15: Section 5.3 Municipal Perspective has been updated to include 1991-2020 climate normal for the City of Frostburg and the City of Cumberland (Tables 5-11 and 5-12).

Page 5-16: Section 5.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts winter storm has on people, systems such as emergency services and utilities, transportation networks, and cultural resources such as historic structures. Vulnerable populations have been identified in this section.

Page 5-16: Section 5.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date. Information regarding warming centers and cold weather shelters has been added.

Page 5-18: Added Section 5.6 Future Conditions. This section examines the impacts that climate change is projected to have on frequency and intensity of winter storm events. Allegany County is already prone to winter storm events and should consider the increase in storm frequency and intensity when planning for snow removal equipment needs.

Chapter 5 Winter Storm & Extreme Cold

5.1 Winter Storm & Extreme Cold Profile

Winter storm in this plan includes Heavy Snow, Winter Weather, Winter Storm, Ice Storm, and Extreme Cold events as identified by the National Centers for Environmental Information (NCEI) Storm Events Database. An overall hazard risk score of "high" was assigned to winter storm for Allegany County and its municipalities (refer to Chapter 3 of this Plan for all hazard risk rankings). Past occurrences and risk are discussed in this chapter for each of the identified winter storm sub-hazards. The hazard risk assessment completed for the 2021 State Hazard Mitigation Plan also ranks the winter weather hazard as "high."

The typical winter storm in Maryland usually brings heavy snowfall (6+ inches), sleet or freezing rain accompanied by cold temperatures and occasionally high winds. This type of storm usually starts as a mid-latitude depression in the central U.S. and moves north and east between the Appalachians and the East Coast. Depending on the speed at which these storms travel and the airmass temperature, heavy amounts of snow, sleet, freezing rain or some combination will result. Typically, a winter storm will last for 24 – 48 hours and move out of the area into New England. Then, depending on the controlling air mass, temperatures will continue to be cold, and the snow or ice will linger for days or sometimes weeks, or conversely the temperature will warm quickly, and the snow or ice will melt in a short time.

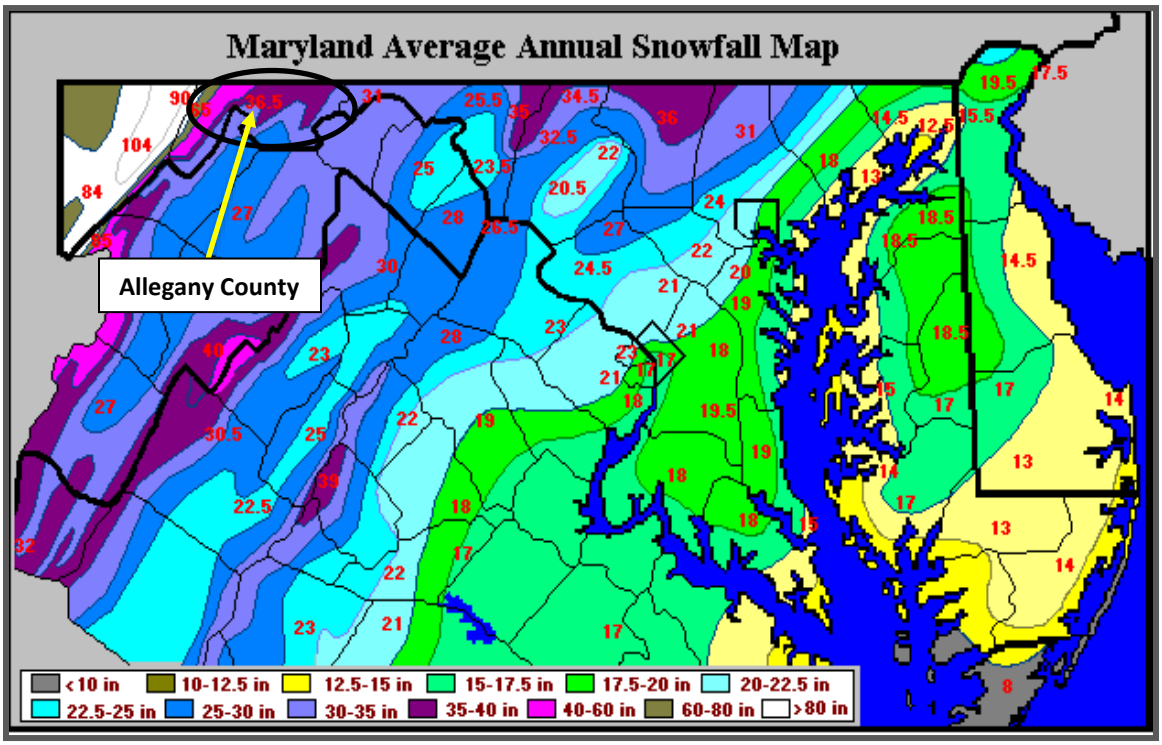


Figure 5-1. Source: National Weather Service.

NOAA defines winter storms as "conditions that are favorable for hazardous winter weather conditions including heavy snow, blizzard conditions or significant accumulations of freezing rain or sleet." Furthermore, heavy snowfall and extreme cold can be detrimental to an entire region by immobilizing emergency vehicles or closing evacuation routes. Even areas that normally experience mild winters can be hit with a major snowstorm or extreme cold, which can result in not only closed highways but also flooding, storm surge, downed power lines and hypothermia. According to NOAA, the definition of extreme cold is when 'dangerously low temperatures are expected for a prolonged period of time; frostbite and hypothermia are likely if exposed to these temperatures.'

5.1.1 Heavy Snow History & Risk

Heavy snow is defined by the National Centers for Environmental Information (NCEI) as "snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24 hour warning criteria. This could mean values such as 4, 6, or 8 inches or more in 12 hours or less; or 6, 8, or 10 inches in 24 hours or less."

A total of 5 reported heavy snow events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-2 provides an overview of recorded heavy snow events that have occurred in Allegany County since 1996 and Table 5-2 includes details for each event.

Table 5-1. Heavy Snow Events Overview
Allegany County from January 2006 – April 2023

5 Heavy Snow events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$5,210,000
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Heavy Snow**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Heavy Snow (Z). Snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24 hour warning criteria. This could mean values such as 4, 6, or 8 inches or more in 12 hours or less; or 6, 8, or 10 inches in 24 hours or less. If the event that occurred is considered significant, even if it affected a small area, it should be entered into Storm Data. In some heavy snow events, structural damage, due to the excessive weight of snow accumulations, may occur in the few days following the meteorological end of the event.

Table 5-2. Heavy Snow Events, 2006 to Present

Date	Event Narrative	Property Damage ($)
April 16, 2007	A Nor'Easter impacted the Mid-Atlantic region on April 15th and 16th. Low pressure off the southeastern coast moved north along the Delmarva. Heavy	$0

Table 5-2. Heavy Snow Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
	rain spread north across the region early April 15th, causing flooding by the afternoon and evening. As the low pressure area pushed north and intensified, colder air advanced from the northwest. This allowed rain to change to snow along the upslope region of the Allegheny Front. Winds also increased in the wake of the low, downing trees and power lines across central and lower southern Maryland. A Cooperative Observer reported 7 inches of snow 1 mile west of Frostburg, MD.	
December 5, 2007	An Alberta Clipper system moved quickly across the Mid Atlantic on December 5th. This was the first snow of the season for much of the region. This storm caused significant traffic impacts during the morning commute across the Washington DC and Baltimore metro areas. The highest snowfall accumulations were measured across northern Maryland from Allegany County east to Carroll County. Snow amounts ranged from 1 to 3 inches across lower southern Maryland north into the Washington and southern Baltimore suburbs, and up to 7 inches in far western Allegany County. Cooperative Observers and trained spotters reported between 4 and 5 inches of snow.	$0
February 12, 2008	Light precipitation spread east across the Mid Atlantic ahead of a low pressure system. Temperatures at the onset of precipitation were cold enough to produce snow. As precipitation spread east of the Blue Ridge, temperatures aloft increased to above freezing while temperatures at the surface remained below freezing. This caused eastern portions of the state to see a change over from snow to freezing rain. Road conditions began to rapidly deteriorate during the afternoon rush when rain began to freeze onto the roadways. Numerous traffic accidents were reported across the Baltimore Metro and across the northern Washington DC suburbs. Several inches of snow were reported in the western part of the state in Allegany and Washington counties, with a mix of snow, sleet and freezing rain in central Maryland. Mostly ice was reported further east into the Baltimore Metro and northern Washington DC suburbs. Trained spotters and cooperative observers reported 4 to 5 inches of snow.	$0
February 22, 2008	Low pressure across the Gulf of Mexico spread snow across the region during the overnight hours February 21st and continued through the morning of February 22nd. Warm air moved in aloft, causing snow to mix with and change over to sleet and freezing rain. Most locations reported a tenth of an inch or less of ice with only an inch or two of snow. The exception was across western Allegany County where 4 to 6 inches of snow was reported with very little freezing rain or sleet. Trained spotters measured 4 to 5 inches of snow in western Allegany County.	$0

Table 5-2. Heavy Snow Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
December 25, 2008	The combination of cold moist air of the mountains triggered snow along and west of the Allegheny front in Maryland from the afternoon of the 25th through the morning of the 26th. A storm total of 6.0 inches was reported two miles north of Frostburg. Snowfall also totaled up to 5.0 inches in Eckhart Mines as well as Frostburg.	$0
Source: National Center for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 5 heavy snow events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 0.29 heavy snow events per year.

5.1.2 Winter Storm History & Risk

Winter storm is defined by the National Centers for Environmental Information (NCEI) as "a winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements."

A total of 58 reported winter storm events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-3 provides an overview of recorded winter storm events that have occurred in Allegany County since 1996. For a complete list of these winter storm events, including event narratives, refer to Table 3-17 in Chapter 3.

Table 5-3. Winter Storm Events Overview Allegany County from January 2006 – April 2023		
58 Winter Storm events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$20,000
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Winter Storm**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Winter Storm (Z). A winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally, a Winter Storm would pose a threat to life or property.		

In terms of the number of occurrences, the NCEI listed a total of 58 winter storm events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 3.41 winter storm events per year.

5.1.3 Winter Weather History & Risk

Winter weather is defined by the National Centers for Environmental Information (NCEI) as "a winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle). The Winter Weather event can also be used to document out-of-season and other unusual or rare occurrences of snow, or blowing/drifting snow, or freezing rain/drizzle."

A total of 166 reported winter weather events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-4 provides an overview of recorded winter weather events that have occurred in Allegany County since 1996. For a complete list of these winter weather events, including event narratives, refer to Table 3-19 in Chapter 3.

Table 5-4. Winter Weather Events Overview
Allegany County from January 2006 – April 2023

166 Winter Weather events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Winter Weather**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: Winter Weather (Z). A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle). The Winter Weather event can also be used to document out-of-season and other unusual or rare occurrences of snow, or blowing/drifting snow, or freezing rain/drizzle. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

In terms of the number of occurrences, the NCEI listed a total of 166 winter weather events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 9.76 winter weather events per year.

5.1.4 Ice Storm History & Risk

Ice storm is defined by the National Centers for Environmental Information (NCEI) as "ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more)."

A total of 6 reported ice storm events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-5 provides an overview of recorded winter weather events that have occurred in Allegany County since 1996 and Table 5-6 includes details for each event.

Table 5-5. Ice Storm Events Overview
Allegany County from January 2006 – April 2023

6 Ice Storm events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	3	$20,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Ice Storm**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Ice Storm (Z). Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more).

Table 5-6. Ice Storm Events, 2006 to Present

Date	Event Narrative	Property Damage ($)
December 13, 2007	A low pressure system moving across the Mid Atlantic brought a mixture of rain and freezing rain to portions of northern and western Maryland. Sub-freezing temperatures at the surface combined with a layer of warmer air aloft caused rain to change over to freezing rain. Ice accumulations between one quarter and one half inch were reported in western Allegany County, with lesser amounts further east.	$0
February 1, 2008	An area of low pressure over the Lower Mississippi River Valley moved up the Appalachians on February 1st. Warmer temperatures aloft combined with subfreezing temperatures at the surface to produce widespread freezing rain across the Mid Atlantic. A quarter of an inch of ice was reported in western Allegany County.	$5,000
February 14, 2016	Prolonged event impacted the Mid-Atlantic. Southwest flow aloft overriding northeast flow at the surface from departing high pressure led to snow spreading over the region initially. Low pressure formed and organized over the Gulf of Mexico, eventually pushing off to the northeast and impacting the region on the 15th. As the cold air	$0

Table 5-6. Ice Storm Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
	wedge was eroded away from this low, warming at all levels led to the snow transitioning to sleet and ice for most of the area.	
2024 Plan Update		
December 16, 2019	Low pressure passed by to the west on the 16th into the 17th. Ahead of the low, plenty of cold air remained in place, and this led to a period of snow across northern and central Maryland during the morning of the 16th. Temperatures rose above freezing, causing precipitation to change to rain for most areas. However, across northern Maryland into the Allegheny Highlands, temperatures hovered very close to freezing and this led to some freezing rain later on the 16th into the morning of the 17th.	$10,000
February 24, 2022	A wave of low pressure passed by to the west high high pressure remained to the north. Warm and moist air overran the low-level cold air, resulting in a wintry mix. Snow and sleet amounts were light. Freezing rain ranged from a light glaze on elevated surfaces around the Baltimore Metropolitan area, to around one to two tenths of an inch in northern Maryland as well as the northern suburbs of Washington DC, to around a quarter inch in portions of Garrett and western Allegany Counties.	$5,000
December 14, 2022	An area of low pressure passed by to the west with another area of low pressure developing near Chesapeake Bay. This resulted in southeasterly winds overrunning colder air near the surface and a prolonged wintry mix/freezing rain event across the Allegheny and Potomac Highlands where temperatures were just below freezing. Ice accumulations totaled one quarter to three quarters of an inch. Sleet accumulations totaled upwards of 2 as well. This led to numerous accidents, downed trees and power lines which resulted in isolated power outages.	$0
Source: National Center for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 6 ice storm events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 0.35 ice storm events per year.

5.1.5 Extreme Cold/Wind Chill History & Risk

Extreme cold/Wind chill is defined by the National Centers for Environmental Information (NCEI) as "a period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -350 F or colder)."

A total of 15 reported extreme cold/wind chill events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-7 provides an overview of

recorded extreme cold/wind chill events that have occurred in Allegany County since 1996 and Table 5-8 includes details for each event.

Table 5-7. Extreme Cold/Wind Chill Events Overview Allegany County from January 2006 – April 2023		
15 Extreme Cold/Wind Chill events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Extreme Cold/Wind Chill**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Extreme Cold (Z). A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -350 F or colder). If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally these conditions should cause significant human and/or economic impact. However, if fatalities occur with cold temperatures/wind chills but extreme cold/wind chill criteria are not met, the event should also be included in Storm Data as a Cold/Wind Chill event and the fatalities are direct.

Table 5-8. Extreme Cold/Wind Chill Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
January 8, 2011	Low pressure intensified off the New England coast while high pressure approached from the Midwest. A strong gradient between these two systems caused windy conditions. The gusty winds combined with cold air for extremely low wind chills.	$0
January 12, 2011	Low pressure intensified off the New England coast while high pressure approached from the Midwest. A strong gradient between these two systems caused windy conditions. The gusty winds combined with cold air for extremely low wind chills for locations near the Allegheny Front.	$0
January 21, 2011	Low pressure intensified was located off the New England Coast while high pressure approached from the Ohio Valley. The pressure gradient between these two systems caused breezy conditions. Cold temperatures combined with breezy conditions for extremely low wind chill values near the Allegheny Front.	$0
January 22, 2011	Low pressure intensified was located off the New England Coast while high pressure approached from the Ohio Valley. The pressure gradient between these two systems caused breezy conditions. Cold temperatures combined with breezy conditions for extremely low wind chill values near the Allegheny Front.	$0
January 3, 2014	A tight pressure gradient between low pressure and high pressure moving into the region led to gusty winds along the Allegheny Front with wind chill values -20 and below.	$0
January 6, 2014	An arctic front moved through the Mid-Atlantic and cold air moved into the region. Gusty winds and cold temperatures led to wind chill values below -	$0

Table 5-8. Extreme Cold/Wind Chill Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
	20. High pressure settled across the area and led to cold conditions to continue for a few days.	
January 22, 2014	Arctic high pressure moved into the region with a strong pressure gradient between the departing low pressure. Gusty northwest winds and cold temperatures resulted in wind chill values below -20.	$0
January 23, 2014	A cold front moved through the region reinforcing cold air and gusty winds. Wind chill values were -20 and below in the Potomac Highlands.	$0
January 28, 2014	High pressure was moving into the region while a pressure gradient existed due to a departing cold front. Gusty winds and cold conditions led to wind chill values at -20 and below for the Potomac Highlands.	$0
January 29, 2014	A pressure gradient between the high pressure approaching from the west and a cold front to the east led to gusty conditions. Northerly flow led to cold conditions and wind chill values of -20 and below were measured in the Potomac Highlands.	$0
February 14, 2015	Strong Arctic high pressure built in across the region in the wake of a cold front, resulting in multiple days of sub-zero wind chills across mainly the higher elevations of western Maryland.	$0
2024 Plan Update		
January 5, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0
January 21, 2019	A low pressure system moved up the eastern seaboard of the United States on January 20th, with cold temperatures and strong northwest winds funneling behind the system from the night of the 20th into the morning of the 21st. This was able to produce very low wind chills across much of the state.	$0
January 30, 2019	A low pressure system moved into southeastern Canada on January 30th, with a cold front crossing through the Mid-Atlantic states. Cold temperatures and strong northwest winds followed behind the front on the night of the 30th and into the morning of the 31st. This was able to produce very low wind chills across much of the state.	$0
December 23, 2022	A cold northwest wind behind an arctic cold front caused wind chills to drop to around -25 to -40 degrees the day of the 23rd through the early afternoon of the 24th.	$0
Source: National Center for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 15 extreme cold/wind chill events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 0.88 extreme cold/wind chill events per year.

Also included with the extreme cold hazard is cold/wind chill. Cold/Wind chill is defined by the National Centers for Environmental Information (NCEI) as "a period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -180 F or colder) conditions."

A total of 14 reported cold/wind chill events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. Table 5-9 provides an overview of recorded cold/wind chill events that have occurred in Allegany County since 1996 and Table 5-10 includes details for each event.

Table 5-9. Cold/Wind Chill Events Overview
Allegany County from January 2006 – April 2023

14 Cold/Wind Chill events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Cold/Wind Chill**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Cold / Wind Chill (Z). (Z). Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -180 F or colder) conditions. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. There can be situations where advisory criteria are not met, but the combination of seasonably cold temperatures and low wind chill values (roughly 15 degrees F below normal) may result in a fatality. In these situations, a cold/wind chill event may be documented if the weather conditions were the primary cause of death as determined by a medical examiner or coroner. Normally, cold/wind chill conditions should cause human and/or economic impact.

Table 5-10. Cold/Wind Chill Events, 2006 to Present

Date	Event Narrative	Property Damage ($)
November 18, 2014	High pressure building in from the west coupled with a deepening upper level trough ushered in record breaking cold temperatures for multiple days.	$0
December 15, 2016	Gusty northwest winds ushered in very cold conditions. The combination of the gusty winds and very cold conditions lead to low wind chill values.	$0
March 14, 2017	Strong northwest winds ushered in very cold air during the overnight hours of the 14th through the morning hours of the 15th. The combination of bitterly cold air and strong winds caused wind chill values to dip well below zero.	$0
2024 Plan Update		
December 13, 2017	Gusty northwest winds and bitterly cold temps caused dangerously low wind chills over the ridges.	$0
December 27, 2017	Gusty northwest winds and bitterly cold temps caused dangerously low wind chills over the ridges.	$0
December 31, 2017	Gusty winds and bitterly cold temperatures caused dangerously low wind chills.	$0
January 1, 2018	Gusty winds and bitterly cold temperatures led to dangerously low wind chills.	$0
January 4, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0

Table 5-10. Cold/Wind Chill Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage ($)**
January 5, 2018	Arctic air and gusty winds caused low wind chills to develop.	$0
January 21, 2019	A low pressure system moved up the eastern seaboard of the United States on January 20th, with cold temperatures and strong northwest winds funneling behind the system from the night of the 20th into the morning of the 21st. This was able to produce very low wind chills across much of the state.	$0
January 30, 2019	A low pressure system moved into southeastern Canada on January 30th, with a cold front crossing through the Mid-Atlantic states. Cold temperatures and strong northwest winds followed behind the front on the night of the 30th and into the morning of the 31st. This was able to produce very low wind chills across much of the state.	$0
March 6, 2019	An arctic cold front crossed the region during the evening of March 5th, with very cold temperatures and strong northwest winds funneling behind the system from the night of the 5th and into the morning hours on the 6th. This was able to produce wind chill values as low as -10 degrees over the higher terrain near the Allegheny Front.	$0
December 23, 2022	A cold northwest wind behind an arctic cold front caused wind chills to drop to around -5 near the Chesapeake Bay to -20 degrees in western Maryland the day of the 23rd through the early afternoon of the 24th.	$0
December 24, 2022	A cold northwest wind behind an arctic cold front caused wind chills to continue to range between -10 and -20 degrees during the afternoon of the 24th into the morning of the 25th.	$0
Source: National Center for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 14 cold/wind chill events occurring in the County between 2006 and 2023. Therefore, Allegany County experiences 0.82 cold/wind chill events per year.

Combining extreme cold/wind chill and cold/wind chill events results in a future probability of 1.70 events annually.

5.2 County Perspective

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for winter weather as "high." Allegany County HMPC members ranked the winter storm & extreme cold hazard as "high" as well.

Figure 5-2: Jackson Street in Lonaconing, January 23, 2016. *Source: Times-News. Photo Source: Mark Greenwald.*

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks winter storm & extreme cold as fourth.

While the average snowfall for the State is 6+ inches, in the mountainous portion of the State, winter storms occur with much greater frequency and are usually more severe in terms of cold temperature, wind speed, and duration. Sometimes, however, the typical mid-latitude winter storm or Nor'easter passes far to the east of Allegany County and the area receives only a dusting of snow while communities east of the Allegheny Plateau receive the bulk of precipitation. The type of storm that is most common in Garrett County and portions of Allegany County in winter months is the "Lake Effect" storm which is generated over the Great Lakes and may continue for days at a time with near constant snowfall, high winds, low visibility, and cold temperatures.

What is a Nor'easter?

Nor'easters may occur anytime of the year but are most frequent and strongest between September and April. These storms develop between Georgia and New Jersey within 100 miles of the coastline and generally move north or northeastward. In addition to heavy snow and rain, nor'easters can bring gale force winds greater than 56 miles per hour (mph).

Source: www.weather.gov/safety/winter-noreaster

The average annual snowfall, depicted in Figure 5-1, differs from west to east as well as north to south. The western and northern portions of the County receive greater amounts of precipitation than the eastern and southern portions. Each winter season brings with it the

possibility of major snow and ice storms, some winter storms do stand out for their severity and duration. Major storms include the Blizzard of 1993 that occurred over an extended period of time as "Lake Effect" snow piled up over 50 inches over a period of more than a week causing a shutdown of most services, businesses, and transportation for several days. In February and March 1994, snowstorms of more than one foot resulted from passing mid-latitude storms. In January 1996, a storm occurred that covered much of the Appalachians with several feet of snow. Following this storm, temperatures rose and with subsequent rainfall, triggered a devastating flood in the County and in surrounding counties in the Potomac Basin. A prolonged mid-latitude storm on President's Day in February 2003 resulted in 2-3 feet of snow throughout the Appalachians, including Allegany County.

Most recently, in January 2016, Winter Storm Jonas brought an average snowfall between 24 to 34 inches. Due to the significant snow amounts throughout the county, all roads were impassable for the initial day of the storm, however, major roads were cleared by the second day. A Federal Declaration was declared in March 2016 enabling Allegany County to receive Public Assistance and snow assistance.

Maryland – Severe Winter Storm and Snowstorm
FEMA-4261-DR
Declared March 4, 2016

On March 4, 2016, President Obama declared that a major disaster in the State of Maryland. This declaration made Public Assistance requested by the Governor available for eligible local governments on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe winter storm and snowstorm. This declaration also authorized snow assistance for a period of 48 hours for the counties.

Source: FEMA (www.fema.gov/locations/maryland#declared-disasters)

5.3 Municipal Perspective

While Allegany County, just to the east of Garrett County and downslope from the Allegheny Plateau, receives less snowfall than its western neighbor, portions of Allegany County, specifically the City of Frostburg receives significant snowfall as shown in the Figure 5-1. The City of Frostburg also tends to have cooler temperatures due to elevation as well as more snowfall, Table: 5-11.

Table 5-11. City of Frostburg Weather & Climate Data

Month	Average Temperature (Degrees F)	Average Precipitation (Inches)	Snow (inches)
January	26.2	3.36	19.0
February	28.6	3.03	19.0

Table 5-11. City of Frostburg Weather & Climate Data			
Month	**Average Temperature (Degrees F)**	**Average Precipitation (Inches)**	**Snow (inches)**
March	36.3	3.97	14.9
April	48.1	4.00	1.8
May	57.4	5.18	0.0
June	65.3	4.61	0.0
July	69.4	3.70	0.0
August	68.1	3.55	0.0
September	61.8	4.21	0.0
October	50.6	3.25	0.4
November	40.0	2.92	4.0
December	30.9	3.43	13.0
Annual Average	**48.6**	**3.77**	**6.0**
Source: https://www.ncei.noaa.gov/access/us-climate-normals/ - 1991-2020 Normals.			

The City of Frostburg, which received 34.0 inches of snow during the January 2016 event, is not the only municipality affected by snowfall due to its location along the Plateau; the Towns of Midland, Lonaconing, Barton, Westernport and Luke are located within the 40-60 inches snowfall according to *Figure 5-1: Maryland Average Annual Snowfall* as well, while the City of Cumberland's annual average total snowfall amount is just under 30 inches of snow.

Table 5-12. City of Cumberland Weather & Climate Data			
Month	**Average Temperature (Degrees F)**	**Average Precipitation (Inches)**	**Snow (inches)**
January	30.8	2.79	8.2
February	33.7	2.38	7.7
March	42.1	3.42	6.8
April	53.6	3.41	0.1
May	62.9	4.22	0.0
June	71.3	3.87	0.0
July	75.8	3.73	0.0
August	74.0	3.40	0.0
September	66.8	3.55	0.0
October	55.0	2.82	0.0
November	43.7	2.58	0.5
December	35.0	3.05	5.4
Annual Average	**53.7**	**3.27**	**2.4**
Source: https://www.ncei.noaa.gov/access/us-climate-normals/ - 1991-2020 Normals.			

In comparison, the City of Cumberland's record low temperature was -14°F, while Frostburg had a record low of -26°F in 1985. The average precipitation decreases between Frostburg and Cumberland and continues to decline in the eastern portion of the County according to

Figure 5-1.

5.4 Impacts to People, Systems, and Resources

Impacts from a winter storm event impact large portions of the County at once, although some locations in higher elevations, such as the City of Frostburg, experience more annual snowfall and colder temperatures than lower-lying areas.

The County's most impacted resources during a winter storm event include drivers, roadways, and utilities. People are impacted by blocked walkways and icy or snow-laden streets. A winter storm event's impact on transportation ranges from delaying morning commutes to completely shutting down roadways for long periods of time until they can be treated. Residents generally know to avoid driving during these conditions, but all drivers are at increased risk of accident if there is snow or ice on the roadway. Travelers from other parts of the state may find themselves caught up in sudden low-visibility conditions, particularly as they enter the County from the east near Sideling Hill, in Washington County. The economic impacts take the form of lost revenue, service disruption, and lost wages.

Extreme cold associated with winter storms can cause older pipes to freeze and burst, leaving residents without access to running water. Additionally, large amounts of snow or ice can damage power lines, leading to power outages. Power outages, if lengthy, can lead to dropping temperatures within homes and businesses, and are especially dangerous to those who rely on at-home medical equipment for support needs. Back up heat and generators can mitigate these issues, but residents should take the proper precautions when using these.

Finally, older and historic structures with flat roofs are particularly susceptible to damage associated with snow loads and ice accumulations and therefore should be properly maintained and restored when possible. Snow tends to aggravate existing issues that have built up over time, making regular maintenance an important form of damage mitigation. A prime example of a location within the county with both historic structures and flat roofs is the Downtown Cumberland Historic District, which is bounded by the tracks of the Western Maryland Railroad to the west and George Street to the east.

Impacts to Vulnerable Populations

FEMA's National Risk Index (NRI) includes social vulnerability as a component of the overall risk index. For purposes of the NRI, social vulnerability is defined as the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

Social vulnerability to natural hazards, including winter storm, is determined at the census

tract level for Allegany County via the NRI. The NRI utilizes the 16 variables included within the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI). These variables make up the following larger groups: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type & transportation.

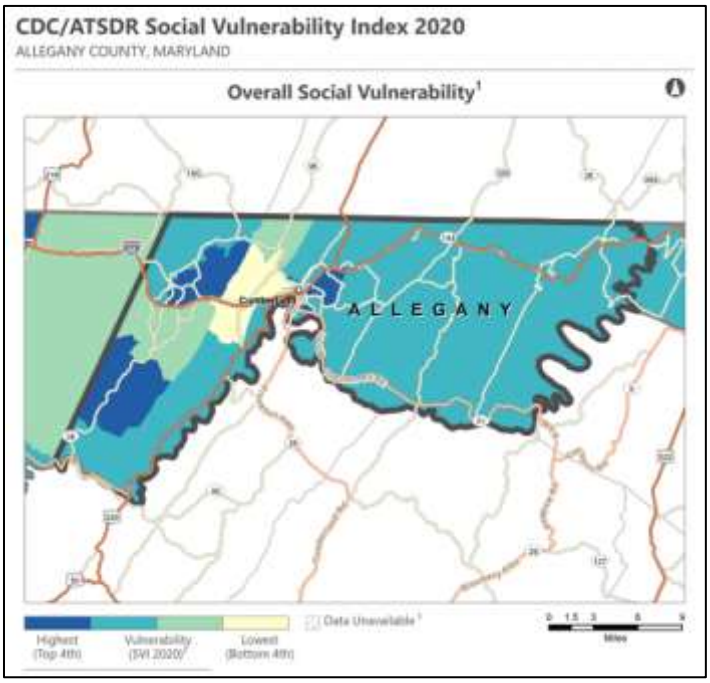


Figure 5-3. CDC/ATSDR Social Vulnerability Index 2020, Allegany County, Maryland. Source: CDC/ATSDR SVI (www.atsdr.cdc.gov/placeandhealth/svi/interactive_map).

The index concludes that Allegany County has a "relatively moderate" susceptibility to the adverse impacts of natural hazard when compared to other counties in the United States. The highest areas of social vulnerability within the County include tracts primarily comprising the City of Cumberland, City of Frostburg, Town of Barton, and the Town of Lonaconing. Figure 5-3 shows social vulnerability mapped for each census tract within the County. Darker blue areas indicate the census tracts with the highest level of social vulnerability.

During this plan update, specific groups have been identified as being more vulnerable to winter storm than others. These groups were identified via the planning process, HMPC members, and the National Risk Index.

Groups identified as more vulnerable to winter storm as identified within this plan include:

- Elderly/Aging population – particularly in the City of Frostburg
- Populations requiring at-home durable medical equipment
- Low-income populations – particularly in the City of Cumberland
- Unhoused populations

5.5 Mitigation Capabilities

Allegany is probably one of the best equipped counties in the State of Maryland when it comes to dealing with winter storms. State Highway Administration-District 6, County Roads Department and Municipal Roads Departments have dealt with winter storms for many years and are trained and equipped to do so. The County's Department of Emergency Services, the

state Department of Natural Resources and local police, fire and rescue departments are also trained to deal with winter storms and the types of situations that result from these storms. Additionally, the County's Building Code contains snow loading and wind load requirements for new structures.

Specific to the County's Road Division, garages have been strategically located within the County in order to ensure proper road maintenance. The garages' locations are:

- Central – Cumberland;
- Northeast – Little Orleans;
- Southeast – Oldtown; and,
- Western – Frostburg.

Since 2012, the Roads Division has purchased twelve (12) single axle dump trucks with plows and salt spreaders. The Roads Division is responsible for plowing 533 miles of county roads. Therefore, due to excessive use during the winter months, the Roads Division has identified additional equipment needs, which includes three (3) new single axle dump trucks with plows and salt spreaders per year in order to maintain these roads.

Additionally, the County makes available warming centers as needed during extreme cold events. The locations of these centers can be determined by contacting the Department of Emergency Services. The Union Rescue Mission of Western Maryland also offers an emergency shelter from November to April to individuals who need shelter from extreme cold.

5.6 Future Conditions

According to Climate Communication Science and Outreach, climate change is fueling an increase in the intensity and snowfall of winter storms. The atmosphere now holds more moisture, and that in turn drives heavier than normal precipitation, including heavier snowfall in the appropriate conditions.

The following list[i] includes known U.S. winter storm trends as it relates to climate change:

- National Oceanic and Atmospheric Administration (NOAA) scientists, examining 120 years of data, found that there were twice as many extreme regional snowstorms in the U.S. between 1961 and 2010 compared to 1900 to 1960.
- According to the U.S. Fourth National Climate Assessment, "Heavy precipitation events [defined as the heaviest 1 percent of all daily events] in most parts of the United States have increased in both intensity and frequency since 1901."[ii]

- From 1958 to 2016, the amount of precipitation falling in very heavy events (the top 1 percent of all daily precipitation events) increased by 55 percent in the Northeast.[iii]
- The 5th Assessment Report of the Intergovernmental Panel on Climate Change states: It is likely that since about 1950 the number of heavy precipitation events over land has increased in more regions than it has decreased. Confidence is highest for North America and Europe where there have been likely increases in either the frequency or intensity of heavy precipitation with some seasonal and regional variations. It is very likely that there have been trends towards heavier precipitation events in central North America.[iv]

Winter storms in Allegany County are normally widespread and affect the municipalities in much the same way as they do the County in general. There are occasions when ice or snow may be heavier in one part of the County, but for the most part the towns are similar to the County in terms of winter storm effects.

As is the case with most weather events, all areas of the County share similar concerns. Due to the lack of well-defined geographic extent for winter storm events, it is difficult to state how future land use and development will change as a result of this hazard. Property owners and land developers should instead mitigate the impacts of winter storms by avoiding flat roofs and constructing to the most recent building code requirements for snow loading and insulation.

Given the above information, it makes sense to plan for more frequent and extreme winter storm conditions in a winter storm prone area such as Allegany County. Undertaking preparedness campaigns, as well as infrastructure and utilities upgrades, and preparedness initiatives will strengthen resilience.

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[i] www.climatesignals.org/climate-signals/winter-storm-risk-increase.
[ii] Donald Wuebbles, David Fahey, and Kathleen Hibbard. U.S. Global Change Research Program. Published date November 3, 2017.
[iii] Ibid.
[iv] Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.). Cambridge University Press. Published date September 1, 2013.

Chapter 6: Severe Weather

2024 Plan Updates

Chapter 6: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 6-2: The hazard risk score of "medium-high" for severe weather, assigned in Chapter 3: Hazard Identification and Risk Assessment, has been added. The 2021 State Hazard Mitigation Plan ranking of "medium" has also been updated.

Page 6-2: Section 6.1.1 Thunderstorm History & Risk has been added. Included in this section is extent and magnitude including the criteria for a severe thunderstorm, the definition for thunderstorm wind from the NCEI, historical occurrences of thunderstorm wind events (Tables 6-1 and 6-2), and future probability of this type of event.

Page 6-7: Section 6.1.2 Lightning Strike History & Risk has been added. Included in this section is the definition for lightning from the NCEI, historical occurrences of lightning events (Tables 6-3 and 6-4), and future probability of this type of event.

Page 6-9: Section 6.1.3 Hail History & Risk has been added. Included in this section is extent and magnitude of hail events, including commonly utilized comparisons for measuring hail, the definition for hail from the NCEI, historical occurrences of hail events (Tables 6-5 and 6-6), and future probability of this type of event.

Page 6-12: Section 6.1.4 Fog History & Risk has been added. Included in this section is the definition for dense fog from the NCEI, historical occurrences of dense fog events (Tables 6-7 and 6-8), and future probability of this type of event.

Page 6-16: Section 6.2 County Perspective was updated to include thunderstorm risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the thunderstorm hazard. This section has been reviewed to ensure information is up to date.

Page 6-18: Section 6.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts severe weather has on people (injuries and deaths), the built environment (tree debris), and utilities (power outage, damage from tree limbs). A sub-section for social vulnerability with information from the National Risk Index has been included. Vulnerable populations have been identified in this section.

Page 6-20: Section 6.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date. Information regarding warming centers and cold weather shelters has been added.

Page 6-20: Added Section 6.6 Future Conditions. This section examines the impacts that climate change is projected to have on frequency and intensity of severe weather events.

Chapter 6: Severe Weather (Thunderstorm, Lightning Strike, Hail, Fog)

6.1 Severe Weather Hazard Profile

Severe weather in this plan includes Thunderstorm, Lightning Strike, Hail, and Fog events as identified by the National Centers for Environmental Information (NCEI) Storm Events Database. An overall hazard risk score of "medium-high" was assigned to severe weather for Allegany County and its municipalities (refer to Chapter 3 of this Plan for all hazard risk rankings). Past occurrences and risk are discussed in this chapter for each of the identified severe weather sub-hazards. The hazard risk assessment completed for the 2021 State Hazard Mitigation Plan ranks the thunderstorm hazard as "medium" which includes lightning and hail, but not fog.

6.1.1 Thunderstorm History and Risk

Thunderstorms are usually high intensity storms of short duration originating in a warm moist air mass that either is forced to rise by mountainous terrain or by colliding with a cooler dense air mass. The process of convection in the atmosphere brings about the release of moisture from the warm air mass as it raises, cools and condenses. This condensation proceeds until most of the moisture in the air mass has been precipitated. Since the motion of the air is nearly vertical, and attains high velocities, rainfall is intense and generally concentrated over a small area in a short time frame.

Extent (Magnitude & Strength)

Thunderstorms can be 10-15 miles in diameter and normally last 20 to 30 minutes. Additionally, thunderstorms can produce short, intense storms resulting in run-off at the equivalent rate of the standard 50 or 100-year storm. Lightning, high winds, hail, and occasionally tornadoes may be associated with thunderstorms.

According to the 2021 State Hazard Mitigation Plan, if a thunderstorm meets any of the following criteria, it is categorized as a severe thunderstorm, capable of causing significant destruction:

- Hail 1 inch or greater in diameter
- Wind gusts exceeding 50 knots (57.5 mph)
- Spawns a tornado

When wind speeds exceed 58 mph, thunderstorms are considered severe. A downburst or sudden descent of cold air during a severe thunderstorm can result in straight line winds up

to 134 mph. One of the most extreme hazards from thunderstorms is a lightning strike. Lightning has been known to strike up to 6-10 miles from the storm in an area of clear sky. It is estimated that more than 30,000,000 points on the ground in the continental 48 states are hit by lightning in a single year.

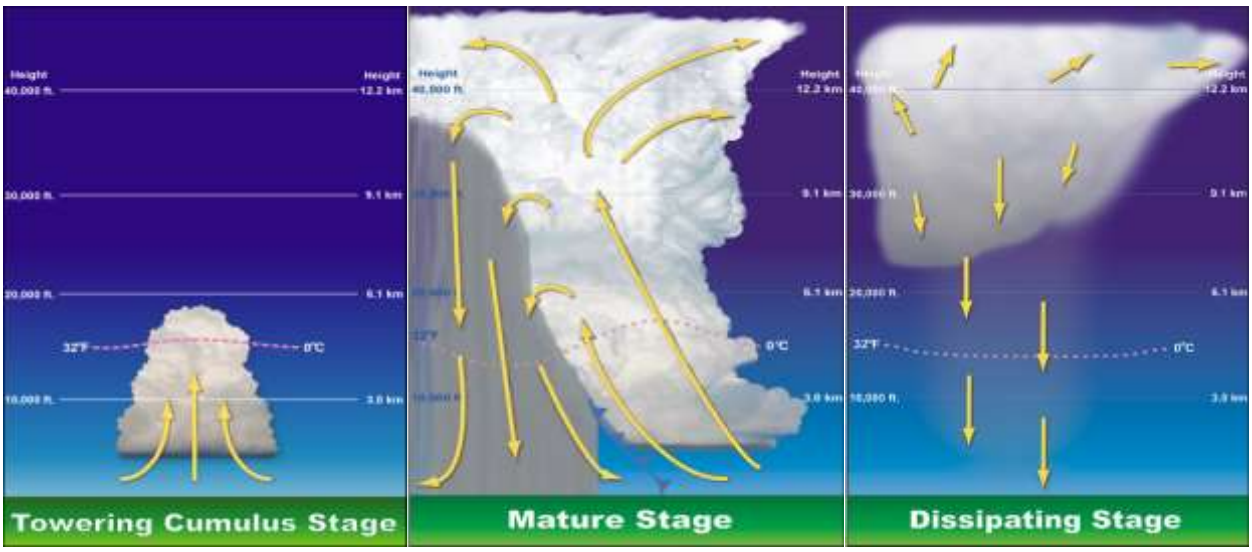

Figure 6-1. Thunderstorm Life Cycle. Source: National Weather Service.

Thunderstorm Wind History & Risk

Thunderstorm wind is defined by the National Centers for Environmental Information (NCEI) as "winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage."

A total of 76 reported thunderstorm wind events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023, however only those thunderstorms with reported damage values are included in Table 6-2. The full list of all thunderstorm wind events is available in *Chapter 3*.

Table 6-1. Thunderstorm Wind Events Overview
Allegany County from January 2006 – April 2023

76 Thunderstorm Wind events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	52	$433,000
Number of Days with Event and Crop Damage:	7	$8,250
Number of Event Types reported:	1	**Thunderstorm Wind**

Table 6-1. Thunderstorm Wind Events Overview Allegany County from January 2006 – April 2023
76 Thunderstorm Wind events
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Thunderstorm Wind (C). Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. Maximum sustained winds or wind gusts (measured or estimated) equal to or greater than 50 knots (58 mph) will always be entered. Events with maximum sustained winds or wind gusts less than 50 knots (58 mph) should be entered as a Storm Data event only if the result in fatalities, injuries, or serious property damage. Storm Data software permits only one event name for encoding severe and non-severe thunderstorm winds. The Storm Data software program requires the preparer to indicate whether the sustained wind or wind gust value was measured or estimated.

Table 6-2. Thunderstorm Wind Events with Property Damage, 2006 to Present		
Date	**Event Narrative**	**Property Damage**
June 22, 2006	Strong winds brought several electrical wires down in South Cumberland and Bowling Green. A small brush fire started due to arcing in Bowling Green. Scattered showers and thunderstorms developed ahead of an approaching cold front.	$22,000
July 18, 2006	Trees down along Interstate 68 near Orleans Road. The downed trees blocked the interstate temporarily. An approaching cold front combined with a very hot and humid airmass to generate severe thunderstorms around much of the Mid Atlantic on July 18.	$10,000
October 4, 2006	Powerlines downed in the town of Barton.	$8,000
May 10, 2007	County officials reported trees and power lines down in Flintstone and Oldtown.	$2,000
June 1, 2007	Emergency Management reported a few trees down in Cumberland, MD.	$1,000
June 12, 2007	Emergency Management officials reported numerous trees down along Route 144 and Interstate 68 near Flintstone, MD.	$5,000
June 13, 2007	A Trained Spotter reported trees down in Cumberland, MD.	$1,000
July 25, 2007	Allegany County Emergency Management reported trees and power lines down in Cumberland. A local newspaper reported multiple trees and power lines down as well as large hail from Barton to Cumberland.	$5,000
July 27, 2007	Allegany County Emergency Management reported a tree down in Westernport, MD.	$1,000
June 10, 2008	A local newspaper reported trees and wired down in Clarysville.	$5,000
June 10, 2008	A trained spotter as well as local newspapers reported trees and power lines down in the Frostburg area.	$10,000
June 10, 2008	Allegany County Emergency Management reported approximately 30 trees down in the Mount Savage area. Numerous power lines were also downed and one shed collapsed.	$20,000
June 28, 2008	A local newspaper reported trees down in Barton. A local newspaper reported trees down in Cresaptown. A local newspaper reported trees down in Bowling Green.	$6,000

Table 6-2. Thunderstorm Wind Events with Property Damage, 2006 to Present		
Date	**Event Narrative**	**Property Damage**
July 20, 2008	Allegany County Emergency Management reported a tree down on Slabtown Road in Frostburg.	$1,000
July 21, 2008	Allegany County Emergency Management reported a tree down near the intersection of Fayette Street and Cumberland Street, off Route 220 south of Cumberland, and on Mason Road.	$6,000
August 4, 2010	Numerous trees were downed throughout the county,	$3,000
April 28, 2011	Several tree limbs were down near the Corriganville Fire Station.	$1,000
April 28, 2011	A tree was down at the intersection of Mertens Road and Oldtown Orleans road.	$1,000
May 26, 2011	Multiple trees were down in Oldtown.	$3,000
May 26, 2011	A tree six inches in diameter was down due to thunderstorm winds.	$1,000
August 14, 2011	Large tree limbs fell off pine trees due to thunderstorm winds.	$1,000
June 1, 2012	Trees were blown down along Moss Ave.	$1,000
June 1, 2012	Trees were blown down along South Street at Franks Lane.	$1,000
June 1, 2012	Trees were blown down at Robbins Terrace.	$1,000
Derecho Event June 29, 2012	Numerous trees were down across western Allegany County.	$5,000
	A tree three inches in diameter was down.	$1,000
	Multiple trees were down or uprooted.	$2,000
	Numerous trees were down near La Vale.	$2,000
	Numerous trees were uprooted, and several roofs were torn off.	$50,000
	A tree fell over a car on Hilltop Street.	$10,000
	Trees were down near Rocky Gap.	$2,000
	Trees were down.	$2,000
	Large trees were down.	$2,000
	A roof was blown off a house along York Place.	$20,000
August 9, 2012	Large tree down onto a residence along Iowa Dr NW.	$1,500
August 14, 2012	Tree down across telephone lines near intersection of Drake Rd SE and Williams Rd SE.	$1,500
August 14, 2012	Multiple trees down on Drake Rd.	$1,000
June 8, 2014	There were seven large trees down including on that fell on a trailer.	$2,000
September 2, 2014	There were trees and power lines down.	$2,000
June 18, 2015	A large tree was reported down across New School Rd.	$1,000
September 2, 2015	A tree and multiple power lines were reported down in the 1500 block of Frederick St, resulting in the closure of the road.	$3,000
2024 Plan Update		
March 3, 2020	Trees down on Bottle Run Road and Hazen Drive.	$2,000

Table 6-2. Thunderstorm Wind Events with Property Damage, 2006 to Present		
Date	**Event Narrative**	**Property Damage**
April 8, 2020	Trees were reported blown down on MD-53 Winchester Road near Cresaptown.	$5,000
June 4, 2020	A tree was blown down on Schuler Lane.	$5,000
June 22, 2020	Several trees were blown down near Spring Gap.	$5,000
July 23, 2020	Tree damage was reported near Old Town, including on MD-51 Oldtown Road Southeast near Crabtree Lane.	$1,000
August 7, 2020	Tree damage was reported on private property near the CSX Railroad Tracks in Cumberland.	$1,000
August 25, 2020	A tree was blown down in the 10000 block of Mount Savage Road Northwest.	$1,000
November 15, 2020	There were nearly two dozen reports of trees blown down through Allegany County.	$25,000
May 5, 2021	Two trees blew down on power lines near the intersection of Thompson Corner Road and MD-234 Budds Creek Road.	$3,000
June 2, 2021	There were multiple reports of trees and wires blown down between Westernport and McCoole.	$7,000
June 21, 2021	Numerous trees were blown down in the Barton and Lonaconing area.	$9,000
June 30, 2021	There were multiple calls for trees blown down in and around Oldtown.	$2,000
July 9, 2021	Trees were blown down near the intersection of MD-202 Largo Road and Kettering Drive/West Kettering Drive.	$2,000
July 11, 2021	Numerous trees blew down along Orleans Road.	$5,000
July 13, 2021	Trees blew down blocking Sugar Maple Lane and MD-36 New Georges Creek Road Southwest.	$2,000
August 25, 2021	Trees blew down near the intersection of National Pike Northeast and Mountain Road.	$2,000
August 26, 2021	Numerous trees blew down in the Flintstone area, including along Murrays Branch Road and Williams Road at Stickley Road. Wires blew down near the intersection of Georges Creek Road and Welsh Hill Road.	$10,000
August 28, 2021	Numerous trees and wires blew down near La Vale and Corriganville between Frostburg and Cumberland. A tree blew down blocking the roadway on Bedford Road Northeast and Valley Road Northeast. A tree blew down onto power lines on MD-36 Mount Savage Road Northwest near MD-638 Parkersburg Road Northwest. Wires blew down near the intersection of MD-36 Mount Savage Road Northwest and Portertown Road. Wires blew down on Greenpoint Road. A tree blew down onto power lines on MD-36 Mount Savage Road Northwest near Moss Cottage Lane Northwest. A tree blew down blocking MD-36 Mount Savage Road Northwest above the Brick Yard. A tree blew down onto power lines on Woodcock Hollow Road.	$10,000
August 29, 2021	Two trees blew down in the Westernport and Luke area: one on wires on Riordan Road, and one on MD-135 Pratt Street.	$3,000
September 15, 2021	Large tree limbs and wires blew down on Lower Town Creek Road Southeast.	$2,000
March 7, 2022	Numerous trees and power lines were blown down throughout the city of Cumberland.	$6,000

Table 6-2. Thunderstorm Wind Events with Property Damage, 2006 to Present		
Date	**Event Narrative**	**Property Damage**
March 31, 2022	Two trees blew down in the 10000 block of Mason Dixon View.	$3,000
May 20, 2022	Tree damage was reported in Frostburg and Midlothian. A tree blew down onto a house in the 100 block of West Main Street. Two trees blew down on Old Legislative Road Southwest near Shaft Road Southwest.	$21,000
June 22, 2022	Tree damage was reported near McCoole, including along US-220 McMullen Highway Southwest near Dawson Cemetery Road.	$3,000
July 23, 2022	Tree damage was reported in Frostburg. A tree blew down onto wires bringing down a pole on First Street.	$16,000
August 4, 2022	A tree was reported down near the intersection of Oliver Beltz Road Southeast and Warrior Mountain Cutoff Road Southeast.	$1,000
August 6, 2022	Several trees blew down near Little Orleans. A tree blew down onto westbound I-68 National Freeway at Mile Marker 65. A tree blew down along Dug Hill Road.	$2,000
Source: National Centers for Environmental Information (NCEI), 2023.		

In terms of the number of occurrences, the NCEI listed a total of 76 thunderstorm wind events (with and without property damage) affecting the County between 2006 and 2023. Therefore, Allegany County experiences 4.47 thunderstorm wind events per year.

6.1.2 Lightning Strike History & Risk

Extent (Magnitude & Strength)

Lightning strikes are defined as sudden and violent discharges of electricity from within a thunderstorm due to a difference in electrical charges and represent a flow of electrical current from cloud-to-cloud or cloud-to-ground. Nationally, lightning strikes cause extensive damage to buildings and structures, kills or injures people and livestock, starts untold numbers of forest fires and wildfires, and disrupts electromagnetic transmissions. Lightning strikes are extremely dangerous during dry lightning storms because people remain outside due to the lack of precipitation; however, lightning is still present during the storm. Lightning strikes usually occur as a result of the thunderstorms that move through the area during the summer months. Peak months for lightning strikes are between May and September.

Lightning Strike History & Risk

The NCEI defines **lighting** as "a sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage." Table 6-3 provides an overview of recorded lightning strike events that have occurred in Allegany County since 1996 and Table 6-4 includes details for each event.

Table 6-3. Lightning Strike Events Overview
Allegany County from January 1996 – April 2023

4 Lightning events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	4	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	2	
Number of Days with Event and Property Damage:	3	$65,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Lightning**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Lightning (C). A sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage.

Table 6-4. Lightning Strike Events with Property Damage

Date	Event Narrative	Property Damage
May 7, 1999	A thunderstorm producing very heavy rainfall, winds over 55 MPH, large hail, and frequent lightning moved across Allegany County between 7:30 and 8:30 PM EDT. A lightning strike started a house fire on Frederick Street in Cumberland at 7:45 PM EDT. One person was reported injured as a result of the fire. Lightning also struck the 1st Presbyterian Church, damaging electrical equipment.	$10,000
September 5, 1999	Lightning also downed two main power poles near Frostburg in Allegany County on the 5th, causing 4700 customers to lose power. The poles were downed at the intersection of Interstate 68 and Route 36, and crews had to shut down Interstate 68 between midnight and 6 AM on the 6th to repair them.	$5,000
June 25, 2000	In Allegany County, a 45-year-old man was struck by lightning while standing under a camper awning near Little Orleans. The victim was thrown against the camper by the strike and received a black burn mark on his right hand. Trees were downed and hail also fell at the campsite.	Not Available
May 14, 2002	In Allegany County, winds between 50 and 65 MPH were reported by a spotter in Frostburg. Across the county, numerous trees and power lines were downed. In Cumberland, an unattached gabled roof blew off a building on Bond Street. The debris damaged structures nearby. A wind gust of 58 MPH was recorded at the Cumberland Regional Airport. In Frostburg, a power line and a streetlight were damaged. Lightning started a fire at a home in Cumberland which damaged the roof and the second story.	$50,000

Source: National Centers for Environmental Information (NCEI), 2023.

There are only four recorded lightning strike events that caused property damage in Allegany County between May 7, 1999, and April 2023 as indicated in Table 6-4. Utilizing the data from the table above, it can be determined that only 0.16 lightning strike events resulting in property damage occur annually.

6.1.3 Hail History & Risk

Hail is a form of solid precipitation that mostly consists of water and has been measured between 0.20 inches to 5.9 inches in diameter. The larger hail stones come from severe thunderstorms and can occur within two miles of the parent thunderstorm. Thunderstorms provide the strong, upward motion of air and lower heights for freezing from which hail is formed. The hail stones are suspended in the air by the strong upward motion of air until the weight of the hail overcomes the updraft and falls to the ground. The velocity at which hail falls to the ground is dependent on several factors: size of the stone, friction in the air, motion of the wind, collisions with other precipitation, and the melting factor. A hail stone measured at 0.39 inches falls at a rate of 20 mph while a larger stone, 3.1 inches in diameter, falls at a rate of 110 mph.

Extent (Magnitude & Strength)

According to the National Oceanic and Atmospheric Administration, hail magnitude and size is often estimated by comparing it to a known object. Hail of any size can be destructive, but larger sizes can be particularly devastating to people, property, and crops.

Commonly utilized comparisons when measuring the size of hail include the following list. Many of these comparisons are utilized in the event narratives of Table 6-6.

- Pea = 1/4 inch diameter
- Mothball = 1/2 inch diameter
- Penny = 3/4 inch diameter
- Nickel = 7/8 inch
- Quarter = 1 inch – hail quarter size or larger is considered severe
- Ping-Pong Ball = 1 1/2 inch
- Golf Ball = 1 3/4 inches
- Tennis Ball = 2 1/2 inches
- Baseball = 2 3/4 inches
- Teacup = 3 inches

- Softball = 4 inches
- Grapefruit = 4 1/2 inches

Hail History & Risk

According to the NCEI definition, **hail** is "frozen precipitation in the form of balls or irregular lumps of ice."

A total of 21 reported days with hail events were recorded by the NCEI Storm Events Database for Allegany County from 2006 to April 2023, however only those hail events of magnitude 1 inch or greater are included in Table 6-6. The full list of all hail events is available in *Chapter 3*.

Table 6-5. Hail Events Overview
Allegany County from January 2006 – April 2023

21 Hail events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	21	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	1	$21,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Hail**

Source: National Center for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Hail (C). Frozen precipitation in the form of balls or irregular lumps of ice. Hail 3/4 of an inch or larger in diameter will be entered. Hail accumulations of smaller sizes, which cause property and/or crop damage or casualties, should be entered. Maximum hail size will be encoded for all hail reports entered.

Table 6-6. Hail Events (≥ 1 Inch in Magnitude)

Date	Event Narrative	Magnitude (inches)
June 22, 2008	Amateur radio replayed a report of quarter-sized hail in Spring Gap.	1.00
May 28, 2010	Some thunderstorms became severe with large hail the primary threat.	1.00
March 23, 2011	Quarter sized hail was reported near Lonaconing. A stationary boundary was located over western Maryland on the 23rd. An upper-level disturbance tracked through the area during this time, bringing showers and thunderstorms. There was enough instability near the boundary for an isolated thunderstorm to produce large hail.	1.00
May 18, 2011	Quarter sized hail was reported at Eckhart Mines.	1.00
May 26, 2011	Hail ranging in size from 1.00 inches to 2.75 inches was reported near Cumberland, Keyser, McCoole, Spring Gap, Pinto, Westernport, Pumpkin Center, Flintstone, Little Orleans, North Branch, Oldtown, and Bellegrove. Property damage of $32,000 was reported in Bellegrove.	1.00 to 2.75

Table 6-6. Hail Events (≥ 1 Inch in Magnitude)		
Date	**Event Narrative**	**Magnitude (inches)**
May 27, 2011	Quarter sized hail was reported near Eckhart Mines, Pleasant Valley, and Woodland.	1.75
June 29, 2012	Quarter sized hail was reported.	1.00
July 4, 2012	Quarter sized hail was reported.	1.00
August 9, 2012	A cold front approached the Mid-Atlantic from the west during the afternoon. Instability and wind shear led to the development of severe thunderstorms that produced damaging winds and hail.	1.00
June 24, 2013	An upper level low was located over the region. Hot and humid conditions were at the surface with cold air aloft. Terrain circulations led to thunderstorm development in a conducive environment in the Potomac Highlands.	1.25
May 13, 2014	A cold front moved into the Mid-Atlantic from Delaware and showers and thunderstorms formed on the warm side where temperatures were near 90 and humid conditions led to heavy rain in activity.	1.00
September 4, 2015	Showers and thunderstorms were triggered along a nearly stalled back door cold front. Temperatures pushed well into the 80s, with even some 90s, allowing for MLCAPE values of around 2000 J/kg.	1.00
August 15, 2016	Quarter sized hail was reported.	1.00
2024 Plan Update		
July 16, 2020	Ping pong ball size hail was reported near Old Town.	1.50
July 12, 2022	Half dollar size hail was reported near Bellegrove.	1.25
September 25, 2022	Quarter size hail was reported in Barton.	1.00
Source: National Centers for Environmental Information (NCEI), 2023.		

The NCEI has listed a total of 21 hail events affecting Allegany County from 2006-2023. Therefore, the probability for the County of experiencing a hail event is 1.24 events per year.

Severe Thunderstorm Spotlight – 1997 Hailstorm

June 18, 1997 – A severe thunderstorm suddenly formed in an unstable air mass between 3-4 pm on the 18th. The storm hammered LaVale and the west side of Cumberland. Winds whipped the rain sideways in sheets, gusting up to 60 mph, bringing down numerous trees in the area.

Meanwhile, hail began to fall. First small hail fell, but it grew progressively larger –up to the size of golf balls (1.75" in diameter). Cars had noticeable dents in them after the severe storm. This storm also dumped torrential rain, with over an inch (1.04") falling in only a half-hour. A large car dealership about 2 miles northeast of my Locust Grove reported baseball-sized hail, which caused several million dollars in damage. Windshields were shattered, paint was stripped, and vehicles were severely dented, some totaled. This was perhaps the worst hailstorm to ever strike the area in recent history.

Source: www.natemullins.com/Top25Weather.pdf

6.1.4 Fog History & Risk

In his *Physical Geography Text*, Arthur Strahler defines fog as a form of stratus cloud lying close to the earth's surface. The two principal types are radiation and advection fog. Radiation fog commonly occurs at night during a temperature inversion when the air temperature at the base level falls below the dew point. Advection fog results from the movement of warm, moist air over a cold or snow-covered surface. While losing heat to the ground, the lower layers of air undergo a drop in temperature below the dew point and condensation sets in. Some of the densest fog conditions occur over oceans where air from a warm current blows across the cold surface of adjacent cold currents.

Fog History & Risk

According to the NCEI definition, **dense fog** is "water droplets suspended in the air just above the Earth's surface reducing visibility to values equal to or below locally/regionally established values for dense fog (usually 1/4 mile or less) and impacting transportation or commerce."

A total of 61 reported days with dense fog events were recorded by the NCEI Storm Events Database for Allegany County from 2006 to April 2023. The full list of all dense fog events is available in *Chapter 3*. These dense fog events are summarized in Table 6-7 and listed with detail in Table 6-8.

Table 6-7. Dense Fog Overview
Allegany County from January 2006 – April 2023

61 Dense Fog events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	61	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	2	
Number of Days with Event and Property Damage:	3	$65,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Dense Fog**

Source: National Center for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Dense Fog (Z). Water droplets suspended in the air just above the Earth's surface reducing visibility to values equal to or below locally/regionally established values for dense fog (usually 1/4 mile or less) and impacting transportation or commerce. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Accidents, which resulted in injuries or fatalities, during a dense fog event, are reported using this event category. These injuries or fatalities should be listed as indirect.

Table 6-8. Dense Fog Events Allegany County from January 2006 to April 2023	
Date	**Event Narrative**
December 26, 2005	Locally dense fog developed early in the morning on December 26. Visibilities fell to one-quarter mile or less in local areas.
January 24, 2006	Areas of dense fog occurred early in the morning of January 24.
February 23, 2006	Areas of dense fog occurred during the early morning.
October 18, 2006	Areas of dense fog formed early in the morning on the 18th. Visibilities were reduced below one-quarter mile in some areas.
October 19, 2006	Dense fog occurred early in the morning of the 19th. Visibilities were reduced below one-quarter mile in some areas.
May 11, 2007	Automated Observations from the Greater Cumberland Regional Airport reported dense fog with visibilities of one quarter mile or less at times. Areas of dense fog developed across central and western Maryland during the early morning hours of May 11th. Visibilities were reduced to one quarter mile or less at times.
May 19, 2007	Automated Observations from the Greater Cumberland Regional Airport reported dense fog, reducing visibilities to one quarter mile or less. Clear skies, light winds and moist ground combined to produce areas of dense fog across far western Maryland. Visibilities were reduced to a quarter mile or less at times during the early morning hours of May 19th.
August 7, 2007	Automated Surface Observations reported dense fog, reducing visibilities to one quarter mile or less along and west of the Allegheny Front in Allegany County, MD. A warm and humid air mass over the region allowed dense fog to develop along the Allegheny Front in western Maryland. Automated Surface Observations reported dense fog, reducing visibilities to a quarter mile or less during the early morning hours of August 7th.
November 5, 2007	Automated surface observations in Prince Georges County reported dense fog reducing visibilities to one quarter mile or less. The combination of moisture and a mostly clear and calm night lead to dense fog development during the overnight and early morning hours along the western shore of the Chesapeake Bay from lower southern Maryland to Baltimore as well as along the Allegheny Front of western Maryland. Local airports and automated observations reported fog reducing visibility to a quarter mile or less.
April 25, 2008	Areas of dense fog developed during the early morning hours of April 26th along the Allegheny Front and portions of the Blue Ridge. Visibilities were reduced to one quarter mile or less.
November 14, 2008	Visibility was down to one quarter of a mile near Westminster. Plenty of low-level moisture off the Atlantic Ocean was drawn into the region ahead of a warm front resulting in areas of dense fog. The dense fog developed on the night of the 13th and continued into the early morning of the 14th.
April 19, 2011	Visibility around one quarter of a mile was reported at Cumberland. A stationary boundary remained just to the south during the 19th and 20th. An easterly flow on the cool side of the front ushered in plenty of moisture from the Atlantic Ocean during this time. The moisture led to the development of dense fog late on the 19th into the morning hours of the 20th.
July 9, 2011	Visibility was estimated to be around one quarter of a mile due to observations nearby.
September 2, 2011	Visibility was reported to be around one quarter mile.
October 7, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.
October 8, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.
October 9, 2011	Visibility was estimated around one quarter mile based on observations nearby.

Table 6-8. Dense Fog Events Allegany County from January 2006 to April 2023	
Date	**Event Narrative**
October 10, 2011	Visibility was estimated to be around one quarter mile.
October 11, 2011	Visibility was estimated to be around one quarter mile based on observations nearby.
January 23 to January 24, 2012	Visibility was estimated to be around one quarter mile across portions of central and eastern Allegany County.
February 5 to February 6, 2012	Visibility was reported to be around one quarter mile in Cumberland.
March 1, 2012	Visibility was reported to be around one quarter mile.
April 29, 2012	Visibility was around one quarter mile at Cumberland.
October 1, 2012	Visibility was reported to be around one quarter mile at the Cumberland Airport.
October 3, 2012	Visibility was reported to be around one quarter mile at Cumberland.
November 21, 2012	Visibility was reported to be around one quarter mile at Cumberland Airport and by satellite.
December 10, 2012	Visibility was reported to be around one quarter mile at Cumberland Airport.
December 18, 2012	Visibility was estimated around a quarter mile at Cumberland airport.
January 12, 2013	Visibility was reported around a quarter mile at Cumberland Airport.
January 13, 2013	Visibility was reported around a quarter mile at Cumberland Airport.
August 4, 2013	Visibilities of around a quarter mile were estimated at Cumberland Airport
August 20, 2013	Visibilities around a quarter mile were estimated at Petersburg.
August 24, 2013	Visibilities around a quarter of a mile were estimated at Cumberland Airport and by satellite.
January 11, 2014	Visibility of a quarter mile or less was measured at Cumberland Airport.
November 26 to November 27, 2014	Visibilities of one-quarter mile or less were reported at ALW28 in Frostburg and AWOS CBE.
November 26 to November 27, 2014	Visibilities of one-quarter mile or less were reported across the county.
December 23, 2014	Observations from surrounding counties reported one-quarter mile visibilities.
December 23, 2014	Surrounding counties reported visibilities of one-quarter mile.
December 23 to December 24, 2014	Surrounding counties reported visibilities of one-quarter mile.
December 24, 2014	HGR and MRB reported one-quarter mile visibilities.

Table 6-8. Dense Fog Events Allegany County from January 2006 to April 2023	
Date	**Event Narrative**
January 21 to January 22, 2015	CBE reported visibilities of one quarter mile or less multiple times throughout the night.
March 10 to March 11, 2015	CBE reported one quarter mile or less visibilities.
May 7, 2015	Visibilities of one quarter mile or less were reported at CBE.
June 6, 2015	One quarter mile or less visibilities were reported at CBE.
October 11, 2015	CBE reported reduced visibilities of one quarter mile or less.
October 12, 2015	CBE reported reduced visibilities of one quarter mile or less.
February 3 to February 4, 2016	CBE reported reduced visibilities of one quarter mile or less.
May 27 to May 28, 2017	Visibility was estimated to be around one-quarter mile based on observations nearby.
May 27, 2017	Visibility was estimated to be around one-quarter mile based on observations nearby.
July 26, 2018	Visibility was around one quarter mile based on observations nearby.
August 13, 2018	Observations from around the area indicate that visibility fell to a quarter mile or less in dense fog.
September 29, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
September 29, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
October 3, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
October 8, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
December 2, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
December 28, 2018	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
February 6, 2019	Observations from around the area indicate visibility fell to a quarter of a mile or less in dense fog.
July 9, 2019	Observations indicated that visibilities were reduced to a quarter of a mile or less in dense fog.
July 24, 2019	Observations indicated that visibilities were reduced to a quarter of a mile or less in dense fog.
October 22, 2019	An onshore flow led to increasing amounts of moisture underneath a strong temperature inversion, and this led to the development of dense fog. Visibility was reported to be around one-quarter mile.
December 30, 2019	Moisture underneath a subsidence inversion resulted in areas of dense fog. Visibility was around one-quarter mile.
January 4, 2020	Light winds beneath a subsidence inversion atop saturated ground led to the formation of fog across central MD. Visibilities were around a quarter of a mile.

Table 6-8. Dense Fog Events Allegany County from January 2006 to April 2023	
Date	**Event Narrative**
January 14, 2020	Moist air at low levels was trapped beneath a subsidence inversion and winds went calm as high pressure moved overhead, leading to the formation of fog across much of central and western Maryland. Visibilities were around a quarter of a mile.
May 23, 2020	Visibility was around one-quarter mile.
September 27, 2020	Dense fog occurred with 1/4 mile visibility or less recorded during the late night and early morning.
December 21, 2020	Dense fog developed early in the morning, with widespread visibility of 1/4 mile or below. Fog dissipated towards noon.
January 15, 2021	Light winds and residual moisture allowed fog to develop late on the night of January 15th. The fog dissipated early on January 16th.
February 28, 2021	Light winds and excessive low level moisture allowed areas of dense fog to form during the evening of the 28th. The fog dissipated before dawn on the 1st.
March 24, 2021	Light winds and plentiful low level moisture allowed areas of dense fog to form late on the 24th. The fog dissipated just after dawn on the 25th.
May 17, 2021	Light winds and plenty of low level moisture allowed areas of dense fog to form before dawn. The fog dissipated shortly after sunrise.

The NCEI has listed a total of 61 recorded hail events affecting Allegany County from 2006-2023; none of these events reported property damage. Therefore, the probability for the County of experiencing a dense fog event is 3.59 events per year. However, the total number of days with dense fog is likely much higher than what is reported in the NCEI database. According to the U.S. Department of Agriculture (USDA), most of Allegany County experiences 20-30 days with dense fog annually, and western Allegany County experiences over 30 days of dense fog annually.

6.2 County Perspective

The *2021 State Hazard Mitigation Plan* identifies thunderstorms as a category which includes lightning and hail. Allegany County's ranking in the State Plan for this category was "medium." However, HMPC members ranked severe weather, which includes thunderstorm, lightning, hail, and also fog, as "medium-high." This slightly higher ranking is due to the number of occurrences for all four types of events that affect the County and the severity of several of these events in the past, such as dense fog.

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks severe weather as sixth.

Allegany County is affected by thunderstorm activity both by the interaction of warm and cool air masses and by the lifting of warm air as it passes over the Appalachian Plateau. Thunderstorms are more common in the spring when frontal zones are passing over the county from west to east and during the summer months when warm, moist air is lifted over the Plateau from the south and west. Intense thunderstorms over the steep terrain in Allegany County result in rapid runoff, particularly in the headwaters of small stream basins. The Georges Creek Watershed is particularly steep and has high runoff rates. In urban areas runoff from stormwater is a problem for downstream property owners when new construction occurs upslope from existing developed areas that have inadequate stormwater systems. Furthermore, as shown on *Appendix A-6 (Average Number of Days with Dense Fog)*, Allegany County lies in the area of the eastern U. S. having 20-40 days of dense fog per year.

According to the Department of Agriculture's "Climate and Man", most of the Appalachian Plateau has 30 or more dense fog days annually, but the Plateau area from central West Virginia to southern Pennsylvania has more than 50 dense fog days annually. Western Allegany County is prone to dense fog conditions in every season, but particularly so during winter and spring months when temperature inversions are common. This condition is more pronounced when the ground is snow covered and warm air flows into the county from the west and south.

This phenomenon produces poor visibility, which is a particular concern along I-68; the major east-west highway shown on *Appendix A-8 (Transportation Facilities)*. If dense fog occurs on a weekend when out of area drivers who are not familiar with this type of driving condition are traveling through the county, deteriorating visibility becomes deadly. Unlike most winter storms or heavy rainfall events there is little or no warning before visibility becomes severely limited.

Dense fog occurs more than 30 times a year on average in western Allegany County. While many of these events have resulted in vehicle accidents, the most well-known recent event occurred in June 2003, when a very dense fog set in on Big Savage Mountain between Frostburg and the Finzel area along I-68. Before officials could provide a warning or close the highway, two multiple chain reaction accidents occurred, involving more than 70 vehicles and causing 2 deaths. Due to the large number of fog events each year and the possibility of another major chain reaction accident; the HMPC has rated the risk for severe weather, including fog, as "medium-high."

6.3 Municipal Perspective

The municipalities in Allegany County face the same threat from severe weather as identified within this chapter as the county. In some cases, in older developed areas, inadequate stormwater management contributes to damage from flash flooding in low lying residential areas or in older residential areas downslope from new construction. The Georges Creek Watershed, which includes the municipalities of Midland, Lonaconing, Barton, Westernport, and Luke seem to be particularly susceptible to the flash floods that result from thunderstorms or cloud burst storms due again to the topography of the area and the settlement patterns of the past.

Additionally, like winter storms, there is little difference in the way fog affects municipalities in Allegany County. Fortunately, vehicles are normally traveling slower inside corporate boundaries and existing landmarks do provide some perspective, particularly where streetlights are located.

6.4 Impacts to People, Systems, and Resources

Due to the size of thunderstorms, which average 15 miles in diameter according to the National Weather Service, most areas of the county will be impacted in some way during a thunderstorm or severe weather event. However, as evidenced by past occurrences, certain resources tend to be the most adversely impacted by severe weather hazards.

High wind and lightning associated with thunderstorms are most likely to negatively impact the County's people and resources than hail and fog. Thunderstorm wind is most likely to impact people via causing property damage, blocking transportation systems, and damaging public utilities as described in detail in the event narratives included in Table 6-2. Since 2006, the County has experienced a reported 52 days with thunderstorm wind – causing $433,000 in property damage and $8,250 in crop damage. Most of the events involved damage to trees and/or power lines. Recently, the most damaging thunderstorm wind events included the following:

- November 15, 2020 – There were nearly two dozen reports of trees blown down throughout the County, property damage estimates totaled $25,000.
- May 22, 2020 – Tree damage was reported in Frostburg and Midlothian. A tree blew down onto a house in the 100 block of West Main Street. Two trees blew down on Old Legislative Road Southwest near Shaft Road Southwest. Property damage estimates totaled $21,000.
- July 23, 2022 – Tree damage was reported in Frostburg. A tree blew down onto wires bringing down a pole on First Street. Property damage estimates totaled $16,000.

- August 26, 2021 - Numerous trees blew down in the Flintstone area, including along Murrays Branch Road and Williams Road at Stickley Road. Wires blew down near the intersection of Georges Creek Road and Welsh Hill Road. Property damage estimates totaled $10,000.

Every thunderstorm produces lightning, which kills more people each year than tornadoes and hurricanes. According to the National Weather Service, lightning kills about 20 people each year in the United States and injures hundreds. Therefore, residents throughout the County should take precautions prior to thunderstorm events and take heed of emergency notifications by staying indoors or somewhere safe. The most at-risk population for lightning strikes are males who are enjoying outdoor leisure activities, particularly fishing. According to the National Lightning Safety Council, lightning strike data collected over a 14 year period (2006 through 2019) shows that males accounted for 79% of all lighting-related fatalities, and about 90% of the deaths in the fishing, sports, and work categories.

As discussed in Chapter 2, the population of Allegany County is projected to increase by 8.9% by 2045. With the exception of the Town of Midland, all municipalities have experienced decreased population between 2010 and 2020. Therefore, severe storm related injuries and deaths may increase in proportion to the increase in total population in the County's unincorporated areas.

Outdoor activities are a major component of tourism and leisure in Allegany County; therefore, these groups need to take extra precautions in order to mitigate risks. Residents and visitors can sign up for emergency alerts, such as for severe weather, via the online "Notify Me" alert system.

Impacts to Vulnerable Populations

As first outlined in Chapter 5: Winter Storm, social vulnerability was reviewed for the County at the census tract level utilizing FEMA's National Risk Index and the CDC's Social Vulnerability Index.

The index concludes that Allegany County has a "relatively moderate" susceptibility to the adverse impacts of natural hazard when compared to other counties in the United States. The highest areas of social vulnerability within the County include tracts primarily comprising the City of Cumberland, City of Frostburg, Town of Barton, and the Town of Lonaconing. Figure 5-3 shows social vulnerability mapped for each census tract within the County. Darker blue areas indicate the census tracts with the highest level of social vulnerability.

During this plan update, specific groups have been identified as being more vulnerable to severe weather than others. These groups were identified via the planning process, HMPC

members, and the National Risk Index.

Groups identified as more vulnerable to severe weather as identified within this plan include:

- Elderly/Aging population – particularly in the City of Frostburg
- Populations requiring at-home durable medical equipment
- Low-income populations – particularly in the City of Cumberland
- Non-English speaking populations
- Visitors/outdoorsmen

6.5 Mitigation Capabilities

As mentioned under the Flood Hazard section of this plan, the County has purchased numerous homes in floodplain areas. These purchases were more the result of chronic stream flooding from large-scale rain or snow melt, rather than from thunderstorm events. The County does, however, enforce its Floodplain Ordinance in mapped floodplain areas prone to thunderstorm runoff and requires a setback from unmapped streams. In addition, the Stormwater Management Ordinance requires storage and release of runoff at predetermined rates in newly developing areas.

In regard to fog events, the State Highway Administration has installed digital warning signs at a number of locations in and near the most severe fog areas along Interstate 68 as one method to warn drivers to slow down in poor driving conditions. In the aftermath of the 2003 fog event and the subsequent multiple car crash, both state and local agencies have met to develop methods to mitigate this problem in the future.

6.6 Future Conditions

It is not well known how climate change might impact the strength and frequency of thunderstorms, as is the case with tornadoes. However, the frequency and severity of severe weather events is projected to increase.

Climate modeling predicts that conditions conducive to severe thunderstorms will arise more often as the Earth warms up. Modeling suggests that weather conditions which lead to severe storms will arise 5% to 20% more often per one degree Celsius of global temperature change, primarily due to increased atmospheric instability .

However, because severe storms do not always arise even in the most favorable conditions, any associated increase in severe thunderstorms is expected to be smaller. Compared with other regions, the Northern Hemisphere is predicted to experience the largest increase in convective environments (i.e., environments favorable to creating severe storms) .

Given this information, the future annual average rate of thunderstorms can be estimated for Allegany County given two possible scenarios considering a current incidence of 7.1 severe weather events annually. The most conservative scenario – a 5% increase in severe weather conditions per one degree Celsius of global temperature change – would mean the County would average approximately 7.5 severe weather events per year in the future. In the most extreme scenario – a 20% increase in severe weather conditions – the County would average approximately 8.5 events per year in the future.

Due to the nature of this hazard and its lack of well-defined geographic extent, future development and population trends are negligible to how said trends will progress. However, future development should always consider building to the latest building code standards set forth by the County or municipality in which development is occurring. Mitigation measures that prioritize development fortified against lightning and hail (i.e., ground structures and impact resistant glass) should also be encouraged for property owners who are developing or redeveloping.

Chapter 7:HazMat Transportation

2024 Plan Updates

Chapter 7: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 7-2: Section 7.1 has been updated. Hazmat incidents included in Table 7-1 have been added to include incidents within the past five years and the annualized events and probability of future occurrence has been modified to reflect these new incidents.

Page 7-7: Section 7.2 County Perspective was updated to include hazmat transportation risk ranking information from Chapter 3, as well as public survey results regarding level of concern for this hazard. This section has been reviewed to ensure information is up to date.

Page 7-9: Section 7.3 Municipal Perspective has been reviewed and updated to represent current risk and capabilities.

Page 7-10: Figure 7-3 has been updated to the latest Annual Average Daily Traffic Map (AADT) (2021).

Page 7-13: Section 7.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts hazmat transportation incidents have on people, systems, and resources.

Page 7-13: Figure 7-5 has been added that shows AADT for routes in and around the City of Cumberland. The City has a convergence of most of the County's heavily traveled roadways.

Page 7-14: Section 7.5 Mitigation Capabilities has been reviewed to ensure hazmat transportation mitigation capabilities are up to date.

Page 7-14 Added Section 7.6 Future Conditions. This section examines how the frequency of hazardous materials incidences may change in the future.

Page 7-15: Added Figure 7-6. Ten-year Hazardous Material Total Incidents Data.

CHAPTER 7 HAZMAT TRANSPORTATION

7.1 HazMat Transportation Profile

The release of hazardous materials (HazMats) while in transit is of great concern to the U.S. Department of Transportation (DOT). While most hazardous materials are stored and used at fixed sites, these materials are usually produced elsewhere and shipped to the fixed facility by rail car, truck, or onboard ships or barges. While these vehicles are identified by placards denoting the hazard, the possibility of release is present at any time. Hazardous materials are constantly being moved in Maryland on interstate highways and rail systems.

In terms of the number of occurrences, the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration's, Office of Hazardous Materials Safety listed a total of 82 HazMat Transportation Incidents occurring in Allegany County from 1976 to 2022. Therefore, Allegany County experiences 1.78 HazMat Transportation incidents per year.

In reviewing the data specific to modes of transportation in Table 7-1, there are two types of modes of transportation that are involved in HazMat incidences within the County. Highway transportation incidents account for 46 of the 82 total HazMat incidents. Highway transportation incidents are listed between 1976 through 2022, an average of 1.0 highway HazMat transportation incidents occurs per year. Rail HazMat incidents account for 36 of the incidents listed in Table 7-1. Therefore, 0.78 rail HazMat incidents per year occur in the County.

Table 7-1. Transportation HazMat Incidents, 1976-2022

Date	Location	Mode of Transportation	Carrier	Damages ($)	Commodity	Quantity Released
January 29, 1976	Flintstone	Highway	MATLACK INC	$0	COMBUSTIBLE LIQUID, N.O.S.	25 LGA
August 10, 1976	Cumberland	Highway	MATLACK INC	$0	FUEL OIL	2 LGA
October 20, 1976	Cumberland	Rail	BALTIMORE & OHIO RR CO.	$0	FUEL OIL	8000 SLB (7 injuries)
February 4, 1977	LaVale	Highway	UNION CARBIDE CORP.	$0	METHYL ETHYL KETONE	31 LGA
April 17, 1977	Cumberland	Rail	CHESSIE SYSTEM	$0	HYDROCHLORIC ACID, SOLUTION	1500 LGA
June 18, 1977	Cumberland	Highway	HALLS MOTOR TRANSIT COMPANY	$0	HYDROGEN SULFIDE, LIQUEFIED	75 SLB
July 13, 1977	Cumberland	Highway	CHARLTON BROS TRNSPTN COMPANY	$0	BATTERY FLUID, ACID	2 LGA

Table 7-1. Transportation HazMat Incidents, 1976-2022						
Date	**Location**	**Mode of Transportation**	**Carrier**	**Damages ($)**	**Commodity**	**Quantity Released**
July 26, 1977	Cumberland	Highway	CHARLTON BROS TRNSPTN COMPANY	$0	COMPOUND, LACQUER, PAINT, OR VARNISH, REMOVING, REDUCING, OR THINNING, LIQUID	2 LGA
August 11, 1977	Cumberland	Highway	COASTAL TANK LINES INC	$0	SOLVENT, N.O.S.	1930 LGA
June 1, 1978	Cumberland	Rail	BALTIMORE & OHIO RR CO.	$0	ETHYLENE, COMPRESSED	1 LGA
June 4, 1978	Cumberland	Highway	FLORIDA-TEXAS FREIGHT INC	$0	ACRYLIC ACID, INHIBITED	35 LGA
January 30, 1979	Cumberland	Highway	CHARLTON BROS TRNSPTN COMPANY	$0	BATTERY FLUID, ACID	5 LGA
February 7, 1979	Cumberland	Highway	SMITHS TRANSFER CORPORATION	$0	CORROSIVE SOLIDS, N.O.S.	75 SLB
August 8, 1979	Cumberland	Highway	WEIGAND A J INC	$0	NITROBENZENE	167 LGA
August 26, 1980	Cumberland	Highway	CHEMICAL LEAMAN TANK LINES INC	$0	METHANOL OR METHYL ALCOHOL	10 LGA
February 19, 1981	Cumberland	Rail	CHESSIE SYSTEM	$0	AMMONIA, ANHYDROUS, LIQUEFIED	5 LGA
June 2, 1981	Flintstone	Highway	DU PONT E I DE NEMOURS & CO	$0	PAINT RELATED MATERIAL	5 LGA
August 25, 1981	Cumberland	Highway	UNITED PARCEL SERVICE	$0	ACETIC ACID SOLUTION	2 LGA
December 28, 1981	Cumberland	Rail	BALTIMORE & OHIO RR CO.	$0	SULFURIC ACID, SPENT	2000 LGA
June 1, 1983	Cumberland	Rail	MONTANA SULPHUR & CHEMICAL CO	$0	HYDROGEN SULFIDE, LIQUEFIED	1 SLB
August 18, 1983	Cumberland	Highway	D.M. BOWMAN INC	$0	FUEL OIL	50 LGA
April 11, 1984	Luke	Highway	BALTIMORE TANK LINES INC	$0	ALUMINUM SULFATE SOLUTION	4200 LGA
March 11, 1985	Cumberland	Highway	BIG T TRANSFER INC	$0	CALCIUM CARBIDE	2 SLB
May 3, 1985	Luke	Highway	GRACE W R & CO	$0	CAUSTIC ALKALI LIQUIDS, N.O.S.	20 LGA
March 6, 1988	Cumberland	Rail	CSX TRANSPORTATION	$0	ETHANOL SOLUTIONS	5000 LGA
December 23, 1988	Cumberland	Rail	CSX TRANSPORTATION	$0	HYDROCHLORIC ACID, SOLUTION	1 LGA
May 18, 1989	Cumberland	Rail	CSX TRANSPORTATION	$0	HYDROCHLORIC ACID, SOLUTION	5 LGA
September 7, 1989	Cumberland	Rail	CSX TRANSPORTATION	$0	PETROLEUM GASES, LIQUEFIED	1.25 LGA
March 22, 1990	Cumberland	Highway	PITT OHIO	$0	RESIN SOLUTION, FLAMMABLE	2 LGA

Table 7-1. Transportation HazMat Incidents, 1976-2022						
Date	**Location**	**Mode of Transportation**	**Carrier**	**Damages ($)**	**Commodity**	**Quantity Released**
August 3, 1990	Frostburg	Highway	CENTRAL TRANSPORT INC	$0	DICHLOROMETHANE	5 LGA
October 24, 1990	Cumberland	Rail	CSX TRANSPORTATION, INC.	$0	ETHANOL SOLUTIONS	1 LGA
April 7, 1991	Cumberland	Highway	YRC INC.	$1,080	PAINT RELATED MATERIAL	10 LGA
June 1, 1991	Cumberland	Highway	EASTERN MOTOR TRANSPORT INC	$307,500	GASOLINE	8500 LGA
March 2, 1992	Cumberland	Highway	GAP SELF STORAGE	$5,000	COMBUSTIBLE LIQUID, N.O.S.	50 LGA
May 21, 1992	Cumberland	Highway	U.S. INTERMODAL CORP OF SOUTH CAROLINA	$40,000	MAGNESIUM SILICIDE	946 SLB
July 31, 1992	Cumberland	Highway	PITT OHIO	$252	SODIUM HYDROXIDE, SOLUTION	5 LGA
November 11, 1992	Cumberland	Highway	PITT OHIO	$550	CYCLOHEXYLAMINE	20 LGA
December 28, 1992	Cumberland	Highway	CRST INTERNATIONAL, INC	$267,000	RESIN SOLUTION, FLAMMABLE/ COMPOUND, CLEANING, LIQUID/PAINT	3531 LGA
March 13, 1993	Cumberland	Highway	YRC INC.	$650	RESIN SOLUTION, FLAMMABLE	25 LGA
April 18, 1994	Cumberland	Rail	CSX TRANSPORTATION, INC.	$0	BUTYLACRYLATE	5 LGA
July 21, 1994	Cumberland	Highway	DENNY TRANSPORT INC	$5,020	INK PRINTERS FLAMMABLE	2 LGA
February 25, 1995	Cumberland	Highway	VITRAN EXPRESS, INC	$75	HYPOCHLORITE SOLUTIONS	2 LGA
February 10, 1997	Cumberland	Rail	CSX TRANSPORTATION, INC	$0	PHOSPHORIC ACID	100 LGA
May 18, 1997	Cumberland	Highway	THREE TEE'S INC	$35	GASOLINE	30 LGA
June 27, 1997	Cumberland	Rail	CSX TRANSPORTATION, INC.	$1,000	ENVIRONMENTALLY HAZARDOUS SUBSTANCES	5 LGA
February 19, 2000	Cumberland	Highway	CLI TRANSPORT, LP	$52,034	GASOLINE	1082 LGA
August 12, 2000	Cumberland	Rail	CSX TRANSPORTATION, INC.	$1,500	ETHYLENE	10 LGA
May 16, 2001	Cumberland	Highway	SUTTLES TRUCK LEASING, L.L.C.	$500	N-PROPANOL OR PROPYL ALCOHOL NORMAL	3 LGA
November 16, 2001	Cumberland	Highway	UPS GROUND FREIGHT, INC	$3,750	RESIN SOLUTION, FLAMMABLE	25 LGA

Table 7-1. Transportation HazMat Incidents, 1976-2022						
Date	**Location**	**Mode of Transportation**	**Carrier**	**Damages ($)**	**Commodity**	**Quantity Released**
May 8, 2002	Cumberland	Rail	CSX TRANSPORTATION, INC	$2,600	FERRIC CHLORIDE, SOLUTION	20 LGA
November 1, 2002	Cumberland	Rail	CSX TRANSPORTATION, INC.	$10,500	PETROLEUM DISTILLATE	350 LGA
March 27, 2003	Cumberland	Rail	CSX TRANSPORTATION, INC	$1,000	HYDROCHLORIC ACID, SOLUTION	1 LGA
September 3, 2003	Cumberland	Highway	SEL-LO OIL, INC	$1,035	FUEL OIL	25 LGA
May 6, 2004	Cumberland	Rail	CSX TRANSPORTATION, INC	$6,520	ACETONE	10 LGA
October 10, 2004	Cumberland	Rail	CSX TRANSPORTATION, INC	$1,500	ELEVATED TEMPERATURE LIQUID, FLAMMABLE	6 LGA
November 1, 2004	LaVale	Highway	ROBBIE D. WOOD, INC.	$8,000	PCB	50 LGA
November 17, 2004	Cumberland	Rail	CSX TRANSPORTATION, INC	$0	METHANOL OR METHYL ALCOHOL	2 LGA
January 1, 2006	Cumberland	Rail	CSX TRANSPORTATION, INC	$3,000	ALCOHOLIC BEVERAGES	50 LGA
January 12, 2006	Cumberland	Rail	CSX TRANSPORTATION, INC	$3,000	STYRENE MONOMER, INHIBITED	10 LGA
March 17, 2006	Cumberland	Rail	CSX TRANSPORTATION, INC	$5,000	SULFURIC ACID, SPENT	5 LGA
April 13, 2006	Cumberland	Rail	CSX TRANSPORTATION, INC	$5,000	ALCOHOLS, N.O.S.	1 LGA
August 23, 2006	Cumberland	Rail	CSX TRANSPORTATION, INC	$1,500	ACRYLIC ACID, INHIBITED	3 LGA
January 28, 2007	Cumberland	Rail	CSX TRANSPORTATION, INC	$3,000	ALCOHOLS, N.O.S.	1 LGA
April 8, 2007	Cumberland	Rail	CSX TRANSPORTATION, INC	$3,000	SULFURIC ACID	1 LGA
September 4, 2007	Cumberland	Rail	CSX TRANSPORTATION, INC	$5,000	FLAMMABLE LIQUIDS, N.O.S.	1 LGA
April 24, 2008	Cumberland	Rail	CSX TRANSPORTATION, INC	$0	HYDROGEN PEROXIDE	4 LGA
May 13, 2008	Cumberland	Rail	CSX TRANSPORTATION, INC	$0	ISOPROPANOL OR ISOPROPYL ALCOHOL	1 LGA

Table 7-1. Transportation HazMat Incidents, 1976-2022						
Date	**Location**	**Mode of Transportation**	**Carrier**	**Damages ($)**	**Commodity**	**Quantity Released**
May 13, 2009	Cumberland	Highway	UPS GROUND FREIGHT, INC	$2,000	COMPOUND, CLEANING, LIQUID	10 LGA
October 12, 2010	Cumberland	Rail	CSX TRANSPORTATION, INC	$3,000	FERRIC CHLORIDE, SOLUTION	5 LGA
April 18, 2011	Cumberland	Highway	UNITED PARCEL SERVICE INC.	$0	FLAMMABLE LIQUIDS, N.O.S.	1.5 LGA
April 23, 2012	Frostburg	Highway	VITRAN EXPRESS, INC.	$3,500	PAINT	10 LGA
October 28, 2014	Luke	Highway	QUALITY CARRIERS INC.	$0	SODIUM HYDROXIDE SOLUTION	50 LGA
November 26, 2014	Cumberland	Highway	UPS GROUND FREIGHT INC.	$2,000	RESIN SOLUTION FLAMMABLE	4 LGA
January 29, 2015	Cumberland	Highway	PITT-OHIO EXPRESS LLC	$0	PAINT INCLUDING PAINT LACQUER ENAMEL STAIN SHELLAC SOLUTIONS VARNISH POLISH LIQUID FILLER AND LIQUID LACQUER BASE	1 LGA
August 19, 2015	Cumberland	Highway	PITT-OHIO EXPRESS LLC	$0	HYDROCHLORIC ACID	1 LGA
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October 6, 2016	Cumberland	Rail	CSX TRANSPORTATION	$3,000	FUEL OIL (NO. 1, 2, 4, 5, OR 6)	1 LGA
February 13, 2017	Cumberland	Rail	CSX TRANSPORTATION	$10,000	SODIUM HYDROXIDE SOLUTION	5 LGA
March 13, 2018	Cumberland	Highway	PTT OHIO	$0	METHANOL	6 LGA
November 2, 2019	Cumberland	Rail	CSX TRANSPORTATION, INC.	$2,500	FUEL OIL (NO. 1, 2, 4, 5, OR 6)	1 LGA
January 9, 2020	Cumberland	Rail	CSX TRANSPORTATION, INC.	$2,500	LIQUEFIED PETROLEUM GAS	1 LGA
April 29, 2020	Cumberland	Highway	MC TANK TRANSPORT	$150	ALKYL SULFONIC ACIDS, LIQUID OR ARYL SULFONIC ACIDS, LIQUID WITH NOT MORE THAN 5 PERCENT FREE SULFURIC ACID	2,500 LGA
December 1, 2021	Cumberland	Highway	PITT-OHIO EXPRESS LLC	$0	HYPOCHLORITE SOLUTIONS	1 LGA
			Totals	**$774,251**		

Source: U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration's, Office of Hazardous Materials Safety
***Note**: LGA – Liquid Gallons and SLB – Solid Pounds. Any spill under 1 LGA was not recorded.

7.2 County Perspective

The *2021 State Hazard Mitigation Plan* does not profile HazMat Transportation as its own hazard, but it does include "transportation accidents" as a sub-hazard of "human-caused hazards and threats." The State Plan identifies Allegany County's risk ranking for human-caused hazards and threats as "medium-high." Allegany County HMPC members ranked the HazMat Transportation hazard as "high" as well.

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the hazmat transportation hazard as first.

Historically, most HazMats moving though Allegany County have been on Interstate 68 (I-68) and the CSX railroad. The same is true for today, the bulk of hazardous materials still passing through the County by truck utilize Interstate 68, which crosses the northern part of the County from west to east. Additional routes utilized to transport hazardous materials include: State Routes 36, 40, 220 and 51.

Hazardous materials continue to be transported via the CSX Railroad. One of the company's major rail yards is located within the City of Cumberland. The railway traverses the southern border of Allegany County as well as along Route 36 through the Georges Creek and Jennings Region. These routes merge at the Cumberland rail yard then continue along the southern border into Washington County.

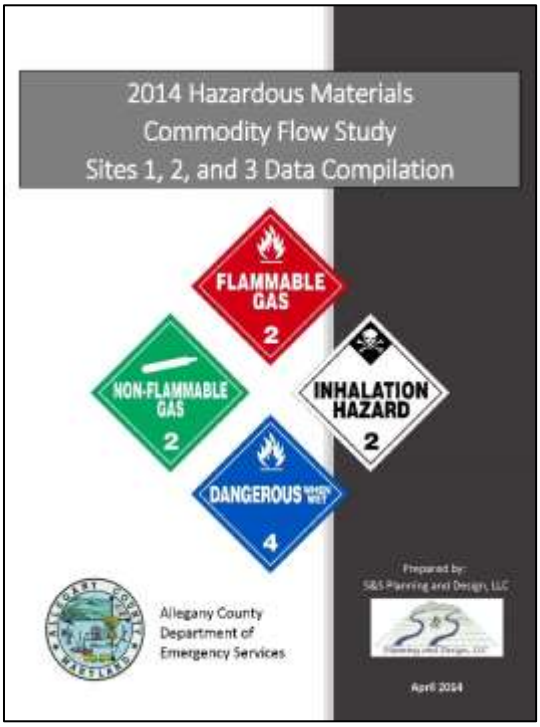


Figure 7-1. 2014 Hazard Materials Commodity Flow Study, Sites 1, 2, and 3 Data Compilation.

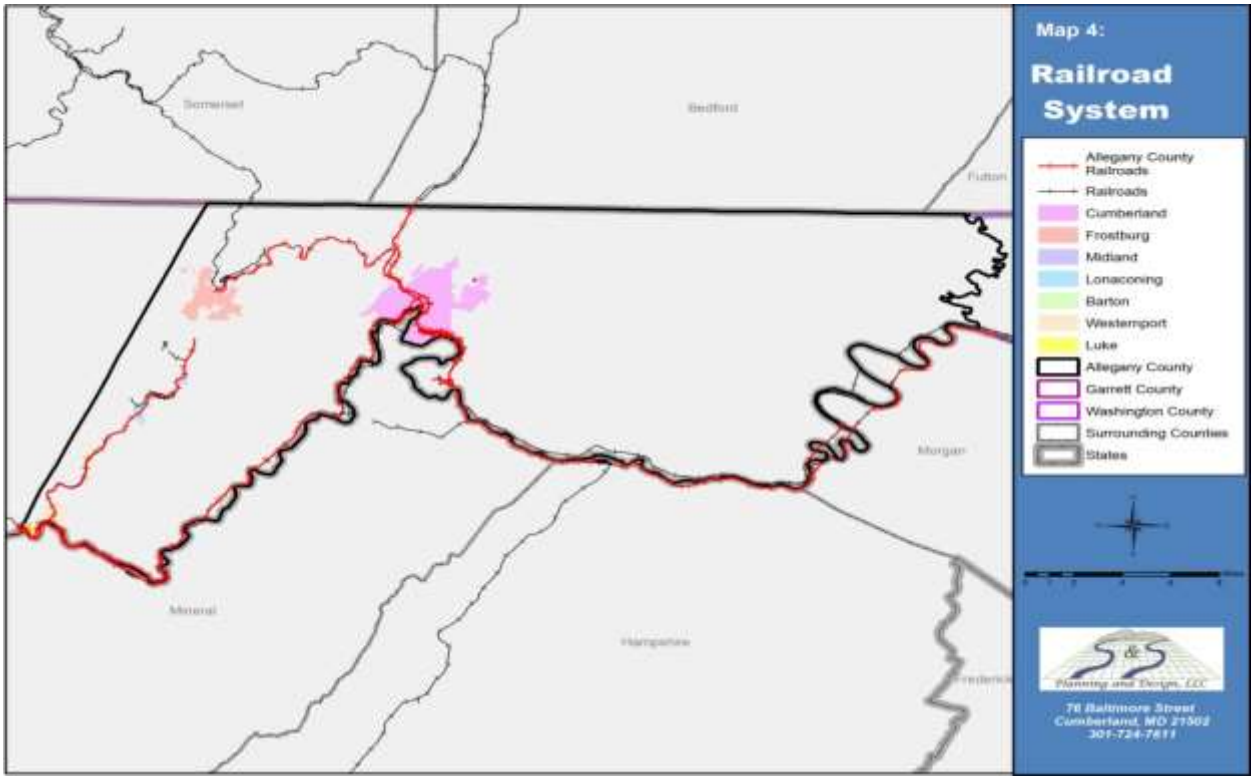


Figure 7-2. Railroad system in Allegany County.

In reviewing the *2014 Allegany County Hazardous Materials Commodity Flow Study – Sites 1,2, and 3 Data Compilation*, the following three (3) sites within the County were monitored:

1. Interstate 68 Westbound
2. U.S. Route 220 Southbound
3. State Route 51 Northbound

The study indicated the top five (5) hazardous commodities being transported within the County were Gasoline – 1203, Butane/Propane – 1075, Corrosive, Flammable 3, and Combustible Liquid Fuel – 1993.

In addition, critical and public facilities located within 1,000 feet of the center line along Interstate 68, Route 220 (northern section from PA line to I-68), and Route 51 were analyzed. These facilities may be at risk depending upon the type and quantity of hazardous material released. Facilities at-risk are listed on Table 7-2 (next page) and depicted on Figure 7-3, on page 7-9.

Note: The County's Commodity Flow Study has not been updated since the 2014 study was completed. Therefore, It is recommended mitigation action item that a new Commodity Flow Study be conducted within the next five years.

Table 7-2. Critical and Public Facilities Along Identified Routes in Allegany County			
Facility Type	**Facility Name**	**Location**	**Route**
Fire Department	Baltimore Pike Volunteer Fire Company	15010 Baltimore Pike, NE	I-68
Fire Department	Bedford Road Volunteer Fire Department	13200 Bedford Road, NE	U.S. 220
Fire Department	Clarysville Volunteer Fire Company	16304 Clarysville Road, SW	I-68
Fire Department	District 16 Volunteer Fire Department	12100 N Branch Rd. SE	SR 51
Government	Allegany County Government Complex	701 Kelly Road	I-68
Government	Allegany County Public Works	3 Commerce Drive	U.S. 220
Government	Allegany County Sanitary District	22810 Gilpin Road, NE	I-68
Government	City of Cumberland City Hall	57 North Liberty Street	I-68
Healthcare	Tri-State Community Health Center	621 Kelly Road	I-68
Healthcare	United Cerebral Palsy	1252 Braddock Road	I-68
Healthcare	United Cerebral Palsy Central MD	449 Pennsylvania Ave.	SR 51
Library	Allegany County Library	33 Washington Street	I-68
Police	Allegany County Sheriff's Office	695 Kelly Road	I-68
School/Education	Board of Education	108 Washington Street	I-68
School/Education	Flintstone Elementary School	22000 National Pike, NE	I-68
Source: 2014 Allegany County Hazardous Materials Commodity Flow Study – Sites 1,2, and 3 Data Compilation.			

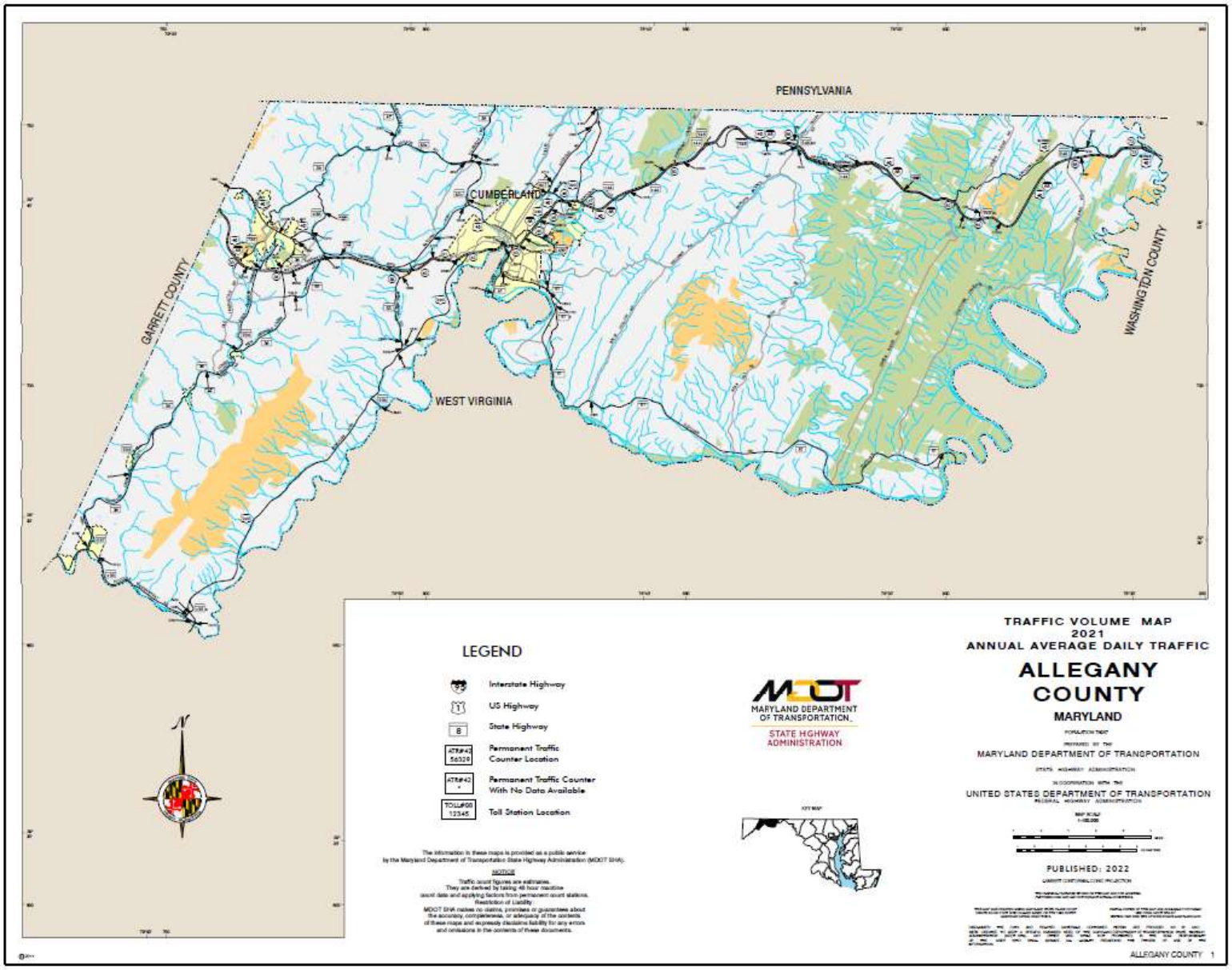


Figure 7-3. Source: Maryland State Highway Administration 2021 Traffic Volume Maps by County.

7.3 Municipal Perspective

As illustrated by Figure 7-3, an average of just under 38,000 vehicles travel via Interstate 68, which traverses through the City of Cumberland, on a daily basis. Also, Route 36, near the Narrows, experiences approximately 8,540 vehicles daily, while Route 220 has a daily average of 16,140 vehicles just outside the City of Cumberland limits while proceeding to Interstate 68. Therefore, critical and public facilities and residents located within the City of Cumberland or those located in close proximity to the Interstate and State Routes mentioned, are more susceptible to a transportation hazmat incident.

Additionally, of the 49 HazMat sites, *Appendix E*, 21 of those facilities are located within the Cumberland Fire District. Therefore, a portion of the traffic traveling on Interstate 68 is transporting hazardous materials directly into the City of Cumberland. This increases the vulnerability of the citizens commuting in the City. Critical facilities are depicted in Figure 7-4, following.

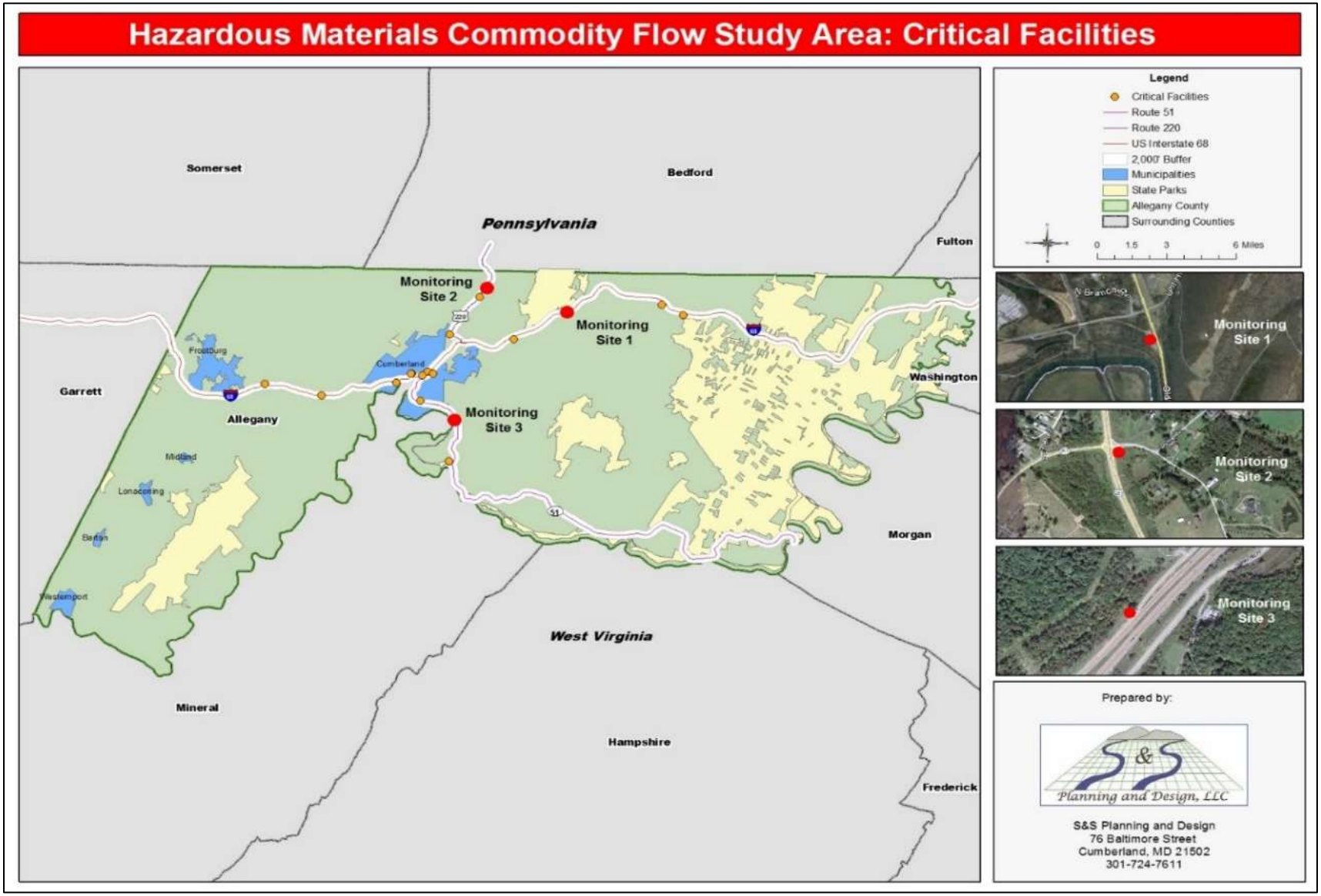


Figure 7-4. Source: 2014 Allegany County Hazardous Materials Commodity Flow Study – Sites 1,2, and 3 Data Compilation.

Moreover, several of the facilities are located in the Georges Creek Region. The trucks transporting the HazMats are utilizing Route 36 to reach their destination and according to Figure 7-5, approximately 8,540 vehicles travel Route 36 daily. Due to the curves and narrow roadways on Route 36, commuters and residents within close proximity to 36 are highly susceptible if a HazMat incident were to occur.

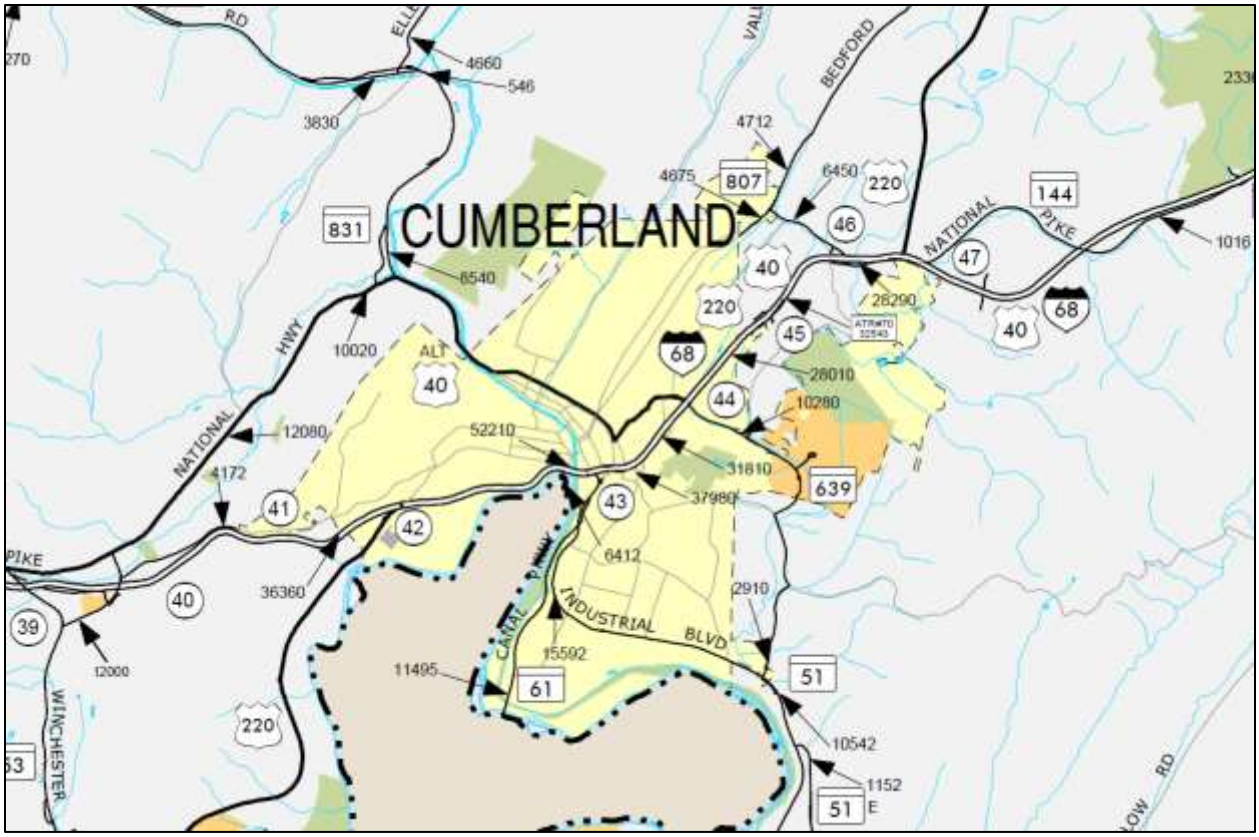


Figure 7-5. Source: Maryland State Highway Administration 2021 Traffic Volume Maps by County.

Furthermore, with the CSX rail yard being located in the City of Cumberland and Interstate 68 intersecting the City, HazMat Transportation is a major concern. Not only are the residents at risk if an incident were to occur but also the commuters traveling through the City. Several large businesses adjacent to or nearby I-68 could also be adversely affected by a HazMat incident.

7.4 Impacts to People, Systems, and Resources

According to FEMA's Hazard Materials Incidents (August 2019), "if released hazardous materials may cause harm to people, the environment, critical infrastructure, and property. Their potential for harm exists regardless of whether hazardous materials are released by accident, malicious actor, fire, or weather-related event."

Furthermore, "hazardous material incidents affect a range of stakeholders in the whole community. Workers in facilities who regularly use or handle hazardous materials, transportation carriers, nearby residents and students, first responders, and first receivers are all at risk of health impacts from hazardous materials."

Hazardous material incidents are most likely to occur on roadways where trucks are frequently travelling. This means the most vulnerable populations are County residents that drive every day, live, or work near heavily traveled routes. In particular, routes that see heavy daily traffic such as I-68 (East-West) and U.S. 220 (North-South).

As identified in Section 7.2, critical and public facilities along heavily traveled routes have the greatest likelihood of being negatively impacted by a hazmat incident. In addition to the critical facilities listed in Table 7-2, all residences and businesses within a similar geographic location could be adversely impacted. Wherever a hazmat incident occurs, there is a likelihood that people located nearby would have to evacuate the area temporarily, given a sufficiently severe incidence. Health risks associated with hazardous materials incidence include thermal harm, radiological harm, asphyxiation, chemical harm, biological harm, and mechanical harm.

7.5 Mitigation Capabilities

The County utilizes the *2015 Hazardous Materials Emergency Response Plan* when an incident occurs. This plan details the standard procedures to be utilized during a hazardous materials incident. As part of the 2024 plan update it is recommended that the County update its Hazardous Materials Emergency Response Plan. Additionally, Allegany County has a HazMat Team that is to be called when an incident occurs.

Allegany County also has a Special Operations Team which is composed of approximately 60 volunteer members – all members have at minimum Hazardous Materials Operations level training. The special operations team responds to the following: Hazardous Materials Response, Swiftwater Rescue, Collapse/Trench Rescue, High Angle Rescue, Confined Space Rescue and Search & Rescue. Members of the Special Operations Team attend specialized rail incident response training. Training courses include:

- Planning for and Managing Key Train or High Hazard Flammable Liquid Unit Train Accidents
- Introduction to Intermodal Containers
- Liquefied Gas Leak Containment – Patching
- Bakken Crude, Ethanol, and Flammable Liquids: Don't go it alone!
- AskRail – Immediate Access to Railroad Information

Training is conducted for the Special Operations Team. However, due to the COVID19 pandemic, training related to hazardous materials has slowed down significantly since 2020. As part of the 2024 plan update, it is recommended that the County continue its regular hazardous material and emergency response training over the 2024-2029 planning period. Examples of training completed in the past include:

- 2015 – A formal functional drill was conducted in February at the Federal Corrections Institute (FCI), which included participation of the 32nd Civil Support Team.
    - The scenario for the drill involved the Special Operations Team responding to a white-powder incident.
- 2016 – Members attended additional training, including the Virginia Hazmat Conference and a DOT-sponsored hazmat rail car response training, which was hosted by Allegany County.
- 2018 – Special Ops/HazMat drill with a TTX held in February.
- 2021 – Advanced HazMat IQ Above The Line/Below The Line course.
- 2023 – Battery Powered Vehicle course.

7.6 Future Conditions

The U.S. Census Bureau estimates that hazardous materials make up approximately eleven (11) percent of the freight transported by trucks in the U.S., and the U.S. DOT estimates that hazardous materials are carried in about seven (7%) percent of all trucks. While hazmat transportation makes up a significant portion of the type of material being transported on U.S. roadways, crashes and accidents involving hazardous materials are under-represented in overall accident statistics.

By the end of 2022, the U.S. DOT Pipeline and Hazardous Materials Safety Administration reported a total of 7,671 highway hazmat incidents occurring during transit in the United States. These incidents resulted in four hospitalizations, one fatality, and $19,589,140 in damages. Incidents are much more likely during unloading, but they are less damaging in terms of total dollars; during the unloading phase of transportation, 11,469 incidents occurred in 2022 which resulted in $3,849,791 of damage.

According to U.S. DOT incident reporting, for every hazardous materials incident involving a train, there are 33 hazmat incidents involving large trucks on the road. Spills are much less common when hazardous materials are shipped by rail. In 2022, there were only 343 incidents that occurred while hazardous materials were in transit by train. These incidents resulted in one hospitalization, zero fatalities, and $21,087,346 in damages. Hazmat spills when materials are transported by train occur most commonly during transit with only six incidents occurring during unloading.

On average, 1.78 hazmat incidents occur within Allegany County annually (refer to section 7.1). This rate appears constant over the years, and only a major change to the County's transportation system or hazardous materials storage sites would change this annual rate. Considering the statistics provided above, hazmat incidents will likely continue most frequently during the unloading phase of highway transportation. Ten-year incident data from the U.S. DOT indicates an upward trend in total hazardous material incidents across all forms of transportation (air, highway, railway, and water). Hazardous material incidents most commonly occur on highways. Figure 7-6 shows this 10-year incident data.

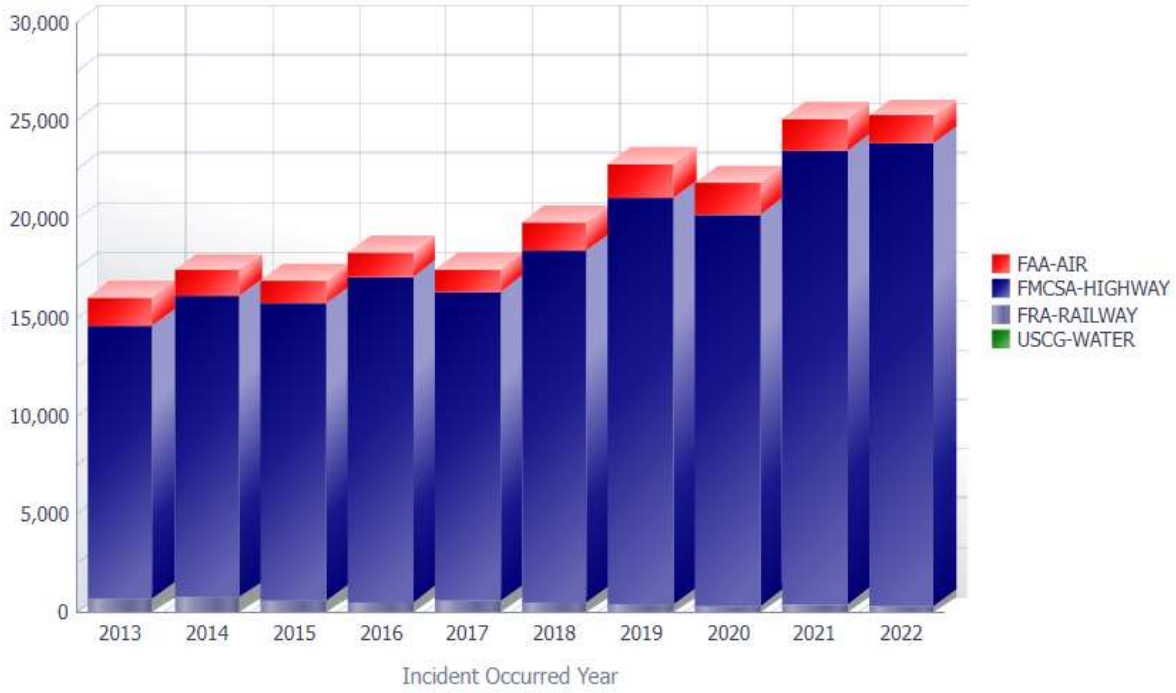


Figure 7-6. Ten-year Hazardous Material Total Incidents Data. Source: U.S. DOT, 2013 -2022.

Chapter 8: Tornado

2024 Plan Updates

Chapter 8: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 8-3: Section 8.2 Tornado and High Wind History & Risk has been added. Included in this section are the definitions for tornado, funnel cloud, and high wind from the NCEI, historical occurrences of tornado, funnel cloud, and high wind events (Tables 8-2 through 8-6), and future probability of these types of events.

Page 8-8: Section 8.3 County Perspective was updated to include tornado and high wind risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the tornado and high wind hazard. This section has been reviewed to ensure information is up to date.

Page 8-9: Section 8.4 Municipal Perspective has been reviewed and updated to represent current risk and capabilities.

Page 8-9: Section 8.5 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts tornadoes and high winds have on people, the built environment (e.g., tree debris), and utilities (e.g., power outage, damage from tree limbs).

Page 8-10: Section 8.6 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 8-11: Added Section 8.7 Future Conditions. This section examines the potential impacts that climate change is projected to have on frequency and intensity of tornado and high wind events.

CHAPTER 8 TORNADO (HIGH WINDS & FUNNEL CLOUDS)

8.1 Tornado & High Wind Hazard Profile

According to the National Weather Service (NWS), a tornado is "a violently rotating column of air touching the ground, usually attached to the base of a thunderstorm." Normally thunderstorms and associated tornadoes develop in warm, moist air in advance of strong eastward moving cold fronts in late winter and early spring (depicted in Figure 8-1). Tornadoes can also occur along a "dryline" which separates very warm, moist air to the east from hot, dry air to the west. Both of these scenarios are common in the Central Plains. Another way that tornadoes can be created occurs when warm moist air flows upslope. Under the right temperature and moisture conditions, intense thunderstorms can produce tornadoes in higher terrain.

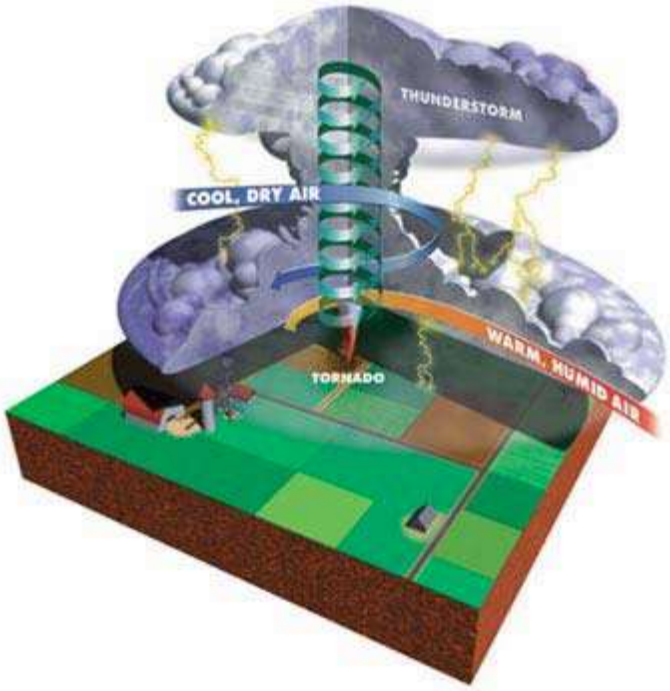


Figure 8-1. Structure of a Tornado. Source: Federation of American Scientists

Tornadoes can be ranked by intensity by using the Fujita Scale devised by Dr. Theodore Fujita at the University of Chicago in 1971. The Fujita Damage Scale (F-Scale) is used to determine the tornado strength based on observed damage. The Fujita Tornado Scale assigns a category to tornadoes based on their wind speed and relates this to the general type of damage that is expected. The damage scale increases in intensity from a weak F0 (40 to 70 mph wind) to a F5 (over 260 mph wind). The Fujita scale of tornado intensity indicates that tornadoes at the F0 classification cause light damage to chimneys, tree branches, and signboards. Tornadoes of F1 magnitude can cause moderate damage to road surfaces, automobiles, and mobile homes. The impact of tornadoes primarily depends upon their occurrence in developed areas-tornadoes in undeveloped areas can cause damage only to a few trees and even go unreported.

According to NOAA, the Enhanced Fujita (EF) Scale has replaced the original Fujita (F) Scale used to rate tornadoes by the NWS. The EF Scale improves upon the limitations of the original F Scale, which has been used since 1971. The tornado rating categories of the EF Scale range from zero to five, with EF0 as having the lowest wind speed and EF5 as having

the highest wind speed. A correlation between the two scales has been developed and this makes it possible to express ratings in term of one scale to the other, thus preserving the historical database. The major improvements of the EF Scale are the more accurate wind speed ranges in each category and an increase in the amount of detail that goes into determining a tornado rating. These improvements will allow for more consistent and accurate tornado ratings by the NWS.

Table 8-1. Enhanced Fujita Scale

Fujita Scale			Enhanced Fujita Scale	
F Number	**Fastest ¼ mile (mph)**	**3 Second Gust (mph)**	**EF Number**	**3 Second Gust (mph)**
0	40-72	45-78	0	65-85
Level of Damage: Minor or no damage				
1	73-112	79-117	1	86-110
Level of Damage: Moderate damage (roofs stripped, windows broken)				
2	113-157	118-161	2	111-135
Level of Damage: Considerable damage (roofs torn off, mobile homes destroyed, cars lifted off ground)				
3	158-206	162-209	3	136-165
Level of Damage: Severe damage (entire stories of house destroyed, trains overturned, heavy cars lifted and thrown)				
4	207-260	210-261	4	166-200
Level of Damage: Extreme damage (well-constructed homes leveled)				
5	261-318	262-317	5	Over 200
Level of Damage: Total destruction of buildings – some cars and trains can be thrown approximately 1 mile				
Source: National Oceanic and Atmospheric Administration. http://www.spc.noaa.gov/faq/tornado/ef-scale.html				

8.2 Tornado and High Wind History & Risk

A tornado is defined by the National Centers for Environmental Information (NCEI) as "a violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. For a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance."

A total of five reported tornado events were recorded by the NCEI Storm Event Database for Allegany County from 1996 to April 2023. An overview of these events is included in Table 8-2, and full event narratives are included in Table 8-3.

Table 8-2. Tornado Events Overview Allegany County from January 1996 – April 2023		
5 Tornado events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	5	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	2	$5,002,000.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Tornado**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Tornado (C). A violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. For a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance.

Table 8-3. Tornado Events, 1996 to Present

Location	Date	Event Narrative	Magnitude	Property Damage
Mt Savage, Cumberland, Frostburg	June 2, 1998	A strong-to-violent tornado caused excessive damage in western Allegany County. The multi-vortex twister had estimated wind speeds of 210 mph - the highest in recorded Maryland history - when it ravaged a neighborhood of well-constructed single-family homes along a local plateau just north of Frostburg. After descending Big Savage Mountain, the twister produced a swath of destruction across a neighborhood just west of Frostburg. At least eight homes were destroyed, and dozens of others were damaged. Advance warning likely saved several lives and reduced casualties; in all, only 5 area residents sustained minor injuries. The tornado continued through Eckhart Mines and Clarysville, causing further damage and destruction to homes and other property. It then continued through undeveloped areas, then passed across Dans Mountain before damaging a few more residences along state route 53 just north of Cresaptown. In all, emergency management officials reported 29 homes destroyed and 125 damaged, with nearly half of the surviving homes receiving moderate to major levels of damage. Initial dollar estimates ranged from $4.5 to $5 million. Hundreds, perhaps thousands, of trees in forested and developed areas were snapped or uprooted.	F4	$5 Million
Oldtown	July 29, 2009	Damage to trees, telephone poles, and structures were surveyed near the intersection of Old Braddock Trail and Brookstree Lane. Dozens of trees were uprooted along Wagner Road as well as Oldtown Cemetery Road and Lower Town Creek Road.	F0	Not Available

Table 8-3. Tornado Events, 1996 to Present				
Location	**Date**	**Event Narrative**	**Magnitude**	**Property Damage**
Belle Grove	July 29, 2009	A funnel cloud was observed in association with tree damage near	F0	Not Available
Town Creek	April 28, 2011	The tornado began on a wooded hillside just south of the 23200 block of Pack Horse Road. Damage along the path length was largely to trees. Numerous trees were uprooted along the hillside. A large tree three feet in diameter partially fell on a residence on pack Horse Pack Road causing damage to one wall and a portion of the roof. The tornado damage extended north from Pack Horse Road into a wooded area evident by more uprooted trees. Farther along the path, damage to trees occurred behind a residence on Maniford Road SE adjacent to boundary of the Green Ridge State Forest	F0	Not Available
Pine Grove	June 1, 2012	The tornado touched down near the intersection of Orleans Road NE and Turkey Farm Road NE. The track was nearly one mile long. The tornado snapped numerous trees and uprooted one large and several smaller trees. Electrified fencing had to be repaired and trees removed from Turkey Farm Road NE.	EF1	$2,000
2024 Plan Update **No new tornado events reported by the NCEI within the last five years.**				
Source: National Centers for Environmental Information (NCEI), 2023 & Allegany County Emergency Management Division.				

In terms of the number of occurrences, the NCEI listed a total of five tornado events impacting the County between 1996 and 2023. Therefore, Allegany County experiences 0.18 tornado events per year.

A funnel cloud is defined by the National Centers for Environmental Information (NCEI) as "a rotating, visible extension of a cloud pendant from a convective cloud with circulation not reaching the ground."

According to the NCEI database, no funnel clouds have been recorded in Allegany County since 2006 (Table 8-4). The single most recent event occurred on July 27, 1995, and was reported by a pilot who saw three funnel clouds approximately 15 miles east of the City of Cumberland.

Table 8-4. Funnel Cloud Events Overview Allegany County from January 2006 – April 2023		
0 Funnel Cloud events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	0	

Table 8-4. Funnel Cloud Events Overview Allegany County from January 2006 – April 2023		
0 Funnel Cloud events		
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	$0
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**Funnel Cloud**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: Funnel Cloud (C). A rotating, visible extension of a cloud pendant from a convective cloud with circulation not reaching the ground. The funnel cloud should be large, noteworthy, or create strong public or media interest to be entered.		

High wind is defined by the National Centers for Environmental Information (NCEI) as "sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively."

A total of 15 high wind events were recorded by the NCEI Storm Event Database for Allegany County from 2006 to April 2023. An overview of these events is included in Table 8-5, and full event narratives are included in Table 8-6.

Table 8-5. High Wind Events Overview Allegany County from January 2006 – April 2023		
15 High Wind events		
Number of County/Zone areas affected:	2	
Number of Days with Event:	15	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	5	$2,065,027.00
Number of Days with Event and Crop Damage:	0	$0
Number of Event Types reported:	1	**High Wind**
Source: National Centers for Environmental Information (NCEI), 2023. Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone. Based on NCEI definitions/criteria: High Wind (Z). Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.		

Table 8-6. High Wind Events, 2006 to Present			
Location	**Date**	**Event Narrative**	**Property Damage**
Countywide	January 14, 2006	Numerous trees and powerlines down. Widespread damages and power outages occurred during this event, with newspaper reports indicating tens of thousands without power for an extended period of time.	$1.6 Million
Countywide	February 22, 2007	Emergency Management Officials reported trees and power lines downed across central and eastern portions of Allegany County. Utility wires and trees were downed in Frostburg, MD, in Allegany County.	Not Available
Countywide	December 16, 2007	Allegany County Emergency Management reported trees and power lines down.	$3,000
Countywide	January 30, 2008	An automated surface observation in Frostburg measured a wind gust of 65MPH. Allegany County Emergency Management reported trees down from McCoole to just north of Cumberland.	$5,000
Countywide	February 10, 2008	Newspaper clippings reported numerous trees and power lines down across Allegany County.	$5,000
Countywide	February 12, 2009	A wind gust of 59 mph was measured in Frostburg. A wind gust of 50 knots was measured in Cumberland.	Not Available
Countywide	April 4, 2009	A wind gust of 50 knots was reported at Frostburg.	Not Available
Countywide	February 25, 2011	Wind gusts around 56 knots were estimated across central and eastern Allegany County.	Not Available
Countywide	October 29, 2012	Numerous tree damage due to both high winds and heavy snow occurred in the county. Downed trees and downed trees into homes and some businesses caused power outages. At the height of the storm, over 9000 were without in the entire county.	$452, 027
Extreme Western	November 19, 2016	Wind gusts around 60 mph were estimated based on observations nearby.	Not Available
2024 Plan Update			
Countywide	March 2, 2018	A wind gust of 60 mph as reported at Frostburg. The 911 call estimated about 55 calls related due to downed trees and power lines.	$0
Countywide	February 24, 2019	Wind gusts of up to 58 mph were measured, including at Frostburg. There were also reports of downed trees. Wind gusts of up to 61 mph were measured, with the highest gust reported near Cumberland. There were also multiple reports of downed trees and wires throughout the zone.	$0
Countywide	November 27, 2019	Low pressure intensified to the northeast and high pressure approached from the Midwest. A strong pressure gradient between these systems led to high winds across the higher elevations in western Maryland. Wind gusts around 60 mph occurred.	$0
Countywide	March 26, 2021	A powerful storm and cold front resulting in strong damaging winds across the area. Peak winds maxed out at 58 mph at Grantsville 5 W at 10:14 EST 3/26.	$0
Countywide	March 4, 2023	An area of low pressure and strong cold front crossed the area, with a prolonged period of strong gradient winds developing in wake of the front. A mesonet station near Cumberland measured a peak wind gust of 59 mph at 0725 local standard time. A Maryland DOT	$0

Table 8-6. High Wind Events, 2006 to Present			
Location	**Date**	**Event Narrative**	**Property Damage**
		mesonet near Frostburg measured a peak wind gust of 65 mph at 0904 local standard time.	
Source: National Centers for Environmental Information (NCEI), 2023.			

In terms of the number of occurrences, the NCEI listed a total of 15 high wind events impacting the County between 2006 and 2023. Therefore, Allegany County experiences 0.88 high wind events per year, or roughly one high wind event annually.

8.3 County Perspective

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for both the tornado and high wind hazards. The State Plan ranks tornado risk as "medium-high" and high wind risk as "medium" for Allegany County. Allegany County HMPC members ranked the tornado and high wind hazards as "medium-high."

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the tornado hazard as ninth.

Figure 8-2: Tornado passing through Frostburg in 1998.

Although Allegany County is located in mountainous terrain it has still been subjected to violent storms including tornadoes. In 1998 there were two reported touchdowns of tornadoes in Allegany County. These two outbreaks of tornado activity occurred at the border of Allegany and Garrett Counties and Somerset County, Pennsylvania, just to the north. Both of these events were related to thunderstorms developing from passing cold fronts. The combination of warm moist air flowing up slope from the southwest and a cold front passing from the north and west created ideal conditions for tornado activity. One of these tornadoes was rated F-4 after it

crossed the county line and hit Frostburg in Allegany County as shown on *Appendix A-9*. Based upon damage assessment reports, three hundred twenty-three homes were reported as having sustained damage.

The County has also had significant damage occur due to high wind events. In 2003 and 2006 high wind events damaged homes and caused countywide power outages. Minor tornado incidents have occurred in 2009, 2010, and 2012. Five incidents have occurred during these years, four of which were rated as EF0, ranging from 65-85 mph wind speeds. The last tornado incident on June 1, 2012, was rated as an EF1 with wind speeds ranging from 86-110 mph.

8.4 Municipal Perspective

As is the case with most other extreme weather events, municipalities in Allegany County share the same concerns as the County. However, the City of Frostburg is located on high, relatively flat land, and seems to be more susceptible to wind events than other municipalities, which are located in a valley setting affording some protection by surrounding mountains.

8.5 Impact to People, Systems, and Resources

Due to the nature of tornadoes, most people and structures are at risk of impacts should they be in the path of a tornado. Tornadoes are destructive to varying levels as described in Table 8-1, with effects ranging from minor or no damage to buildings to complete destruction of buildings. High wind associated with tornadoes can cause property damage, injury or death to people, displacement of populations, environmental damage, and utility damage or failure.

Systems such as roads, utilities, and emergency notification and response can be impacted during and after a tornado event. Roads might be blocked by tree debris, which slows down emergency responders or prevents them from reaching their destination in time. Roadway blockages may also prevent residents from traveling until the debris can be removed. High winds and flying debris from the tornado may damage above ground utilities, causing disruptions in communication and power. Those most vulnerable during a power outage include the elderly and those relying on at-home durable medical equipment.

Tornadoes also cause damage to the natural environment. Much of the flying debris generated during a tornado is vegetation and tree limbs. Regular removal of dead tree limbs, especially along roadways, can help reduce the total amount of flying debris generated during a tornado or high wind event. Tornadoes and high wind events can also disturb above

ground fuel storage tanks, causing contamination of the nearby environment. Educating the public on how to properly tie down their above ground storage tanks can help mitigate this issue.

There have been no recorded incidences of damage to historic structures caused by tornadoes in Allegany County since 1996. However, damage to residential structures due to tornadoes and high wind events has been reported at over seven million dollars since 1996. The most destructive tornado event in Allegany County in recent history occurred on June 2, 1998. The tornado was rated as an EF4 and caused an estimated five million dollars in damage. From Table 8-3:

> "In all, emergency management officials reported 29 homes destroyed and 125 damaged, with nearly half of the surviving homes receiving moderate to major levels of damage. Initial dollar estimates ranged from $4.5 to $5 million. Hundreds, perhaps thousands, of trees in forested and developed areas were snapped or uprooted."

If a sufficiently powerful tornado were to occur in one of the more densely developed areas of the County, such as the City of Cumberland or the City of Frostburg, the chance of damage to historic structures would increase.

8.6 Mitigation Capabilities

While mitigating tornado damage is difficult, Allegany County does have a state mandated Building Code, which includes wind loading requirements and tie-down requirements for mobile homes as shown on *Appendix A-12*. Additionally, the County's hazard warning system can be activated following notification of impending severe weather by NOAA.

Per the National Weather Service, a **Tornado Watch** is issued when severe thunderstorms and tornadoes are possible in and near the watch area. It does not mean that they will occur. It only means they are possible.

A **Tornado Warning** is issued when a tornado is imminent. When a tornado warning is issued, seek safe shelter immediately by moving to the lowest level of the building. If there is no basement, move to an interior room or hallway on the lowest floor, stay away from windows, and cover your head if possible. If you are in a car, do not try to outrun a tornado; leave the vehicle immediately and lie flat in a ditch or depression. Mobile homes offer little protection from tornadoes and should be abandoned. If you cannot reach an appropriate building in time, lie flat in a ditch or depression.

Tornadoes can occur at any time of year but usually occur in the late afternoon and evening (typically between 4:00 PM and 9:00 PM) during the spring and summer. The average

tornado moves southwest to northeast but can move in any direction. If severe weather is expected, stay tuned to radio or television for important weather updates and safety information. Have a NOAA Weather Radio with a warning alarm and battery back-up so you can receive severe weather information if the power goes out.

Common signs of a tornado:

- Dark, often greenish sky
- Funnel cloud formation
- Debris field under the funnel cloud
- Large hail
- Loud roar similar to freight train

8.7 Future Conditions

National Geographic states that predicting whether climate change will have an effect on the frequency and power of tornadoes is challenging.

Tornadoes are small compared to other extreme weather events, such as hurricanes, which can span hundreds of miles. The largest tornado on record measured "only" 2.6 miles wide. Tornadoes are also very short lived, lasting from a few seconds to a few hours as opposed to days or weeks at a time. These two factors make them very difficult to model in the climate simulations that are used to project the effects of climate change.[i]

Instead, scientists must attempt to predict how climate change may impact the individual weather components that support the development of supercell thunderstorms (the type that produce tornadoes). These weather components include:

- warm, moist air;
- an unstable atmosphere; and
- wind shear.

As global temperatures rise, the warmer atmosphere is able to hold more moisture. This increases atmospheric instability, a vital supercell component. However, as the planet warms, wind shear is likely to decrease. These two forces work against each other, so it is difficult to anticipate which might have a greater impact on tornado formation.

The fourth National Climate Assessment summarizes the complicated relationship between tornadoes and climate change: "Some types of extreme weather (e.g., rainfall and extreme heat) can be directly attributed to global warming. Other types of extreme weather, such as

tornadoes, are also exhibiting changes which may be linked to climate change, but scientific understanding isn't detailed enough to project direction and magnitude of future change."

Due to the lack of well-defined geographic extent for tornado and high wind events, it is difficult to know how future development or changes in population patterns will change as a result of these hazards. Future development may shy away from the City of Frostburg, which has been identified as being at an increased risk of wind related hazards due to its higher elevation. Future development could also avoid locations that have previously been impacted by tornadoes or high wind events as identified in Tables 8-3 and 8-6.

Population growth in Allegany County is projected over the next couple decades, therefore new property owners and land developers should be educated in proper tie-down techniques and build to the most recent building code requirements for wind loading.

One thing known for certain is that we live in a warmer and wetter world due to climate change, and this is likely to have an effect on extreme weather events, including tornadoes. Unfortunately, in the case of tornadoes we cannot yet predict what that effect might be.[ii]

[i] Tornadoes and climate change. National Geographic Society. (2022, May 20). Retrieved July 7, 2022, from https://education.nationalgeographic.org/resource/tornadoes-and-climate-change
[ii] Ibid.

Chapter 9: Excessive Heat & Drought

2024 Plan Updates

Chapter 9: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 9-3: Updated information from the NCEI Annual 2022 Global Climate Report was added.

Page 9-2: Section 9.1.1 Excessive Heat History & Risk has been updated. Included in this section are the definitions for heat and excessive heat from the NCEI, historical occurrences of heat and excessive heat events (Tables 9-2 thru 9-5), and future probability of these types of events.

Page 9-3: Figure 9-1 Mean Temperature Departures from the NCEI for 2022 has been added.

Page 9-3: Section 9.1.2 Drought History & Risk has been updated. Included in this section are the definitions for drought from the NCEI, historical occurrences of drought events (Table 9-7), and future probability of these types of events.

Page 9-7: Figure 9-2 Historic Drought Conditions in Allegany County, 2000 to 2022 has been added to highlight additional periods of drought that are not recorded in the NCEI database.

Page 9-8: Section 9.2 County Perspective was updated to include drought and extreme heat risk ranking information from Chapter 3, as well as public survey results regarding level of concern for these hazards. This section has been reviewed to ensure information is up to date. Maps 9-1 and 9-2 have been updated with population estimates from the 2020 census.

Page 9-10: Section 9.3 Municipal Perspective has been reviewed and updated to represent current risk and capabilities.

Page 9-11: Section 9.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts drought and extreme heat have on people, systems, and resources throughout the County.

Page 9-12: Section 9.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 9-12: Added Section 9.6 Future Conditions. This section examines the potential impacts that climate change is projected to have on frequency and intensity of drought and extreme heat events.

CHAPTER 9 EXCESSIVE HEAT & DROUGHT

9.1 Excessive Heat & Drought Hazard Profile

9.1.1 Excessive Heat History & Risk

The National Weather Service defines excessive heat as conditions where temperature and humidity together exceed certain levels (e.g., 85° F and 100% humidity, 90° F and 70% humidity, or 110° F and 30% humidity). Such conditions, which can create a heat index temperature of 105° F or greater, are encountered in Maryland virtually each summer and are associated with increased risk of developing heat disorders. At certain levels, the human body cannot maintain proper internal temperatures and may experience heat stroke. The "Heat Index" is a measure of the effect of the combined elements on the body.

The Heat Index is an important aspect to consider during the summer months. The heat index refers to how hot it "feels" outside. The heat index is based on air temperature and relative humidity. For example, an air temperature of 92°F with a humidity of 100% creates a heat index of 132°F, which is extremely dangerous. It should be noted that while anyone can experience heat related disorders, the two groups most vulnerable are those 65 years of age and older and those aged 17 or younger, especially small children and infants. The relationship between the heat index and heat disorders is described in Table 9-1.

Table 9-1: Heat Index and Heat Disorders

Classification	Heat Index (F)	Possible Heat Disorders
Extreme Danger	130 or Higher	Heatstroke/sunstroke highly likely with continued exposure.
Danger	105-130	Sunstroke, heat cramps or heat exhaustion likely and heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90-105	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80-90	Fatigue possible with prolonged exposure and/or physical activity.

Source: NOAA, NWS.

According to the National Centers for Environmental Information (NCEI) Annual 2022 Global Climate Report:

> "The year 2022 was the sixth warmest year since global records began in 1880 at 0.86°C (1.55°F) above the 20th century average of 13.9°C (57.0°F). This value is 0.13°C (0.23°F) less than the record set in 2016 and it is only 0.02°C (0.04°F) higher than the last year's (2021) value, which now ranks as the seventh highest. The 10 warmest years in the 143-year record have all occurred since 2010, with the last nine years (2014–2022) ranking as the nine warmest years on record. Of note, the year

> 2005, which was the first year to set a new global temperature record in the 21st century, currently ties with 2013 as the 11th-warmest year on record. The year 2010, which had surpassed 2005 at the time, now ranks as the 10th-warmest year on record."

NCEI data has shown the mean maximum temperature for the State of Maryland has been increasing since 1980. As depicted in Figure 9-1, the mean temperature departure from the 20th century mean has increased about 1.0-2.0 degrees Fahrenheit for Allegany County.

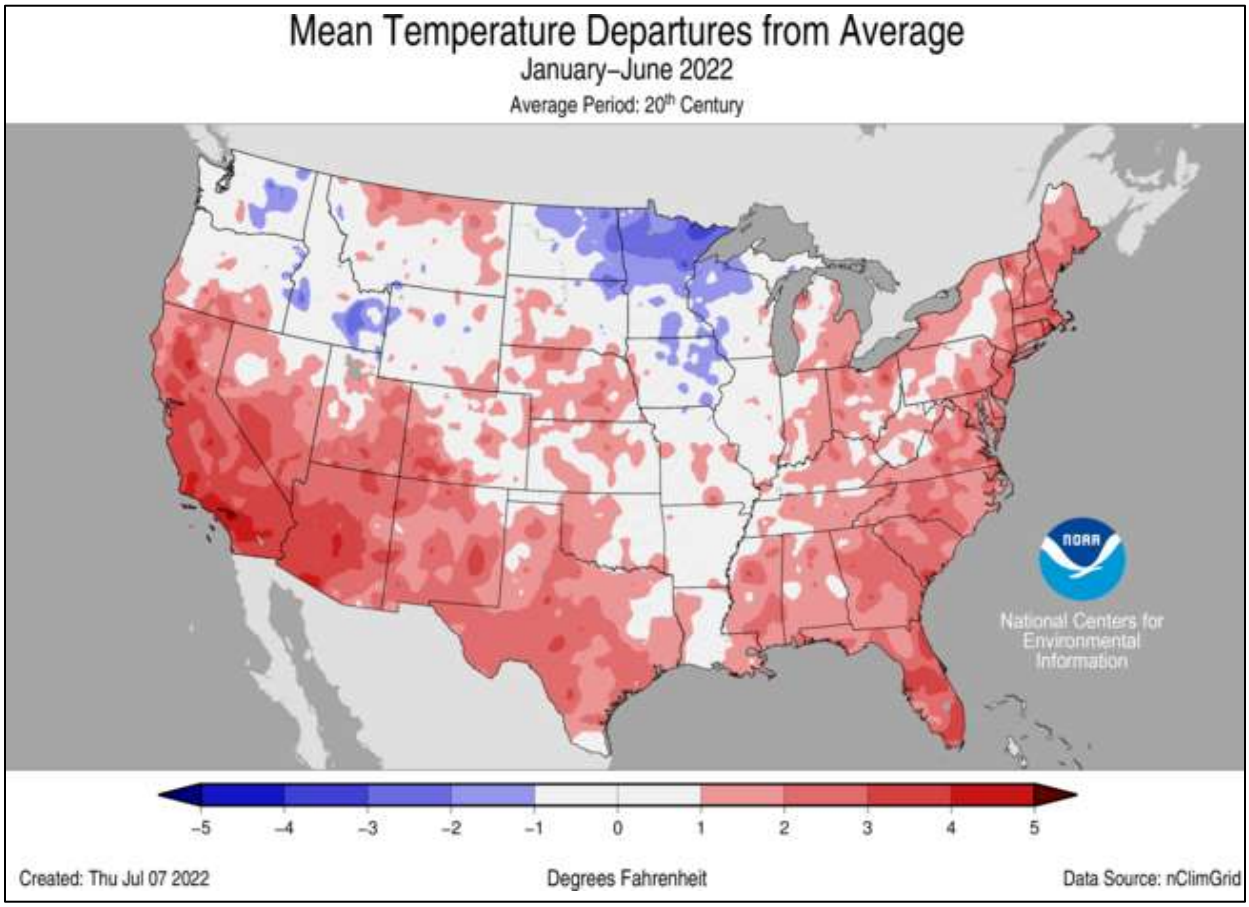


Figure 9-1. Mean Temperature Departures from Average. Source: National Centers for Environmental Information (NCEI).

Excessive heat is defined by the National Centers for Environmental Information (NCEI) as "Excessive heat results from a combination of high temperatures (well above normal) and high humidity."

A total of four reported excessive heat events were recorded by the NCEI Storm Event Database for Allegany County from January 2006 to April 2023. An overview of these events is included in Table 9-2, and full event narratives are included in Table 9-3.

Table 9-2. Excessive Heat Events Overview Allegany County from January 2006 – April 2023		
4 Excessive Heat events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	4	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	
Number of Days with Event and Crop Damage:	0	
Number of Event Types reported:	1	**Excessive Heat**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Excessive Heat (Z). Excessive Heat results from a combination of high temperatures (well above normal) and high humidity. An Excessive Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established excessive heat warning thresholds. Fatalities (directly related) or major impacts to human health that occur during excessive heat warning conditions are reported using this event category. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 9-3. Excessive Heat Events, 2006 to Present		
Date	**Event Narrative**	**Property Damage**
August 1 to 3, 2006	Excessive heat conditions occurred on Tuesday, Wednesday, and Thursday, August 1-3, across much of Maryland. Afternoon heat index values ranged between 105 to as high as 115 degrees.	Not available.
July 22, 2011	Heat indices in excess of 110 degrees were estimated due to observations nearby.	Not available.
July 7, 2012	Heat index values around 105 degrees were reported at the Cumberland Airport.	Not available.
July 20, 2017	Heat indices around 105 degrees were reported.	Not available.

Source: National Centers for Environmental Information (NCEI), 2023.

In terms of the number of occurrences, the NCEI listed a total of four excessive heat events impacting the County between 2006 and 2023. Therefore, Allegany County experiences 0.23 excessive heat events per year.

Also included in the excessive heat hazard is "heat." Heat is defined by the National Centers for Environmental Information (NCEI) as "A period of heat resulting from the combination of high temperatures (above normal) and relative humidity."

A total of thirteen reported heat events were recorded by the NCEI Storm Event Database for Allegany County from January 2006 to April 2023. An overview of these events is included in Table 9-4, and full event narratives are included in Table 9-5.

Table 9-4. Excessive Heat – Heat Events Overview Allegany County from January 2006 – April 2023		
13 Heat events		
Number of County/Zone areas affected:	1	
Number of Days with Event:	12	
Number of Days with Event and Death:	0	
Number of Days with Event and Injury:	0	
Number of Days with Event and Property Damage:	0	
Number of Days with Event and Crop Damage:	0	
Number of Event Types reported:	1	**Heat**

Source: National Centers for Environmental Information (NCEI), 2023.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Heat (Z). A period of heat resulting from the combination of high temperatures (above normal) and relative humidity. A Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established advisory thresholds. Fatalities or major impacts on human health occurring when ambient weather conditions meet heat advisory criteria are reported using the Heat event. If the ambient weather conditions are below heat advisory criteria, a Heat event entry is permissible only if a directly related fatality occurred due to unseasonably warm weather, and not man-made environments.

Table 9-5. Excessive Heat – Heat Allegany County from January 2006 – April 2023		
Date	**Event Narrative**	**Property Damage**
July 21, 2011	Heat indices in excess of 105 degrees were reported at Cumberland.	$0
July 7, 2012	Heat index values around 105 degrees were reported at the Cumberland Airport.	$0
July 20, 2017	Heat indices around 105 degrees were reported.	$0
July 1, 2018, thru July 3, 2018	Heat indices around 100 degrees were reported.	$0
July 19, 2019, thru July 21, 2019	Heat index values exceeded 100 degrees.	$0
July 19, 2020	A ridge of high pressure developed over the eastern United States and western Atlantic, allowing a southwesterly flow to bring plenty of tropical air northward. High temperatures plus high humidity resulted in heat indices in the 100-110 degree range.	$0
August 12, 2021	Heat indices rose to between 100 and 105 degrees.	$0
August 13, 2021	Heat indices rose to between 100 and 105 degrees.	$0

Source: National Centers for Environmental Information (NCEI), 2023.

In terms of the number of occurrences, the NCEI listed a total of thirteen heat events impacting the County between 2006 and 2023. Therefore, Allegany County experiences 0.76 excessive heat events per year. Combined with the rate of excessive heat events, Allegany County is likely to experience one (1) excessive heat or heat event per year.

9.1.2 Drought History & Risk

Additionally, a prolonged period of excessive heat can lead to drought. According to NOAA, drought is defined as 'a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area.' Droughts may be short term, a few weeks to a month, or long term, several months to several years. A long term drought may be interrupted by occasional precipitation without breaking the drought cycle. NOAA together with its partners provides short and long term drought assessments.

Droughts are measured via the Palmer Drought Severity Index (PDSI), which was developed by W. C. Palmer in 1965 to measure the departure of moisture from the norm. The index provides measurements of moisture conditions so that comparisons can be made between locations and between time periods in the same location. The index is really a hydrological index rather than a meteorological index because it is based on moisture availability (precipitation, outflow, and storage) over time. The Palmer Drought Severity Index (PDSI) is shown in Table 9-3.

Table 9-6: Palmer Drought Severity Index

Value	Condition
+4.0 and above	Extremely Moist
+3.0 to +3.9	Very Moist Spell
+2.0 to +2.9	Unusual Moist Spell
--1.9 to +1.9	Near Normal
-2.0 to -2.9	Moderate Drought
-3.0 to -3.9	Severe Drought
-4.0 or less	Extreme Drought
Source: National Climate Prediction Center; NOAA.	

According to the NCEI, a total of 7 drought events have affected Allegany County from 1997 to April 2023. Therefore, the probability of the County experiencing a drought event is 0.27 per year.

Table 9-7: Drought Events

Date	Event Narrative
July 1997	A very dry month, containing one 7-day heat wave, exacerbated drought-like conditions across much of the fertile farmland of Maryland. The weather in July proved to be the death knell for much of the crop yields, including corn, hay, alfalfa, and soybeans. Agricultural states of emergency were declared in many areas west of the Chesapeake Bay.

Table 9-7: Drought Events	
Date	**Event Narrative**
May 1999	The Maryland Department of the Environment issued a drought warning in December, and it remained in effect through May. May was the 7th month in the past 12 months that precipitation was below normal. From June 1998 through May 1999 precipitation was a staggering 14 inches below average, the 2nd driest 12 months on record. Additional rainfall totals included Allegany County at 2.6 inches. Western Maryland ground water levels fell from above normal to below normal during the month and remained below normal elsewhere.
June 1999	The drought warning issued by the Maryland Department of the Environment remained in effect through June. Additional June rainfall totals included Allegany County at 1.8 inches.
July 1999	By the last week of July, the Palmer Drought Index, a measure of long term drought conditions, indicated Maryland was in an extreme drought. The drought warning issued by the Maryland Department of the Environment in December remained in effect through the month. The governor issued a satellite drought emergency on the 29th. July was the 14th month in the past 16 months that precipitation was below normal. From August 1998 through July 1999 precipitation was a staggering 16 inches below average, the 2nd driest 12-month period on record. Additional July rainfall totals included Allegany County at 1.1 inches. In the city of Cumberland, Lake Gordon and Lake Koon were both 11 inches below the spillway. Officials in Frostburg reported the Piney Dam was 8 inches low.
August 1999	Heavy rain fell over all but Western Maryland between the 24th and 26th, helping to fill surface reservoirs. Unfortunately, because most of the rain fell in the form of thunderstorm downpours, most of the moisture ran off into the rivers before it had the chance to seep into the aquifer supply. The drought warning issued by the Maryland Department of the Environment last December remained in effect through the month. Additional August rainfall totals included Allegany County at 2.5 inches. Piney Dam, Frostburg's main water supply, was 8 inches below normal pool. Cumberland's two reservoirs, Lake Koon and Lake Gordon were down 4 feet and 1 foot respectively. The Mount Savage reservoir was down 3 feet and officials had to store up its supply by hauling 38 tanker trucks of water.
September 1999	Rainfall from two land falling hurricanes made a tremendous impact on the drought that plagued the region since the summer of 1998. The water shortage came to an end by mid-month in all but Allegany and Washington Counties. By the 30th, conditions in Western Maryland were upgraded from an extreme to moderate drought and were near normal or slightly wet elsewhere.
October 1999	The drought that affected much of the region since the summer of 1998 finally came to an end in Allegany and Washington Counties. At the beginning of the month, western Maryland was still in a moderate drought. From the 1st through the 11th, over 2 inches of much needed rain fell, bringing an end to the water shortage. The ban on open burning was finally lifted.
Source: National Centers for Environmental Information (NCEI), 2023.	

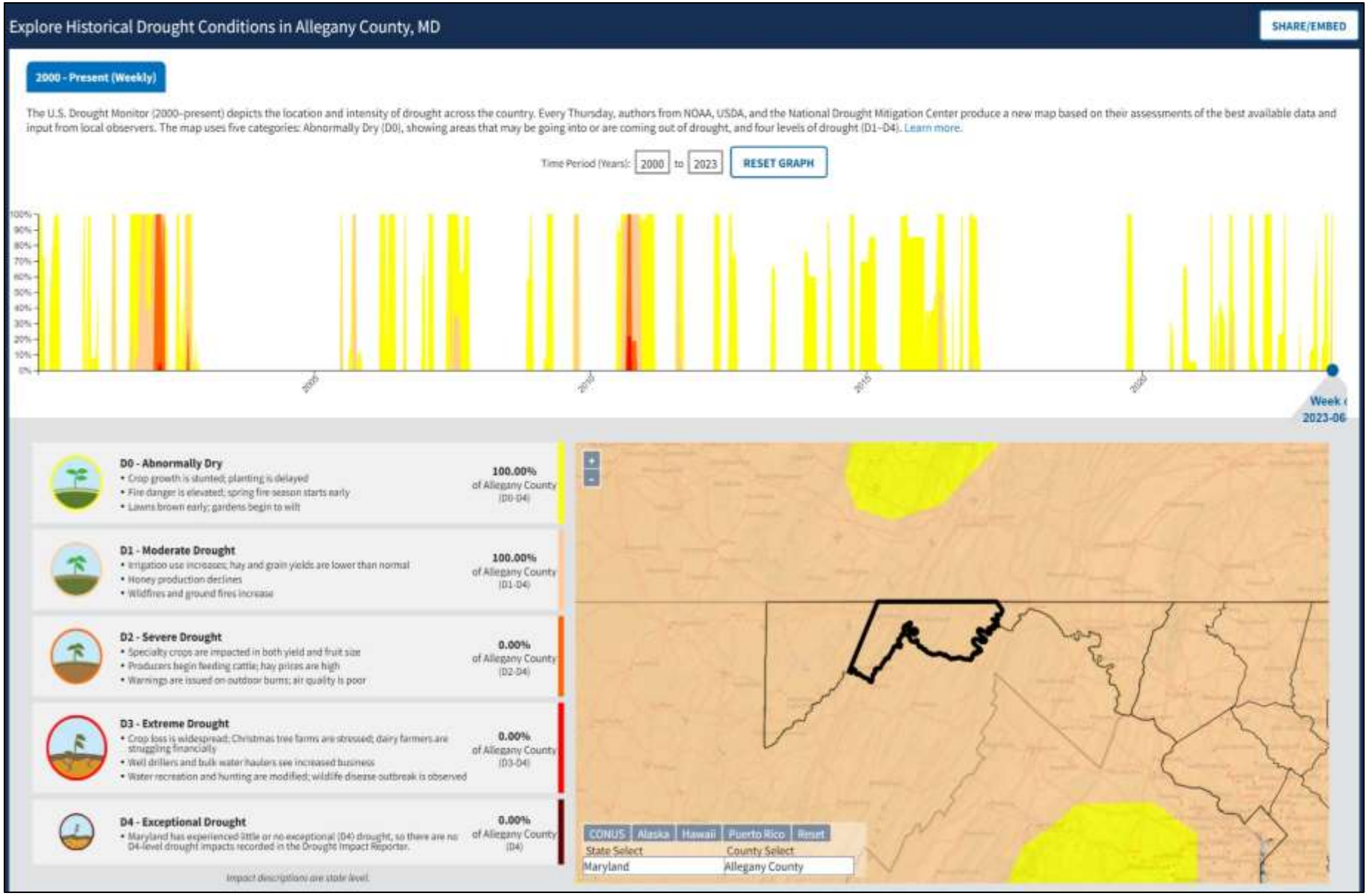


Figure 9-2. Historic Drought Conditions in Allegany County, MD, 2000 to Present. Source: U.S. Drought Monitor (USDM), drought.gov.

9.2 County Perspective

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for both the drought and excessive heat hazards. The State Plan ranks drought risk as "medium-low" and extreme temperatures (including excessive heat) risk as "medium" for Allegany County. Allegany County HMPC members ranked both the drought and excessive heat hazards as "medium" risk.

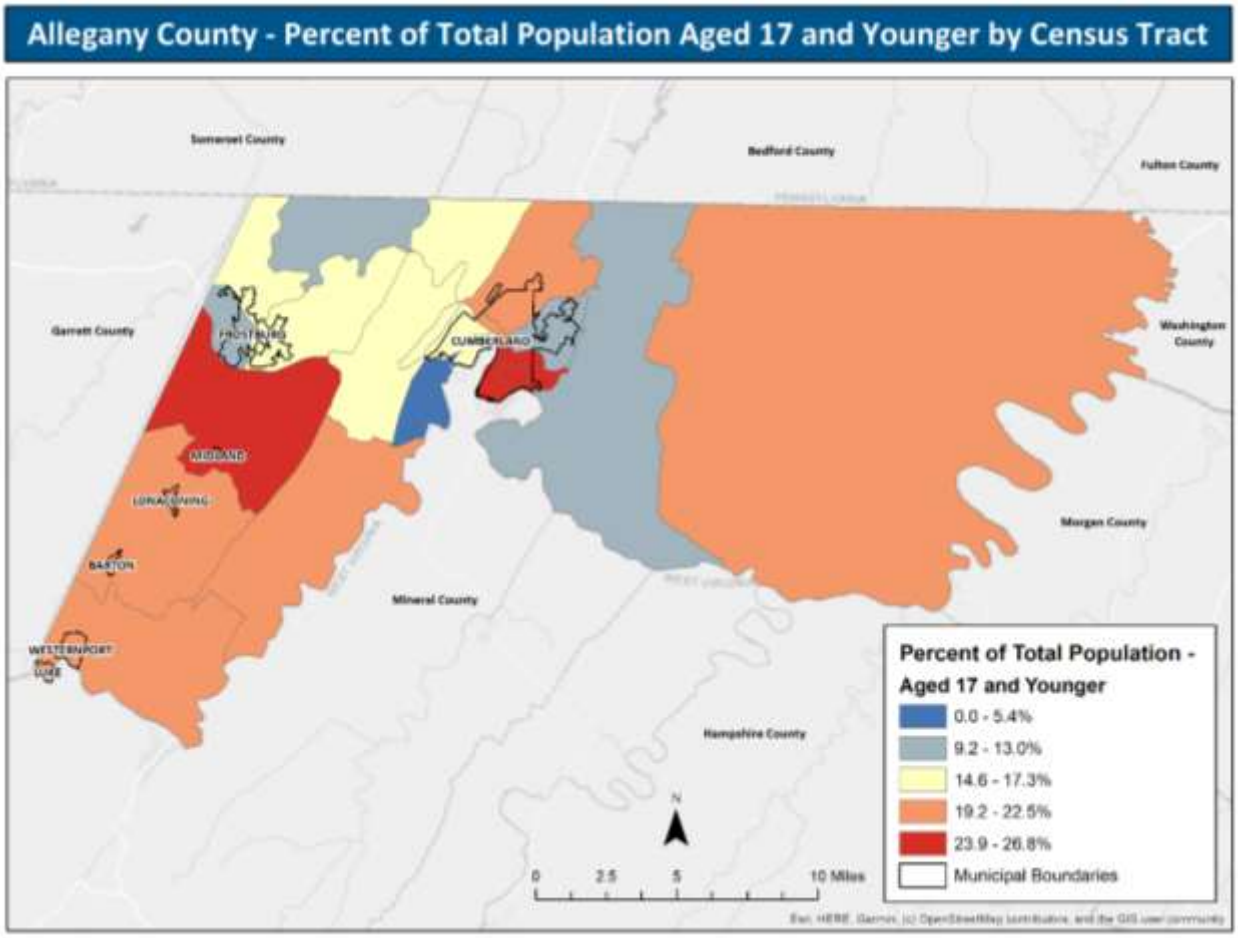
During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the drought and excessive heat hazard as seventh.

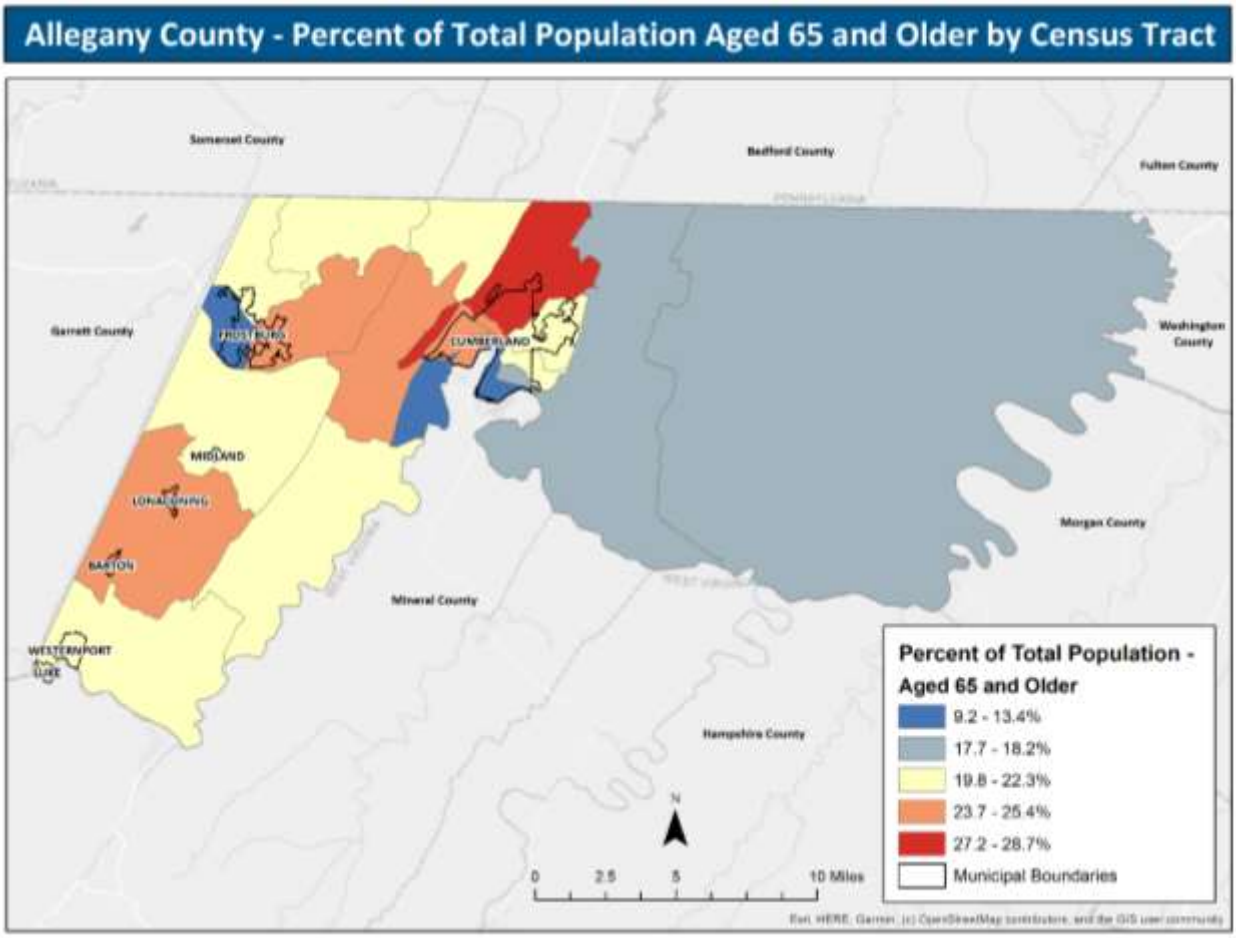
As noted in Chapter 2: Community Profile, Allegany County normally averages close to the same temperature and humidity during the summer months as the overall State of Maryland. Additionally, Allegany County averages 84 days of precipitation of 0.1 inch or more within a year and averages a humidity level of 74.56%. Considering Allegany County's average temperatures above 90° F in the summer combined with the average humidity level, the County is highly susceptible to drought and long periods of excessive heat.

Regarding populations that are most vulnerable to excessive heat, a high concentration of people aged 17 and younger are located in Midland, south of Frostburg, and south Cumberland. High concentrations of population aged 65 and older are located in and around north Cumberland. Additionally, the community known as Cresaptown contains higher concentrations of both age groups. There is also a concentration of people aged 65 and older in the community of Flintstone.

Maps 9-1 and 9-2 illustrate where concentrations of the two vulnerable groups are located in the County.



Map 9-1. Percent of Total Population Aged 17 and Younger by Census Tract in Allegany County.
Source: U.S. Census Bureau, 2020.



Map 9-2. Percent of Total Population Aged 65 and Older by Census Tract in Allegany County.
Source: U.S. Census Bureau, 2020.

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for both the drought and excessive heat hazards. The State Plan ranks drought risk as "medium-low" and extreme temperatures (including excessive heat) risk as "medium" for Allegany County. Allegany County HMPC members ranked both the drought and excessive heat hazards as "medium" risk.

9.3 Municipal Perspective

Municipalities are subject to similar temperatures during the summer months; therefore, they are affected by drought and excessive heat in the same ways as the rest of the County. The two groups that are most vulnerable to excessive heat conditions are populations 65 years of age and older and populations 17 years of age or younger (particularly small children and infants). Vulnerable populations, shown in red on Maps 9-1 and 9-2, are located in Lonaconing, Midland, Cumberland, and Frostburg. These areas should be prioritized for targeted outreach and wellness checks.

9.4 Impacts to People, Systems, and Resources

As shown on Maps 9-1 and 9-2, the elderly and the very young are the two most at risk and vulnerable populations to the hazards identified in this chapter. Other at risk populations include those with chronic health problems such as asthma or other breathing issues. The lack of adequate water specifically associated with drought conditions will impact all people negatively to some extent, but particularly the oldest and youngest within the County. Another potential impact to people caused by extreme heat are utility failures causing power loss. These events can worsen existing heat related disorders within the population due to lack of proper cooling. Power failures also impact the availability of emergency and government services available during an incident.

Drought and extreme heat have a large negative impact on vegetation and cropland. According to the USDA Census of Agriculture conducted for the county in 2017 there are 290 farms in the county that comprise 35,282 acres of land; this represents about 12.8% of the total land area in the county. Of these farms, 38% are cropland. Allegany County ranks 23rd in the state for total number of farmlands, which means it has very little compared to other counties in the state. The lack of water availability during a drought has significant impacts on crop and livestock productivity and the lack of surface and groundwater availability may also increase the costs to access water for irrigation and livestock.

Finally, extreme and high heat events can impact critical infrastructure systems such as transportation, structural integrity of buildings, and utilities. Such impacts to infrastructure such as roadways and buildings can include, but is not limited to:

- Power lines become less efficient from overheating effects like drooping and load shedding capacity can be overwhelmed as transformers degrade or become damaged.
- Concrete degradation from direct sunlight and heat can cause cracks, dimpling of the material, expansion within the structure which allows moisture to infiltrate and break down the stability of the foundation/support.
- Overheating of materials can permeate buildings and cause greater energy needs for cooling, dangerous internal heat levels during power outages, and degraded refrigerant abilities.
- Cast iron cannot bend or stretch and will crack to relieve stresses of a weld if there is no preheat event.
- The loss of cooling abilities at offices, including emergency services, could result in power loss as sites will have to shut down or reduce operations to prevent overheating.
- Crop decay and increased livestock mortality rates are expected due to worsening heat.

- Snowpacks have begun to melt earlier and form later as winter shortens causing earlier blooms and out of cycle harvest periods along with reduced water storage capabilities.
- Local dams, levees, and other water retention structures could see loss in efficiency as cracks, breaks, and elevation shifts from subsidence expand across regions from the stressors of heat and overpulling.

9.5 Mitigation Capabilities

Currently, there are limited mitigation measures related to excessive heat and drought. During the long periods of excessive heat, residents are asked to reserve water and heat index warnings are issued. Public service announcements are issued, and cooling centers may be available to the public during an excessive heat event. For example, in July 2012 the Allegany County Fairgrounds Multi-purpose building was opened as a cooling center, as well as a 24-hour shelter due to excessive heat event.

Cooling center information is provided on the Allegany County Health Department's website: https://health.maryland.gov/allegany/Pages/Home.aspx. Residents can also obtain information about cooling centers by calling the Health Department (301-759-5000).

Additionally, Allegany County's Department of Emergency Services provides emergency preparedness information via the Ready.gov website: https://www.ready.gov/. This website provides specific preparedness and alert information for extreme heat events; https://www.ready.gov/heat. Residents can also follow the Emergency Services Facebook page for regular updates.

9.6 Future Conditions

9.6.1 Drought

Increasingly frequent drought conditions have long been forecasted as a consequence of warming temperatures. A study from the National Center for Atmospheric Research (NCAR) projects serious impacts as soon as the 2030's. Impacts by century's end could go beyond anything in the historical record.

Scientists use the Palmer Drought Severity Index to measure drought as introduced in Table 9-6. A positive score indicates wetter conditions, and a negative score indicates drier conditions; a score of zero is neither overly wet nor dry.

According to the NCAR study, the most severe drought in recent history, in the Sahel region of western Africa in the 1970s, had a PDSI of -3 or -4. By contrast, the study indicates that by 2100 some parts of the U.S. could see -8 to -10 PDSI. By the 2030's, the central and western U.S. could see average readings dropping to -4 to -6, the study projected. At present, most of the Northeast (including Maryland) is expected to see only slightly drier conditions by the end of the 2030's, that is, a decreasing PDSI of -0.5 to -1.0.

Short-term drought forecasting (e.g., daily, weekly, and up to 3 months) is completed by NOAA via the National Integrated Drought Information System (NIDIS) and is available at www.Drought.gov. Current data (as of June 20, 2023) shows that all of Allegany County is in a "moderate drought" condition. Moderate drought is a scenario where the following conditions may apply: some damage to crops, pastures, high fire risk, streams, reservoirs or wells low, some water shortage developing or imminent, and voluntary water use restrictions requested.

According to the 2022 Census of Agriculture, Allegany County has 270 out of 12,550 total farms in the state. This represents 2.1% of total farms in Maryland. Farms comprise 34,179 acres in Allegany County, or 8.8% of the total land acreage in the County. Total farm acres in Allegany County have been on the decline since 2012 according to the census. While droughts are projected to become more frequent and intense, there will likely be less farmland in Allegany County to be negatively impacted by droughts in the future.

The projected increase in the population of Allegany by 2045 might create a scenario where there is more competition for water resources during a drought. This increased competition for water due to drought conditions may disproportionately impact vulnerable populations, particularly low income households.

9.6.2 Excessive Heat

In regard to excessive heat, the Center for Climate and Energy Solutions reported the following information regarding extreme heat and climate change:

> *During the past decade, daily record high temperatures have occurred twice as often as record lows across the continental United States, up from a near 1:1 ratio in 1950. By midcentury, if greenhouse gas emissions are not significantly curtailed, scientists expect 20 record highs for every low. The ratio could be 50:1 by the end of the century. By the 2050's, many of the Mid-Atlantic States including urban parts of Maryland and Delaware could see a doubling of days per year above 95 degrees F.*
>
> *Extreme heat can also increase the risk of other types of disasters. When heat occurs in conjunction with a lack of rain, drought can occur. This, in turn, can encourage more*

extreme heat, as the sun's energy acts to heat the air and land surface, rather than to evaporate water. Hot dry conditions also increase the risk of wildfires, like the ones in 2013 in Colorado that were fueled by record high heat and an ongoing drought.

Highlights from the April 2016 Maryland Climate and Health Profile produced by the Maryland Department of Health and Mental Hygiene indicate that the occurrence of summertime extreme heat events more than doubled during the 1980's, 1990's, and 2000 in Maryland compared to the 1960's and 1970's. Modeling indicates that extreme heat events are projected to rise across all counties in Maryland into 2040. Additional highlighted data includes:

- Extreme heat events increased the risk of heart attacks in Maryland by 11%.
- The increase in heart attack related extreme heat events was much higher among non-Hispanic blacks compared to non-Hispanic whites (27% vs. 9%).
- Compared to 2010, increases in the frequency of extreme heat events during summer months in 2040 are projected to result in a higher rate of hospitalization for heart attack in Maryland.
- Compared to 2010, increases in the frequency of extreme heat events during summer months in 2040 are projected to result in a higher rate of hospitalization for asthma in Maryland.

Extreme heat conditions are expected to become more frequent and intense due to changing climate conditions. The need for more cooling centers is one major consideration in terms of future development to meet the needs of vulnerable populations.

Chapter 10: Wildfire

2024 Plan Updates

Chapter 10: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 10-3: Section 10.1 has been updated with new information from the 2022 Local Land Preservation, Parks and Recreation Plan. Figure 10-1 has been updated and shows local, state, and federal lands in the County.

Page 10-4: Table 10-2 Description of Fuel Types has been added to include descriptions and examples of common wildfire fuel types from the USDA.

Page 10-4: Section 10.1.1 Wildfire History and Risk has been updated with the latest "fire starts" data from the Maryland DNR Forest Service (Table 10-3). Table 10-4 has been added to the chapter and includes fire department responses to wildfires in the county from 2000 to 2022. Future probability of wildfire events is also included in this section.

Page 10-6: Section 10.2 County Perspective was updated to include wildfire risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the wildfire hazard. This section has been reviewed to ensure information is up to date.

Page 10-7: Figure 10-2 and 10-3 have been added to this chapter from the State's Strategic Forest Land Assessment. The figures show wildfire threat potential and wildfire protection priority locations, respectively.

Page 10-8: Section 10.3 Municipal Perspective has been reviewed and updated to represent current municipal risk and capabilities.

Page 10-9: Section 10.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts wildfires have on people, the built environment, and systems.

Page 10-9: Section 10.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 10-10: Added Section 10.6 Future Conditions. This section examines the potential impacts that climate change is projected to have on frequency and intensity of wildfire events.

CHAPTER 10: WILDFIRE

10.1 Wildfire Hazard Profile

Wildfire is an uncontrolled fire spreading through vegetative fuels, threatening and possibly consuming structures and other community assets. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. A wildland fire is a fire in an area in which development is almost nonexistent, except for roads, power lines and similar facilities. The wildland urban interface (WUI) is an area where structures and other human development meet or intermingle with wildland or vegetative fuels. Fire may be rated as low, moderate, high, very high, or extreme based on the type of fuels that help sustain them (Table 10-1).

Wildfires can occur at any time of the year, but they mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can spread out of control. Human carelessness, negligence, and ignorance cause most wildfires. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Because wildfires consume the vegetative land cover, potential aftermath impacts include severe erosion and the silting of stream beds and reservoirs, resulting in damage to the watershed and increased flooding risks.

Table 10-1. National Fire Danger Rating System – Descriptions

Rating	Description
Low	When the fire danger is "low" it means that fuels do not ignite easily from small embers, but a more intense heat source, such as lightning, may start fires in duff or dry rotten wood. Fires in open, dry grasslands may easily burn a few hours after a rain, but most wood fires will spread slowly, creeping or smoldering. Control of fires is generally easy.
Moderate	When the fire danger is "moderate" it means that fires can start from most accidental causes, but the number of fire starts is usually pretty low. If a fire does start in an open, dry grassland, it will burn and spread quickly on windy days. Most wood fires will spread slowly to moderately. Average fire intensity will be moderate except in heavy concentrations of fuel, which may burn hot. Fires are still not likely to become serious and are often easy to control.
High	When the fire danger is "high", fires can start easily from most causes and small fuels (such as grasses and needles) will ignite readily. Unattended campfires and brush fires are likely to escape. Fires will spread easily, with some areas of high intensity burning on slopes or concentrated fuels. Fires can become serious and difficult to control unless they are put out while they are still small.
Very High	When the fire danger is "very high", fires will start easily from most causes. The fires will spread rapidly and have a quick increase in intensity, right after ignition. Small fires can quickly become large fires and exhibit extreme fire intensity, such as long-distance spotting and fire whirls. These fires can be difficult to control and will often become much larger and longer-lasting fires.
Extreme	When the fire danger is "extreme", fires of all types start quickly and burn intensely. All fires are potentially serious and can spread very quickly with intense burning. Small fires become big fires much faster than at the "very high" level. Spot fires are probable, with long-distance spotting likely. These fires are very difficult to fight and may become very dangerous and often last for several days.

Source: USDA – Wildland Fire Assessment System.

Occasionally, brush fires threaten urban development where homes are built in close proximity to forest, or brush covered land. As more former agriculture land reverts to brush, this problem will become more prevalent. Since more than 78% of Allegany County's land surface is covered by forest, wildfire is a major concern. According to the *2022 Local Land Preservation, Parks and Recreation Plan,* more than 68,306 acres of forested land is managed by the State of Maryland and the Federal Wildlife Administration (Figure 10-1).The State Department of Natural Resources and the Federal government take a leading role in fire suppression throughout the County.

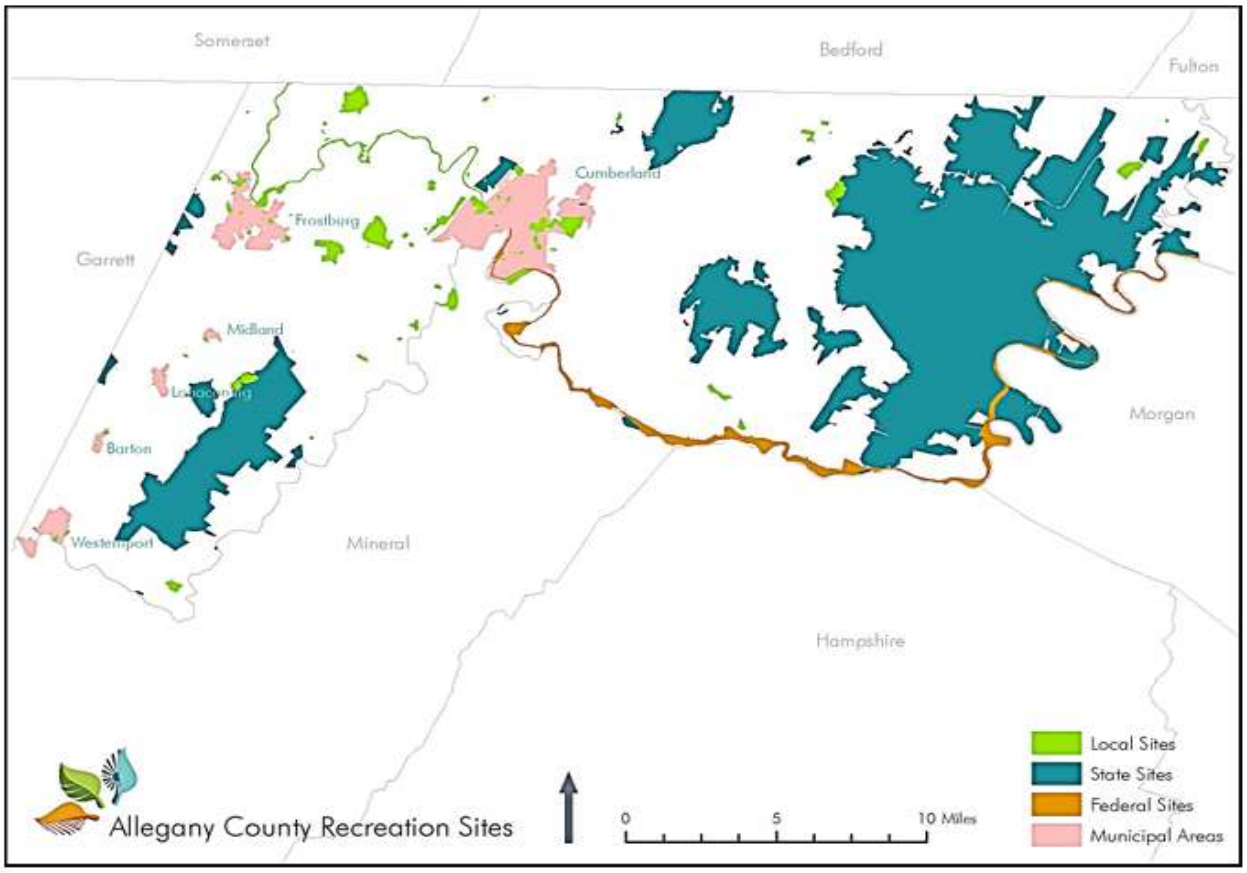


Figure 10-1. Allegany County State & Federal Lands. Source: 2022 Local Land Preservation, Parks and Recreation Plan

Allegany County primarily contains deciduous (hardwood) forest; therefore, the fuel type is hardwood litter. According to the Maryland Department of Natural Resources Forest Service, this fuel type produces fires that typically burn the surface leaves and debris, with flame lengths of 1-4 feet. Table 10-2 describes the common types of fuel for wildfire.

Table 10-2. Description of Fuel Types		
Fuel Type	**Description**	**Example**
Ground fuel	This vegetation is close to the ground or lying on the ground. Ground fuels include dead grass and leaves; needles, dead branches, twigs, and logs.	
Surface fuel	These plants and trees are closer to the ground but are not actually lying on the ground. They are usually made up of shrubs, grasses, low-hanging branches and anything not located in the high branches of the trees that may burn. They can also be referred to as "ladder fuels," because fire can move from ground fuels to surface fuels, then on to crown fuels.	
Crown/Aerial fuel	Crown fuels are only in the "crowns" or tops, of the trees. They do not touch the ground and are usually the high branches of trees. When a wildfire burns in the tops of the trees, firefighters call it a "crown fire."	
Source: USDA Forest Service. www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5042664.html		

Residual ground fires may smolder in the duff layer (partially decomposed leaves and humus). In areas with a dense layer of shrubs, or a large accumulation of woody debris, fire intensity and rate-of-spread can increase substantially. Considering the total number of incidents compared to the number of acres burned, a majority of the fires responded to by fire departments were residual ground fires.

10.1.1 Wildfire History & Risk

According to the Maryland Department of Natural Resources (DNR) Forest Service, a total of 440 recorded fire start events have impacted Allegany County between 2000 and 2022. Therefore, in terms of number of occurrences, Allegany County experiences about 19.1 fire starts annually, which burn an average of 77.9 acres a year. These fire starts are recorded on Table 10-3 on the following page.

Table 10-3. Fire Starts, 2000 to 2022		
Year	**Number of Fire Starts**	**Acres Burned**
2000	33	57.3
2001	40	947.9
2002	43	189.2
2003	16	12.5
2004	7	3.7
2005	26	20.7
2006	41	53.9
2007	22	27.4
2008	24	25.9
2009	36	121.8
2010	25	31.0
2011	9	14.3
2012	15	13.7
2013	4	1.3
2014	16	20.2
2015	14	49.4
2016	21	45.6
2024 Plan Update		
2017	11	64.3
2018	6	28.9
2019	10	23.4
2020	4	16.2
2021	10	18.6
2022	7	5.0
Average	**19.1**	**77.9**
Total	**440**	**1,792.2**
Source: Maryland DNR Forest Service Fire Starts 2000 to 2022.		

In addition, the Maryland Fire Incident Reporting System (MFIRS) provides data on fire department responses to wildfire incidents and reported acres burned. According to MFIRS, fire departments respond to an average of 123 wildfire incidents per year. These events burn 24.9 acres of land annually.

Table 10-4. Fire Department Response to Wildfires*		
Year	**Total Incidents**	**Acres Burned**
2000	96	0
2001	185	0
2002	150	0
2003	49	5
2004	25	2
2005	86	7
2006	163	32
2007	120	27
2008	133	61
2009	188	35

Table 10-4. Fire Department Response to Wildfires*		
Year	**Total Incidents**	**Acres Burned**
2010	198	67
2011	130	20
2012	123	11
2013	80	4
2014	158	11
2015	191	56
2024 Plan Update		
2016	150	69
2017	108	19
2018	90	29
2019	95	31
2020	116	23
2021	122	32
2022	74	33
Average	**123.0**	**24.9**
Total	**2,830 incidents**	**574 acres**

Source: Maryland Fire Incident Reporting System (MFIRS) – Fire Department Responses 2000-2022.
*Note: Defined as "Natural Vegetation Fires (140-143)" in the NFIRS database.

10.2 County Perspective

The *2021 State Hazard Mitigation Plan* identifies Allegany County's risk ranking for wildfire as "medium-high." Allegany County HMPC members ranked the wildfire hazard as "high."

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the wildfire hazard as fifth.

Maryland's Strategic Forest Lands Assessment is conducted by the Maryland Department of Natural Resources with financial assistance from the United States Department of Agriculture Forest Service and is composed of many types of vulnerability studies applying to the forests of Maryland. Figure 10-2 shows one of the studies conducted on wildland/urban interface fire threat potential. Allegany County is shown to be in the very high to extreme Wildland Urban Interface Fire Threat Potential.

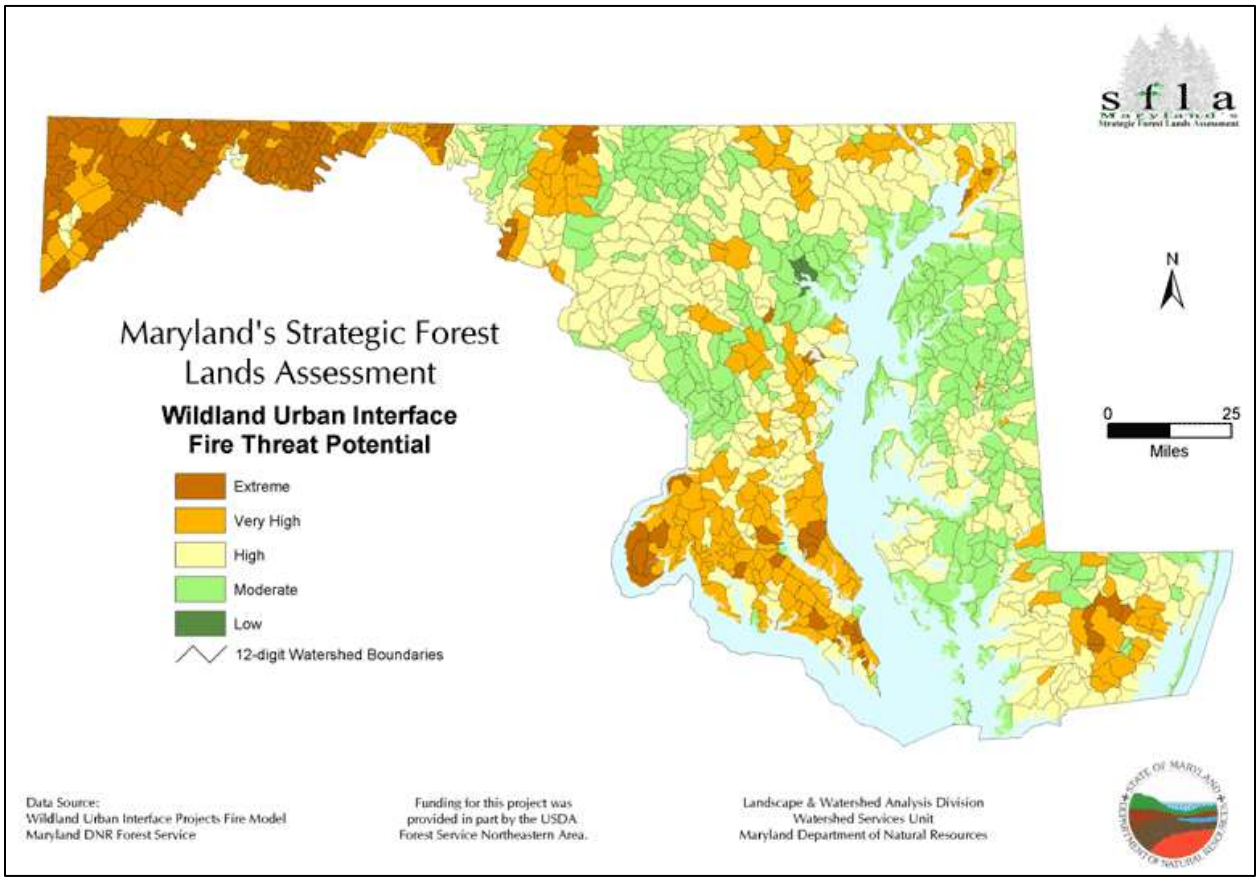


Figure 10-2. Maryland's Strategic Forest Lands Assessment. Source: Maryland DNR Forest Service.

Figure 10-2 represents only a single component of the greater "Protect Forests From Harm (PFFH) Wildfire Priority Map." Figure 10-3 (next page), which is part of the *2020 Forest Action Plan*, highlights areas within Maryland where the following three conditions are met:

1. Wildfire is historically prevalent;
2. Wildfire has the potential to cause great harm to people and property, and;
3. Where fuels and other conditions can increase the likelihood and intensity of wildfire.

Allegany County, including all of its municipalities, are within the wildfire priority area as depicted in orange in Figure 10-3, meaning they meet the three aforementioned qualifications. Full statewide results of the analysis are depicted in Figure 10-3.

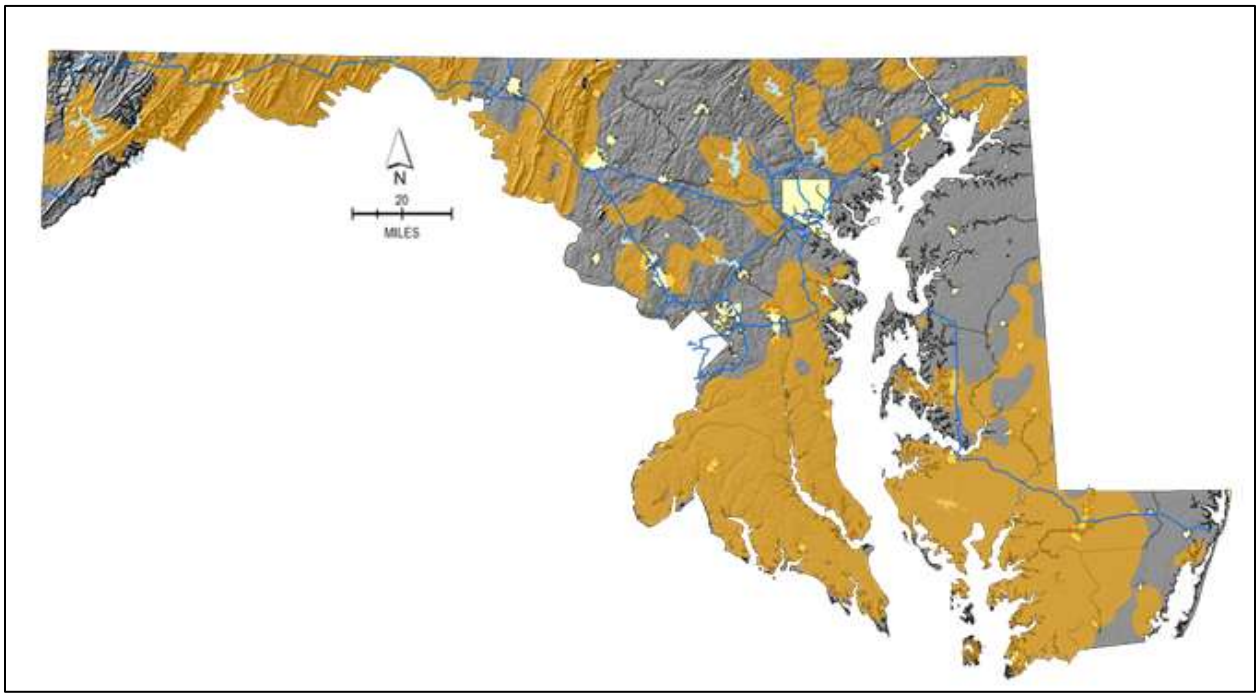


Figure 10-3. Protect Forests From Harm Wildfire Priority Map.
Source: 2020 Forest Action Plan Part I: Forest Resource Assessment.

The areas of greatest wildfire concern are within and surrounding the seven municipalities due to the fact that they are population centers. Also, growth patterns, discussed in Chapter 2 under Development Trends, are expanding beyond the incorporated limits of the municipalities through annexation. Therefore, structures within the growth areas may be more susceptible to damage caused by wildfires due to their forested conditions. Additionally, the area of the County containing the most contiguous forest stand is the Green Ridge State Forest, located in eastern Allegany County as shown in Figure 10-1.

10.3 Municipal Perspective

As previously mentioned, municipalities are at a slightly higher risk of wildfires. All municipalities in the County are surrounded by forestland and are within the wildland urban interface and development is continuing to expand outward. The municipalities within the Georges Creek Region; City of Frostburg, Midland, Lonaconing, Barton, Westernport and Luke, are surrounded by forestland and therefore if growth continues, the new development will likely encroach into the wooded areas, increasing the risk for wildfires. The City of Cumberland is at the same risk; however, the boundary of the forest is more defined by the city limits. Development is concentrated in the center of Cumberland and contains a limited amount of forested land.

10.4 Impacts to People, Systems, and Resources

Wildfire impacts in Maryland are most commonly associated with the natural environment due to the high amount of forested areas in the state. Allegany County is the most heavily forested county in the state (i.e., 78 percent of its land area). Common impacts to the environment include destruction of forested areas, loss of wildlife habitat, destruction of crops, and temporary poor air quality due to smoke generated by wildfire. Recently, beginning on June 7th, 2023, the air quality index in Allegany County was at "moderate" levels and much of the northeastern United States was at "hazardous" levels, which triggered health warnings of emergency conditions. By the end of June, air quality alerts for the entirety of Maryland were at hazardous levels. The drop in air quality was not due to a local, or even regional, wildfire but rather due to massive wildfires in Eastern Canada. The smoke from these fires generated an orange smog-like haze that lowered air quality for multiple days in Allegany County.

People and structures are more at risk to wildfire if they are within or near the wildland urban interface, which is where forested areas and development meet. The fire itself can cause property damage and physical injury or even death, while smoke and ash can greatly impact those with pre-existing respiratory diseases or heart diseases. Vulnerable populations include infants, young children, pregnant women, older adults, and those with additional medical or mobility needs. In large scale incidents, people may be displaced due to damaged or destroyed homes and thus require temporary shelter. All structures within the immediate area of a fire would be vulnerable, but older wooden structures would be more likely to suffer greater damage or be destroyed.

Transportation and utility systems are very likely to be negatively impacted by a wildfire event. Wildfires can block transportation routes and cause traffic delays, which would slow emergency responders and members of the public. Roadways connect the community – any blockages would disrupt how people move throughout Allegany County and its municipalities. Additionally, emergency response workers such as firefighters are also greatly impacted by injuries, burns and smoke inhalation, particularly at high concentrations. These injuries can make the emergency response system less effective and slow overall response times.

10.5 Mitigation Capabilities

The State Department of Natural Resources Forest Service and the Federal government take the leading role in fire suppression throughout the County with the assistance from local fire departments and police. The Department of Emergency Services also assists with coordination and communication during wildfire events. In order to increase preparedness and mitigation

capabilities, it is recommended that within the next five years the County and its municipalities become a Firewise Community.

Some local fire departments (of both incorporated and unincorporated communities) maintain community wildfire protection/response plans, including: Frostburg Fire Department No. 1, Corriganville Volunteer Fire Department, Bowman's Addition Volunteer Fire Company, and Orleans Volunteer Fire Company.

An excerpt from the Department of Natural Resources Forest Service website details their agency's response and mitigation capabilities throughout the State of Maryland:

> *"To combat these wildfires the Forest Service maintains a fleet of wildfire suppression equipment including 42 Type 6 & 7 wildfire engines, 19 tractor plow (fire dozer) units with transports, 2 tankers, and 1 bombardier. This equipment is utilized by agency personnel for both initial and extended attack operations on wildfires within the state. The DNR Forest Service is the only state agency that maintains this type of specialized heavy equipment for wildfire suppression. The Forest Service also relies on the volunteer and career fire service throughout the state for initial attack response for wildfires.*
>
> *Prescribed burn operations are also conducted annually to reduce the risk of wildfires. Burns are conducted for various objectives including hazardous fuels reduction, site preparation, fuels manipulation, and wildlife habitat improvement. Treatments are accomplished on an average of 900 acres annually with 147 burns completed on 4,435 acres over the past five years.*
>
> *Maryland has large areas of wildland urban interface (WUI) or areas where homes and forest are intermingled. This increases the threat of loss of property even with small wildfires. Landowners and homeowners must be aware of the dangers of wildfires and develop and use "Firewise" building and landscaping practices to help reduce the risk to their properties."*

10.6 Future Conditions

The Maryland DNR indicates that wildfires are a common occurrence in the State. During a typical year the Maryland Forest Service responds to an average of 123 wildfires that burn more than 1,780 acres of forest, brush, and grass. Fire departments respond to over 5,000 wildfire incidents per year.

While wildfires occur every month in the State, they peak in the spring and fall seasons.

During these seasons the leaves from deciduous trees have fallen to the ground, which allows sunlight and wind to reach the forest floor and dry out the fuel (i.e., leaves). Additionally, relative humidity tends to be drier during the spring and fall, which when combined with wind can create the conditions that allow a wildfire to spread quickly.

Climate change is expected to play a role in increasing the frequency and intensity of wildfires across the United States and in Maryland. An article written for the New York Times, in which the article references a United Nations Report, suggests the following:

> "In a moderate scenario for global warming, the likelihood of extreme, catastrophic fires could increase by up to a third by 2050 and up to 52 percent by 2100, the report estimates. If emissions are not curbed and the planet heats up more, wildfire risks could rise by up to 57 percent by the end of the century."[i]

As determined in Section 10.1, Allegany County experiences an average of 123 wildfire events annually. Based on the moderate scenario for global warming, which predicts an increase in major wildfires of up to a third by 2050, Allegany County's total annual wildfires could increase by 41 events per year, for a total of 164 wildfires annually.

The U.N. report urges governments to become even more proactive about wildfire hazards. Of every dollar spent in the United States on managing wildfires, almost 60 cents go toward immediate firefighting responses, according to research cited in the report. Much less is spent on reducing fire risks in advance and helping communities recover in ways that could make them more resilient.[ii]

As shown by Figure 10-1, there are areas in Allegany County that are at higher wildfire risk. These areas include heavily forested areas and developed land, such as municipalities, that are within the Wildland Urban Interface. These areas are at higher risk due to the large tracts of forestland surrounding and encompassing them.

New developments should be carefully placed if not avoided entirely. In general, future development near or along large areas of contiguous forest should be avoided to reduce wildfire risk. Additionally, development in areas that lack public water and sewer should be heavily considered as the lack of public water access may create difficulties in extinguishing large fires.

[i] www.nytimes.com/2022/02/23/climate/climate-change-un-wildfire-report.html
[ii] www.unep.org/resources/report/spreading-wildfire-rising-threat-extraordinary-landscape-fires

Chapter 11: Rail Accidents

2024 Plan Updates

Chapter 11: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 11-2: Section 11.1 Rail Accidents History & Risk has been updated with new narrative regarding train accidents occurring within the last five years from the Federal Railroad Administration.

Page 11-2: A new table – Table 11-1 Annual Rail Incidents in Allegany County – has been added to this section and includes state and county-level data for all rail accidents between 2017 and 2022.

Page 11-3: Table 11-2 Highway-Rail Grade Crossing Incidents in Allegany County has been updated and includes incidents occurring from 2017 to 2022.

Page 11-3: Section 11.2 County Perspective was updated to include rail accident risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the rail accident hazard. This section has been reviewed to ensure information is up to date.

Page 11-4: Section 11.3 Municipal Perspective has been reviewed and updated to represent current municipal risk and capabilities. For the rail accident hazard, the County and its municipalities largely share the same concerns.

Page 11-4: Section 11.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts rail accidents and rail hazmat accidents have on people, the built environment, and systems. A recent railway hazmat incident occurring in East Palestine, Ohio has been added to highlight the potential impacts a major incident has on people, systems, and resources. Figure 11-2 has been added as a visual aid.

Page 11-5: Section 11.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 11-6: Section 11.6 Future Conditions has been added to this chapter. The section looks at recent data trends (i.e., incidents within the last decade) to determine potential future conditions.

CHAPTER 11 RAIL ACCIDENTS

11.1 Rail Accidents History & Risk

According to the Federal Railroad Administration rail incidents, or train accidents, are defined as "a safety-related event involving on-track rail equipment (both standing and move), causing monetary damage to the rail equipment and track above a prescribed amount." These events include derailments, collisions, highway-rail crossing incidents, obstructions, explosion-detonations, fire/violent ruptures, and other impacts. Derailment is by far the leading cause of rail accidents followed by highway-railway crossing incidents.

The state has reported a total of 69 train accidents since the beginning of 2017, which equates to about 12 incidents annually (Table 11-1). Allegany County consistently has the highest total number of train accidents in the state. Since 2017, a total of 21 train accidents have occurred in the County, which represents about one-third of the total accidents occurring in the state within this timeframe. This is followed by Baltimore County (13 accidents), City of Baltimore (10 accidents), and Washington County (6 accidents).

Table 11-1: Annual Rail Incidents in Allegany County

Year	Rail Incidents (State of Maryland)	Rail Incidents (Allegany County)	Percent of Total (Allegany County)
2017	16	7	43.7%
2018	11	3	27.3%
2019	16	2	12.5%
2020	9	5	55.5%
2021	5	1	20.0%
2022	12	3	25.0%
Total	**69**	**21**	**30.0%**

Source: Federal Railroad Administration Office of Safety Analysis.

The public is most likely to be impacted by a type of rail accident known as a highway-rail grade crossing incident. The Federal Railroad Administration defines a highway-rail grade crossing incident as "any impact between a rail and highway user (both motor vehicles and other users of the crossing as a designated crossing site, including walkways, sidewalks, etc.) associated with the crossing."

In terms of number of occurrences of highway-rail grade crossing incidents, the Federal Railroad Administration Office of Safety Analysis lists a total of 36 highway-rail grade crossing incidents occurring within Allegany County from January 1975 through December 2022 (Table 11-2). Therefore, Allegany County experiences 0.76 highway-rail grade crossing incidents per year.

Table 11-2: Highway-Rail Grade Crossing Incidents in Allegany County		
Year(s)	**Highway-Rail Grade Crossing Incidents**	**Highway-Rail Grade Crossing Deaths**
1975-1979	2	0
1980-1984	7	0
1985-1989	7	0
1990-1994	3	0
1995-1999	1	0
2000-2004	4	1
2005-2010	3	1
2011-2016	6	3
2024 Plan Update		
2017-2022	3	1
Total	**36**	**6**
Source: Federal Railroad Administration Office of Safety Analysis.		

11.2 County Perspective

The *2021 State Hazard Mitigation Plan* includes rail accidents as part of "transportation accidents" which is a sub-hazard to human-caused hazards and threats. The State's risk ranking for the hazard is "medium-high." Allegany County HMPC members ranked the rail accident hazard as "medium" due to the railway location and amount of railway within the County.

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the rail accident hazard as third.

Figure 11-1. CSX Rail Yard located in City of Cumberland, Maryland.

The railway traverses the County and parallels the Potomac River and tracks through major population centers. There are 392.76 miles of

railway within the County. One of the major rail yards for CSX is located in the City of Cumberland. Many commodities are transported by CSX including:

- Agricultural Products
- Automotive
- Bioenergy
- Building Material
- Chemicals and Fertilizer
- Coal
- Consumer Products
- Food
- Machinery
- Metals
- Military
- Minerals
- Paper
- Pulp
- Fiber Products
- Transportation Equipment
- Waste

Considering the railway traverses the County, railway accidents are of concern due to the numerous crossings found throughout the County. There are approximately 163 railroad crossings within Allegany County. Possible secondary effects of these accidents include the release of chemical/hazardous materials, fires (both urban and rural), and utility failures (depending on the accident venue). The maximum transportation-related threat to Allegany County is when an incident occurs in or near a heavily populated area.

11.3 Municipal Perspective

Municipalities share the same concerns as the County. However, since one of CSX's major railyards is located in the City of Cumberland, the risk for a rail hazmat incident increases significantly. Therefore, all information on the materials being transported should be readily available to all municipalities, specifically the City of Cumberland, and appropriate personnel should an accident occur.

11.4 Impacts to People, Systems, and Resources

Much like transportation accidents, the largest potential negative impacts from rail accidents involve hazardous materials. According to the Association of American Railroads, railroads moved about 2.3 million carloads of plastics, fertilizers, and other chemicals in 2022. Of these, the vast majority (i.e., 99.9%) reach their destination without incident and not all of them are considered hazardous. Rail incidents are far less frequent than highway hazmat incidents but tend to be more costly overall. For example, there were an estimated 23,178 highway hazmat incidents in 2022, which caused $21.3 million in damage. In the same year, 355 railway spills were recorded, but damages were more than $45 million.

Rail hazmat incidences are rare, but when they do occur impacts can include: health issues, evacuation, disruption of emergency services, economic costs (e.g., cleanup, damage to cars

and tracks, disruption of shipping infrastructure) and environmental degradation.

An example of a recent local railway hazardous material incident occurred in Hyndman, PA. On the morning of August 2, 2017, a CSX freight train carrying hazardous materials derailed. A total of 32 train cars derailed, which caused some fires to ignite; the cars that ignited were carrying liquid petroleum gas and molten sulfur. The event forced emergency officials to evacuate the town for 4 days. Emergency response included assistance from Allegany County.

A recent example of a worst-case scenario rail accident was the train derailment that occurred in East Palestine, Ohio on February 3, 2023. A Norfolk Southern freight train carrying hazardous materials derailed, which caused several cars to spill their hazardous material contents. Emergency crews conducted a controlled burn of several railcars, which released hydrogen chloride and phosgene into the air. Residents within a one mile radius were evacuated and emergency responses were initiated from agencies in Ohio, Pennsylvania, and Western Virginia.

Figure 11-2. Freight train derailment in East Palestine, Ohio, February 6. 2023. Source: NTSB.

Side effects from this derailment included but were not limited to: evacuation of local residents, disruptions to local services, disruption to local business, health concerns related to the release of hazardous materials, exposure to dioxins, release of contaminants into the air caused by the controlled burn, release of contaminants into the water, related lawsuits, and environmental damage including animal deaths, habitat destruction, and pollution of water.

11.5 Mitigation Capabilities

In the event of a major rail accident, the Allegany County Hazardous Incident Response Team (HIRT) would respond to the scene and immediately identify the material contained within the tanker cars. Placards which identify hazardous materials contained in the tankers are located on the side of railroad cars. These numbers are listed in the U.S. Department of Transportation Emergency Response Guidebook, which is updated regularly. Relevant response information (e.g., toxicity, possibility of fire or explosion, recommended protective clothing, and health hazards) is also included for hazardous materials included in the guidebook.

As this information is collected, a command post is established to coordinate the response of various agencies that would be involved. Other variables collected at this time include wind direction and wind speed. Agencies at the command post work collaboratively to plan the response and determine if evacuation is necessary. In some cases, rail incidents involving hazardous materials might require residents to shelter in place.

Emergency routine exercises are conducted locally every two years to assess and improve preparedness for emergency responses. Allied agencies and first-responders take part in the exercises.

In addition, CSX states the following in regard to emergency response, "In the communities the company serves, CSX provides emergency planning assistance and training to local fire, police and emergency response personnel. The company has developed a customized training program for two groups: emergency responders and law enforcement personnel."

11.6 Future Conditions

According to Federal Railroad Administration data compiled by the Association of American Railroads, freight rail has been the safest it has ever been since 2000 and specifically within the last decade. The Association reaches the following national-level conclusions based on the data[i]:

- Class I railroads' (i.e., railroad carriers earning more than $250 million annually) mainline accident rate is down 49% since 2000. For all railroads, that rate has declined 44% since 2000.
- Track-caused accidents have been down 55% since 2000 and are at their lowest-ever rate across the entire industry. Equipment-caused accidents are down 21% since 2000 but increased by 15% compared to 2021.
- For all railroads, the derailment rate has been down 31% since 2000. Despite that longer-term positive trend, it was up by 5% year-over-year.
- Per Class I railroad employee, the injury rate has dropped 63% since 2000 and is at an all-time low.
- Per carload, the hazmat accident rate is down 78% since 2000 and the lowest ever per preliminary BOE data.
- Grade crossing collisions were down 23% last year compared to 2000, but along with trespass incidents, these preventable accidents remain persistent challenges across the rail industry. Over 95% of rail-related fatalities are trespassers or grade crossing users. The combined total of trespasser and suicide fatalities for 2022 increased by 4% from 2021.

For Allegany County, the last decade sees the following changes (from Federal Railroad Administration Office of Safety Analysis data):

- Class I total accidents/incidents has declined by 83.3% since 2014.
- Train accidents (not at grade-crossings) are down 62.5% since 2014.
- Derailments are down 25% since 2014.

The primary drivers of the decline in rates of train accidents are attributed to "employee commitment to safety and ongoing industry investments in technology, maintenance, and equipment." The goal for the future is to become "zero accident" therefore it follows that rail accident trends will stabilize or continue downward for the foreseeable future as long as safety and accident prevention are highly prioritized at all levels.

[i] https://www.aar.org/issue/freight-rail-safety-record/

Chapter 12: Soil Movement

2024 Plan Updates

Chapter 12: visual and thematic updates were included throughout the chapter, including updates to fonts, colors, and the addition of this cover page detailing updates.

Page 12-2: Section 12.1 Soil Movement History & Risk has been updated. Information from FEMA's National Risk Index has been integrated. The index ranks landslide as "relatively high" for Allegany County.

Page 12-3: Section 12.2 County Perspective was updated to include soil movement risk ranking information from Chapter 3, as well as public survey results regarding level of concern for the soil movement hazard. This section has been reviewed to ensure information is up to date.

Page 12-6: Section 12.2 County Perspective was updated to include recent soil movement events from the USGS Landslide Inventory. The most significant recent event was a 2018 rockslide that occurred on Maryland Route 51.

Page 12-6: Section 12.3 Municipal Perspective has been reviewed and updated to represent current municipal risk and capabilities. Information from the National Risk Index has been included.

Page 12-6: Section 12.4 Impacts to People, Systems, and Resources has been added to this chapter to highlight the impacts soil movement has on people, systems, and resources.

Page 12-7: Section 12.5 Mitigation Capabilities has been reviewed to ensure capabilities are up to date.

Page 12-8: Section 12.6 Future Conditions has been added to this chapter. The section considers how climate change may impact the future occurrence and severity of landslides. More frequent and intense heavy rain events are likely to trigger more landslides in areas that already experience landslides.

Chapter 12 Soil Movement

12.1 Soil Movement History & Risk

The most common types of soil movement are landslides and slumps. According to the United States Geological Survey (USGS), a landslide is defined as "the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of 'mass wasting' which denotes any down-slope movement of soil and rock under the direct influence of gravity." A slump is similar but involves the slippage of a mass of earth and rock along a rotational axis (i.e., the slip plane). Usually, this mass rotates backward as it slips downslope. Many small slumps are related to slope disturbance of horizontal or folded rock units during road construction or mining activities. The disturbance of colluvial materials having poor soil characteristics also results in the downslope movement of these materials. In this chapter soil movement is used interchangeably with slope failure.

Subsidence is caused by a diverse set of human activities and natural processes that include the mining of coal, metallic ores, limestone, salt, and sulfur; the withdrawal of groundwater, petroleum and geothermal fluids, dewatering of organic soils; the wetting of dry, low-density deposits called hydro compaction; natural sediment compaction; liquefaction; and crustal deformation.

Susceptibility to landslides is the probable degree of response of the area's rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. High, moderate, and low susceptibility are delimited by the same percentages used in classifying the incidence of landslide. Based on the landslide map from the USGS, Allegany County is an area of high susceptibility and low incidence.

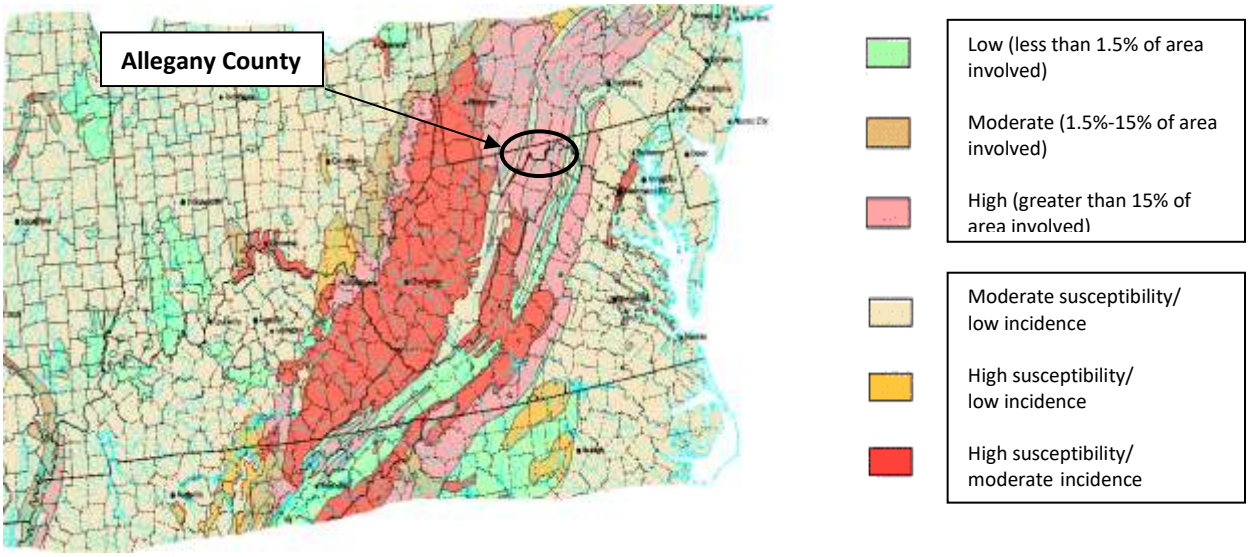


Figure 12-1. Landslide susceptibility. Source: United States Geological Survey (USGS).

The County being in an area of high susceptibility and low incidence is very much in line with FEMA's National Risk Index. According to the index, Allegany County's risk rating for landslide is "relatively high," which is the highest landslide risk rating in Maryland.

12.2 County Perspective

The *2021 State Hazard Mitigation Plan* ranks Allegany County's risk for soil movement, including landslides, sinkholes, and coastal erosion. The State's risk ranking for the hazard is "medium." Allegany County Hazard Mitigation Planning Committee (HMPC) members ranked the soil movement hazard as "medium" as well.

During the 2024 plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks the rail accident hazard as tenth.

This risk rating of "medium" determined by the HMPC is in large part due to a concern about development on steep slopes and subsidence in areas of western Allegany County. These areas are sometimes underlain by old coal mine diggings and/or layers of sedimentary rocks that have been folded moderately. These rock units alternate between sandstone, shale, and limestone. When exposed on steep slopes, as shown on *Appendix A-7*, normally the sandstone forms the cap rock at the top of the slope with shale or limestone lying underneath. When these weaker rocks are disturbed, the sandstone eventually fails and moves downslope.

This slump-type of soil movement is most common in the Georges Creek Watershed area, particularly in road cuts and in strip mining operations. While these movements are not normally on a large scale, they do result in road blockage from time to time, particularly where narrow valley floors are shared by a stream and a road or railroad. Route 36 and many county roads in the Georges Creek and Jennings Run watersheds are prone to this type of slope failure.

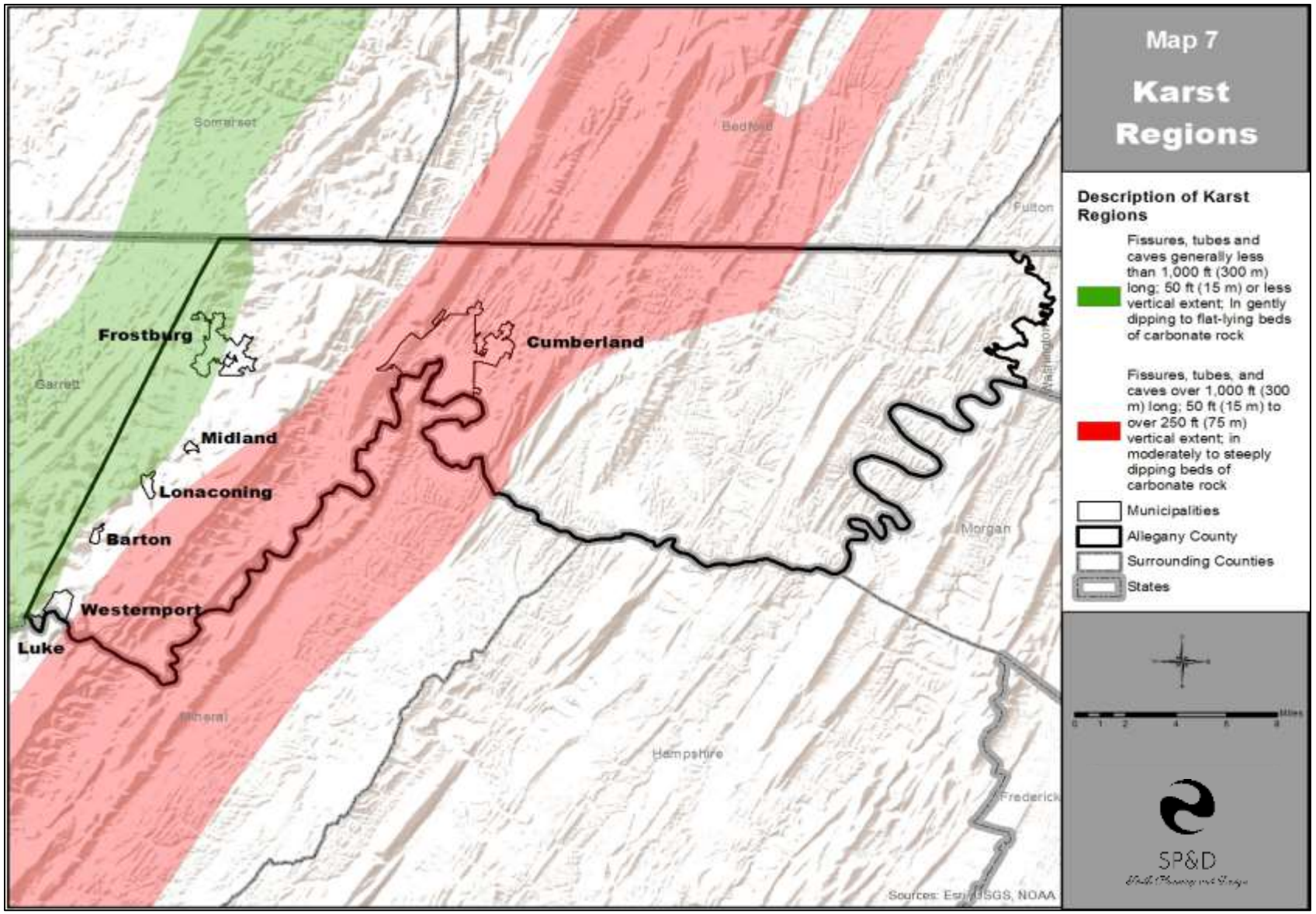
In addition, as discussed in Chapter 2, Allegany County is located in the Ridge and Valley Province, which contains karst features present along narrow valleys underlain by Silurian limestones. According to Maryland Geological Survey, "karst" describes terrain that is characterized by sinkholes, caves, underground streams, and other features that are formed

by the slow dissolution of calcium and magnesium oxides in limestone, dolomite, or marble bedrock. Karst terrain is among the most susceptible to environmental impact, including ground subsidence. Following storms, droughts, and changes in land use, sudden subsidence features known as sinkholes can cause damage to buildings, roads, parking lots, and farmed land. Sinkholes occur when a "bridge" of loose stones and soil collapses into a fissure or opening in the rock, sending surface material and water into underground cavities.

The Engineering Aspects of Karst developed a data set that shows areas of karst in the United States. This data set is a representation of United States Geological Survey (USGS) Open-File Report 2004–1352, which is a digital version of the 1984 USGS Engineering Aspects of Karst map (scale 1: 7,500,000). The following map depicts areas containing distinctive surficial and subterranean features developed by solution of carbonate and other rocks and characterized by closed depressions, sinking streams, and cavern openings.

Several popular caves are located in the karst region depicted in red on the following map. These caves are large sinkholes and fissures caves, some of which extend over a mile horizontally and hundreds of feet in depth. The caves located in the county include:

- Devil's Hole Cave
- Greises Cave
- Rocky Gap Cave
- Twiggs Cave



Map 12-1. Karst Regions in Allegany County, Maryland.

The most common type of soil movement in Allegany County is often related to heavy rainfall and subsequent runoff that weakens and undermines slopes in areas where road construction or other urban development cuts into the toe of a slope. During the construction of the Cumberland Freeway (i.e., Interstate 68) a large slope failure occurred on Wills Mountain south of Cumberland. A small-scale slope failure along an old fault zone in LaVale during the 1970's resulted in destruction of the back wall of a commercial structure. Slopes near Interstate 68 at Clarysville failed when a new commercial structure was built at the foot of a steep slope that was subject to runoff from an old railroad grade.

Figure 12-2. Flooding on Douglas Avenue. Source: Allegany County Department of Emergency Services.

In an effort to mitigate the loss of property, several parcels within Allegany County have been obtained through the County's buyout program. Structures at risk for flooding and slope failure have been purchased. In the last ten years, the County has obtained three parcels located along Church Street in Westernport. These parcels were subject to slope failure and drainage issues.

Figure 12-3. Landslide on Western Maryland Scenic Railroad. Photo Source: Cumberland Times-News.

In February 2016, a landslide was discovered on the Western Maryland Scenic Railroad tracks during a routine track inspection. Land below the railroad tracks slipped away at an estimated 2 to 4 feet, therefore the erosion made the tracks impassible. Track damage from the landslide was caused by a coal mine collapse. Repairs to the track and installation of a retaining wall cost an estimated $1 million. The landslide occurred between Frostburg and Switch Number 9, resulting in the remaining two miles of the scenic railroad to be closed for over a year.

Most recently, according to the USGS Landslide Inventory and reported by WCBC Radio, the following incident took place: at approximately 3:00 AM on September 28, 2018, a large rockslide occurred on Moores Hollow Road near Maryland Route 51. The rockslide was quickly cleared by responders and there were no delays in traffic.

12.3 Municipal Perspective

According to the National Risk Index, the census tract which includes the Town of Westernport, and the Town of Luke has the highest landslide risk in Allegany County.

However, most of the County is at relatively high risk due to similar geologic conditions being present throughout the entire county. Areas of higher risk include municipalities and developed areas where steep slopes are common, such as in the City of Cumberland's West Side. The Town of Westernport is likewise surrounded by bowl-like steep slopes that are prone to downslope movement. Midland, Lonaconing, and Barton are located on valley floors and are surrounded by steep slopes. Frostburg, at the head of the Georges Creek basin has steep slopes to the north in the Jennings Run Basin.

Figure 12-4. Flood Event in Lonaconing 2010. Source: Allegany County Department of Emergency Services

A recent municipal event occurred on March 14, 2010, when the Town of Lonaconing experienced a mine blow-out on Douglas Avenue during a heavy rain event. Rapid water engulfed the impacted area creating waterways that did not previously exist. Five homes were directly impacted by the event, three of which were flooded (Figure 12-4).

12.4 Impacts to People, Systems, and Resources

According to the 2021 State Hazard Mitigation Plan, soil movement could impact Allegany County in the following ways:

Public – Residential and commercial landowners are at risk of property damage, business disruption, injury, or loss of life during a severe incident. First responders such as fire and

police would be called to respond to an incident, which puts them within the hazard area, thus making them at-risk of injury while they work.

Continuity of Operations – Minimal impacts to most critical services unless the incident occurred on or near the critical facility's property. Delivery of services is likely to be slowed or disrupted during a major event if roads are blocked. Landslides and slumps have occurred along roadways in Allegany County, causing them to be closed temporarily for clearing and repair.

Property, Facilities, Infrastructure – Property owners within the hazard area might experience damage or loss of property. Other impacts to infrastructure include damage to roads and bridges, temporary closure of roadways, failure of stormwater systems, and power loss. Most structures share the same risk of landslide, but older homes or those constructed of lighter materials such as wood might receive more damage.

Environment – Erosion and debris flows are the biggest environmental impacts caused by soil movement such as landslides.

Economic – Local governments will carry the burden of repair and recovery costs associated with a landslide event. For example, economic damage can take the form of loss of land, loss of structures, disrupted or damaged transportation routes, and loss of tourism, particularly associated with the natural environment, as is popular in Allegany County.

Historic and Cultural Resources – A landslide event would heavily damage, or completely destroy, historic structures situated on or near steep slopes. While most of the County is at a relatively high risk of soil movement due to its topology, communities with the highest risk include the Town of Westernport and the Town of Luke. Predominantly in Allegany County, areas of steep slopes intersect with the special flood hazard area. A good example of this is the Georges Creek area. Historic structures located in the SFHA are identified and mapped in Chapter 16, Table 16-12. The following historic structures are located Georges Creek and surrounding areas, and feature steep slopes:

- Acme Hall (Mount Savage)
- Haus Saltbox House (Mount Savage)
- Mount Savage Jail (Mount Savage)
- Waitekunas Saltbox House (Mount Savage)

12.5 Mitigation Capabilities

Perhaps the most important mitigation measure taken by the county is the enforcement of sediment control and stormwater management measures. These measures are mandated by state law and have provisions for development on steep slopes as well as limitations for the amount of water that can be stored and released in conjunction with new development. Highway construction and surface mining are also subject to these measures. The Allegany County Soil Conservation District is responsible for revieing and approving sediment and erosion control plans for construction projects in the county. These plans are reviewed by urban planners in the soil conservation district in cooperation with local planning and zoning officials to ensure minimal soil erosion and nutrient runoff.

Additionally, the Maryland Department of the Environment-Bureau of Mines Division enforces all regulations dealing with mining operations within the State of Maryland. The Bureau of Mines also works to reclaim old, abandoned mines and to improve conditions caused by previous mining activities that pre-dated many of the regulations now in place.

12.6 Future Conditions

Climate change could lead to more landslides in certain parts of the world, particularly areas that regularly experience landslides. A recent quantitative study[i] conducted by NASA's Goddard Space Flight Center and the National Oceanic and Atmospheric Administration (NOAA) has linked more frequent and intense rainfall events due to climate change and increased risk of landslides in High Mountain Asia regions of China, Tibet, and Nepal.

According to the study, rainfall is the most common driver in landslide events, as the increased rainfall reduces the strength of the soil. As identified in Sections 12.2 and 12.3, Allegany County has experienced landslides and soil movement events caused by heavy rainfall in the past. In addition to projected increases in heavy rainfall events, the study identifies increased occurrences and intensity of wildfire events as another factor that could increase landslides. Wildfires destroy the vegetation that helps keep soil in place, leading to greater soil movement, which can be dangerous in areas with steep slopes.

A NASA article summarizing the study concluded the following:

> *"The full human impact of increasing landslide risk will depend on how climate change affects glaciers and how populations and community's change. When they evaluated their model projections in the context of five potential population scenarios, the team found that most residents in the area will be exposed to more landslides in the future*

> *regardless of the scenario, but only a small proportion will be exposed to landslide activity increases greater than 20 percent."*

The study shows new possibilities for research that could help local decision-makers prepare for future disasters related to soil movement and landslides. The future goal of the study is to expand its quantitative method to new study areas including Alaska and Appalachia.

In terms of growth pressure impacts, certain natural features constrain development (i.e., steep slopes). Unfortunately, much of the growth that occurred prior to the adoption of floodplain regulations in 1981 was in unsuitable locations due to the prevalence of steep slopes and floodplains. The declining population will cause less people in Allegany County overall to be vulnerable to hazards identified within the plan, and will potentially provide less competition for local resources, which may increase resilience.

While the Towns of Barton and Midland adopted comprehensive plans prior to the adoption of the *2014 Allegany County Comprehensive Plan*, they do not at present exercise zoning and land use authority. The Town of Luke currently has not adopted a comprehensive plan or municipal growth element, nor does it exercise zoning and land use authority.

In reviewing these plans, growth areas for all municipalities, with the exception of the City of Cumberland, were directed away from hazard areas such as steep slopes. Considering the amount of available land for development and the location of the floodplain in the City of Cumberland, projected development in the eastern portion may be impacted by flooding. It is imperative that the County and its municipalities promote new development away from the 1 percent-annual-chance floodplain and steep slopes in order to mitigate loss due to the flood and soil movement hazards.

[i] Kirschbaum, D. et al. (2020) Changes in extreme precipitation and landslides over High Mountain Asia. Geophysical Research Letters.

Chapter 13: Emerging Infectious Diseases

CHAPTER 13 EMERGING INFECTIOUS DISEASES

13.1 Emerging Infectious Diseases Hazard Profile

The amount of a particular disease that is usually present in a community is referred to as the baseline or **endemic** level of the disease. This term refers to the constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area.

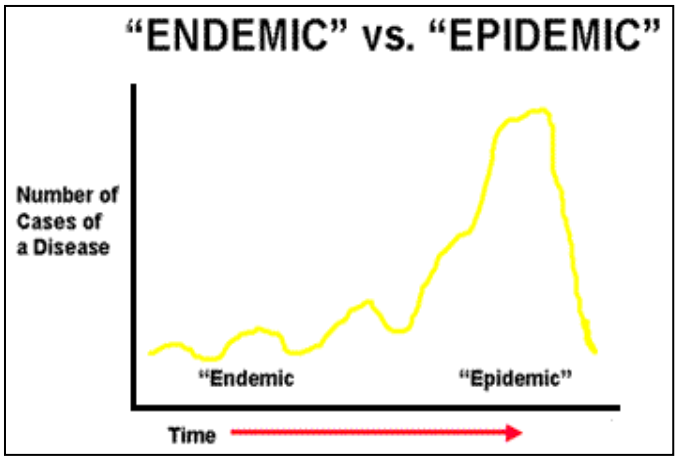


Figure 13-1: Endemic V. Epidemic. Source: health.mo.gov

According to the Centers for Disease Control and Prevention (CDC), sometimes the amount of disease in a community rises above the expected level; this is known as an epidemic. **Epidemics** are characterized by an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. While some diseases are so rare in a given population that a single case warrants an epidemiologic investigation (e.g., rabies, plague, polio), other diseases occur more commonly so that only deviations from the norm warrant investigation. Figure 13-1 provides a visual representation of the difference between endemic and epidemic.

Epidemics may also take the form of large scale incidents of food or water contamination, infestations of disease bearing insects or rodents, or extended periods without adequate water or sewer service. An epidemic may also be a secondary effect from other disasters such as flooding, tornadoes, hurricanes, or hazmat incidents.

The Maryland Department of Health (MDH) maintains counts for 86 diseases, conditions, outbreaks, and unusual manifestations as reported by health care providers and 43 diseases notifiable by laboratories in Maryland. The surveillance and reporting of these diseases is the responsibility of the local Health Department, which investigates and completes reporting both electronically and manually as per MDH regulations. Example of notifiable diseases include measles, Hepatitis B, AIDS, salmonellosis, giardiasis, malaria, Lyme disease, and rabies.

Processes followed for day to day surveillance and reporting of diseases establishes the baseline for public health response in a large-scale outbreak of a disease. One of the greatest potentials for an epidemic to occur is the emergence of an infectious disease that has newly appeared in a population or that has been known for some time but is rapidly increasing in

incidence or geographic range which is referred to as an emerging infectious disease. According to the CDC, **emerging infectious diseases** are those whose incidence in humans has increased in the past two decades or threaten to increase in the near future. These diseases, which respect no national boundaries, can challenge local efforts to protect residents as prevention and control recommendations may not be immediately available.

These diseases include:

- New infections resulting from changes or evolution of existing organisms;
- Known infections spreading to new geographic areas or populations;
- Previously unrecognized infections appearing in areas undergoing ecologic transformation;
- Old infections reemerging as a result of antimicrobial resistance in known agents or breakdowns in public health measures.

Two examples of emerging infectious diseases that have posed a real threat for Maryland are the Ebola Virus and the Zika Virus. Both of these emerging diseases were related to travelers bringing the disease to Maryland. For this reason, preparedness efforts in Maryland were critical in mitigating the spread of emerging diseases. Likewise, mitigation and preparedness are key in the current Opioid Crisis response at state and local levels. While opioid use is not an infectious illness, the increased rates of opioid use have created numerous public health concerns including an increase in overdose deaths and a potential for increase in rates of HIV, Hepatitis C, etc.

Finally, this chapter will also profile the global COVID-19 Pandemic. The World Health Organization (WHO) defines a **pandemic** as the worldwide spread of a new disease. A pandemic happens when a new strain of a virus appears for which people have little or no immunity. As a result, it spreads easily from person to person around the world, causing widespread illness and death. Individuals, families, caregivers, healthcare workers, and teachers can all take steps to get ready for a pandemic before it happens.

13.2 Emerging Infectious Diseases History

The Maryland Department of Health routinely collects statistics on notifiable conditions. A notifiable condition is any condition that is required by law to be reported to government authorities. This collection allows state and local governments to monitor diseases and provide early warning of possible outbreaks. Table 13-1 provides an example of routine incidence of notifiable conditions in Maryland over a five-year period (2017 to 2021). An increase in the incidence rates triggers a public health response.

Table 13-1. Cases of Selected Notifiable Conditions Reported, Allegany County						
Condition	**2017**	**2018**	**2019**	**2020**	**2021**	**5-Year Average**
Amebiasis	0	0	0	0	0	0
Anaplasmosis	0	0	0	0	0	0
Animal Bites	189	218	202	157	192	191.6
Anthrax	0	0	0	0	0	0
Babesiosis	0	0	0	0	0	0
Botulism	0	0	0	0	0	0
Brucellosis	0	0	0	0	0	0
Campylobacteriosis	41	51	32	47	53	44.8
Chancroid	0	0	0	0	-	0
Chikungunya	0	0	0	0	0	0
Chlamydia	279	242	263	234	-	254.5
Cholera	0	0	0	0	0	0
Coccidioidomycosis	1	0	0	0	0	0.2
Creutzfeldt-Jakob Disease	0	0	0	0	0	0
Cryptosporidiosis	3	1	2	6	10	4.4
Cyclosporiasis	0	0	0	2	1	0.6
Dengue Fever	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0
Ehrlichiosis	0	0	0	0	0	0
Encephalitis - non-Arbov.	1	1	0	0	0	0.4
Epsilon Toxin (C. perf.) A.	0	0	0	0	0	0
Giardiasis	0	0	3	0	0	0.6
Glanders	0	0	0	0	0	0
Gonorrhea	30	41	22	47	0	28
H. influenzae - Invasive	2	1	1	0	1	1
Hantavirus Infection	0	0	0	0	0	0
Hantavirus Pulmonary S.	0	0	0	0	0	0
Hemolytic Uremic Syndrome	0	0	0	0	0	0
Hepatitis A (Acute-Symp)	0	0	1	1	0	0.4
Hepatitis B - Perinatal	0	0	0	0	0	0
Hepatitis B (Acute-Symp)	0	3	1	0	0	0.8
Hepatitis C - Perinatal	-	0	0	0	1	0.25
Hepatitis C (Acute-Symp)	7	2	0	1	4	2.8
Hepatitis D (Acute-Symp)	0	0	0	0	0	0
Hepatitis E (Acute-Symp.	0	0	0	0	0	0
Influenza Novel A Virus	0	0	0	0	0	0
Isosporiasis	0	0	0	0	0	0
Kawasaki Syndrome	0	0	0	0	0	0
Legionellosis	1	3	11	0	4	3.8

Table 13-1. Cases of Selected Notifiable Conditions Reported, Allegany County						
Condition	**2017**	**2018**	**2019**	**2020**	**2021**	**5-Year Average**
Leprosy (Hansen Disease)	0	0	0	0	0	0
Leptospirosis	0	0	0	0	0	0
Listeriosis	0	1	0	0	0	0.2
Lyme Disease	87	85	71	51	84	75.6
Malaria	0	0	0	0	0	0
Measles (Rubeola)	0	0	0	0	0	0
Meningitis, Aseptic	8	3	11	4	2	5.6
Meningitis, Fungal	0	0	0	0	0	0
Meningococcal Invasive	0	0	0	0	0	0
MERS-CoV, Mid East Res.	0	0	0	0	0	0
Microsporidiosis	0	0	0	0	0	0
Mumps (Infectious Parotitis)	0	0	0	0	0	0
Mycobacteriosis, Other.	4	9	7	6	6	6.4
Pertussis	0	2	0	0	0	0.4
Pertussis Vaccine Adverse reactions	0	0	0	0	0	0
Plague	0	0	0	0	0	0
Poliomyelitis	0	0	0	0	0	0
Psittacosis	0	0	0	0	0	0
Q Fever	0	0	0	0	0	0
Rabies – Animal	2	0	1	5	5	2.6
Rabies – Human	0	0	0	0	0	0
Ricin Toxin Associated Ill..	0	0	0	0	0	0
Rubella - Congenital Syn..	0	0	0	0	0	0
Rubella (German Measle...	0	0	0	0	0	0
Salmonellosis - Other	1	8	10	5	4	5.6
Severe Acute Respiratory Syndrome	0	0	0	0	0	0
Shiga toxin producing E. Coli	0	4	0	3	1	1.6
Shigellosis	0	1	0	0	0	0.2
Smallpox & Other Ortho	0	0	0	0	0	0
Spotted Fever Rickettsio	0	0	2	0	0	0.4
Staphylococcal Enterotoxin	0	0	0	0	0	0
Strep Group A - Invasive	0	2	2	3	5	2.4
Strep Group B - Invasive	9	17	17	9	10	12.4
Strep pneumoniae - Invasive	10	4	5	6	1	5.2
Syphilis – Congenital	0	0	0	2	-	0.5
Syphilis - Primary and Se..	0	1	4	1	-	1.5
Tetanus	0	0	0	0	0	0
Trichinellosis	0	0	0	0	0	0

Table 13-1. Cases of Selected Notifiable Conditions Reported, Allegany County						
Condition	**2017**	**2018**	**2019**	**2020**	**2021**	**5-Year Average**
Tuberculosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0
Typhoid Fever – Acute	0	0	0	0	0	0
Typhoid Fever – Carrier	0	0	0	0	0	0
Varicella (Chickenpox)	0	0	0	0	0	0
Vibriosis (Non-Cholera)	0	1	0	0	0	0.2
Viral Hemorrhagic Fever	0	0	0	0	0	0
West Nile Virus	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0
Yersiniosis	0	0	1	0	2	0.6
Zika Virus Disease	0	0	0	0	0	0
Zika Virus Infection	0	0	0	0	0	0
Totals	**675**	**701**	**669**	**590**	**386**	**-**

* Data sources: Maryland's NEDSS and PRISM databases. Data is current as of February 16, 2023. These are active databases and counts may vary slightly over time, as well as differ slightly from counts published by the Centers for Disease Control and Prevention (CDC). HIV/AIDS data are not included here but are available at:

https://health.maryland.gov/phpa/OIDEOR/CHSE/pages/statistics.aspx. COVID-19 data are available at https://coronavirus.maryland.gov/. ** The case status classifications (confirmed, probable or suspect) included in these totals are specific to the condition, and depend in part on https://health.maryland.gov/phpa/OIDEOR/CHSE/pages/statistics.aspx.

HIV/AIDS data are not included in Table 13-1; therefore, rates have been collected from the CDC. According to the CDC, an estimated 751 people aged 13 and older were diagnosed with HIV infection in Maryland during 2022. At the end 2022, there were 31,616 people aged 13 and older living with diagnosed HIV in Maryland. Maryland was ranked 12th among states and territories in adult/adolescent HIV diagnosis rates (per 100,000) in 2021.

Further information about sexually transmitted infections is available to the public on the Allegany County Health Department website.

13.2.1 Emerging Infectious Diseases – Community Perspective

Results of the Hazard Identification and Risk Assessment (HIRA) completed for Allegany County during this Plan Update indicate that the County's risk ranking for emerging infectious diseases is "high." The HIRA completed for the 2021 State Hazard Mitigation ranks "public health emergencies", which includes the categories of endemic, epidemic, and pandemic, as "medium-high" for Allegany County.

During the plan update, members of the public were able to complete the Allegany County Hazard Mitigation Plan Update Public Survey. Question 4 asked respondents to "indicate your

level of concern for each hazard" for each of the eleven (11) hazards identified within the plan. Options for each hazard included: "not concerned," "somewhat concerned," "concerned," and "very concerned."

Results indicate respondents combined "level of concern" for each of the hazards identified within the plan. On a scale of 1 to 11 – with 1 representing the hazard of most concern and 11 representing the hazard of least concern – the public ranks emerging infectious diseases as second.

13.3 Pandemic History

Evidence suggests that the likelihood of pandemics has increased over the past century because of increased global travel and integration, urbanization, changes in land use, and greater exploitation of the natural environment.[i] These trends likely will continue and will intensify. Significant policy attention has focused on the need to identify and limit emerging outbreaks that might lead to pandemics and to expand and sustain investment to build preparedness and health capacity.[ii]

The most common risk factors related to pandemics and infectious diseases include the following:

- Pandemics have occurred throughout history and appear to be increasing in frequency, particularly because of the increasing emergence of viral disease from animals.
- Pandemic risk is driven by the combined effects of spark risk (where a pandemic is likely to arise) and spread risk (how likely it is to diffuse broadly through human populations).
- Some geographic regions with high spark risk, including Central and West Africa, lag behind the rest of the globe in pandemic preparedness.
- Probabilistic modeling and analytical tools such as exceedance probability (EP) curves are valuable for assessing pandemic risk and estimating the potential burden of pandemics.
- Influenza is the most likely pathogen to cause a severe pandemic. EP analysis indicates that in any given year, a one (1) percent probability exists of an influenza pandemic that causes nearly 6 million pneumonia and influenza deaths or more globally.

Historically, some of the worst pandemics the United States has endured include the smallpox pandemic, cholera pandemic, H1N1 pandemic, and the COVID-19 pandemic. These pandemic events are described in further detail, below. *Note: this is not an all-inclusive historical account of pandemics that have occurred in the United States.*

Smallpox: 1633-1634

Smallpox came to North America in the 1600s. Symptoms included high fever, chills, severe back pain, and rashes. It began in the Northeast and the Native American population was ravaged by it as it spread to the west.

In 1721, more than 6,000 cases were reported out of a Boston population of 11,000. Around 850 people died from the disease.[iii] In 1770, a vaccine was developed by Edward Jenner from cow pox.

Cholera (three waves): 1832-1866

The United States had three serious waves of cholera, an infection of the intestines, between 1832 and 1866. The pandemic began in India and swiftly spread across the globe through trade routes.

New York City was the first U.S. city to feel the impact. Between five and ten percent[iv] of the total population died in large cities. While it is not clear how the pandemic ended, it was likely due to the combination of climate change and the use of quarantine measures; by the early 1900s, outbreaks of cholera had ended.

Present: Cholera is responsible for nearly 95,000 deaths a year worldwide[v], according to the CDC. Modern sewage and water treatment have helped eradicate cholera in some countries, but the virus is still present elsewhere. Vaccinations for cholera are available for those planning to travel to high-risk areas. The most effective way to prevent cholera is regular hand washing with soap and water and avoiding consumption of contaminated water.

H1N1 Flu: 1918

H1N1 is a strain of flu that still circulates the globe annually. In 1918, it was the type of flu behind the influenza pandemic, sometimes referred to as the "Spanish flu" (though it did not actually originate from Spain). After World War I, cases of the flu slowly declined. None of the suggestions provided at the time (wearing masks, drinking coal oil) were effective cures. Today's treatments include bed rest, fluids, and antiviral medications.

Present: Influenza strains mutate every year, meaning it is important to get receive an annual vaccination to decrease personal risk for the flu.

13.3.1 COVID-19 Pandemic

The Novel COVID-19 pandemic has exploded since cases were first reported in Wuhan, Hubei Province, China in December 2019. As of October 2023, more than 771 million cases of COVID-19—caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection—have been reported globally, including more than 6.9 million deaths. Cases have been reported in nearly every country, including all 50 states of the United States. The WHO reports that approximately 13.1 billion vaccine doses have been administered globally.

Prior to the release of safe and effective vaccine options for COVID-19, the United States' response to the virus was largely centered around practices such as quarantining, isolation, social distancing, wearing masks, and frequent hand washing. Additionally, economic relief was provided to citizens in the form of several congressional acts or stimulus packages, including the Consolidated Appropriations Act of 2021, the HEROES Act , the HEALS Act, and the CARES Act. The Coronavirus Aid, Relief, and Economic Security Act of 2020 provided fast and direct economic assistance for American workers, families, small businesses, and industries. This bill temporarily expanded unemployment benefits, provided tax rebates to American citizens, and suspended payments and interest on student loans. The American Association for Cancer Research provides more detailed information about each of these acts.

The State of Maryland responded by issuing a State of Emergency on March 5, 2020, which was regularly renewed until it finally came to an end on February 3, 2022. The State also enforced quarantining, social distancing, mask mandates, and restrictions on social gatherings. Economically, measures such as eviction moratoriums, reimbursement for telehealth, and preventing utility shutoffs and late fees were placed into effect. Maryland also extended unemployment coverage and provided stimulus payments for low to moderate income residents via the RELIEF Act of 2021.

According to the Maryland Department of Health, Maryland has reported a total of 1.4 million positive COVID-19 cases, including 16,735 confirmed deaths, as of October 3, 2023. Per the MDH (as of October 3, 2023), total COVID-19 cases in Allegany County since the start of the pandemic are 22,409, including 398 confirmed deaths.

13.4 Vulnerability Analysis

Traveling abroad can put people at risk for infectious diseases that are not widespread in the United States. Travelers who become ill in a country where treatment for these diseases may be somewhat limited are even more at risk. All people planning travel should become informed about the potential hazards of the countries they are traveling to. Further information to reduce the risk of getting these diseases can be found here:

www.hopkinsmedicine.org/health/conditions-and-diseases/emerging-infectious-diseases.

If you are going to be traveling, it is always a good idea to check the CDC for any travel health notices specific to the country you will be visiting. The CDC's website offers specific health related information for travelers; this information is available for each country.

Specific to COVID-19 – Community or local levels of risk were developed by the CDC for local communities to help them decide what prevention steps to take based upon the latest local COVID-19 data. The Community Level is determined by looking at three factors:

1. The number of new cases in the county per 100,000 population in the past seven days.
2. The new COVID-19 admissions per 100,000 in the past seven days.
3. The percentage of staffed inpatient beds that are occupied by patients with confirmed COVID-19 in the past seven days.

Each level is defined in Table 13-2, below. Levels are determined each week for each county in the United States and can be found here.

Table 13-2: Community Levels – Impact from COVID-19

Level	Recommendations
Low	Stay up to date on vaccination, including recommended booster doses, avoid contact with people who have suspected or confirmed COVID-19, discuss additional prevention actions if you are at high risk.
Medium	If you are at high risk of getting very sick, consider wearing a high-quality mask (for example, N95) when indoors. If you have contact with someone at high risk for getting very sick, consider self-testing to detect infection before contact, and consider wearing a high-quality mask when indoors with them.
High	It is recommended that everyone wear a mask indoors in public areas and on public transportation. If you are at high risk for severe illness, consider taking additional precautions such as avoiding non-essential indoor activities in public.

Source: Centers for Diseases Control and Prevention.

As of October 1, 2023, Allegany County's COVID-19 Community Level was a "Low" This risk ranking is updated once per week.

13.5 Local Mitigation Efforts and Capabilities

Allegany County's Health Department is the primary responsible entity for coordination and information as it relates to health and public health emergencies. The department's mission is to "promote physical, behavioral, and environmental health, and prevent disease and disabilities of people in Allegany County." Programs, services, and capabilities offered by the Health Department to achieve this mission include but are not limited to:

- Behavioral Health Services
    - Addiction Treatment
    - Mental Health Services
    - Prevention
- Birth and Death Certificates (Vital Records)
- Cancer Screening and Treatment
- Dental Health
- Environmental Health
- Emergency Preparedness

The Allegany County Environmental Health Division specifically promotes and protects the health of County residents and visitors by focusing on regulatory and outreach efforts on safe food supplies, safe drinking water, effective wastewater disposal, prevention of the spread of vector and foodborne illnesses, and safe environments. Programs and services specific to the Environmental Health Division include:

- Food Control and Permits
    - Food Facility Inspections
- Rabies Clinics and Prevention Information
- Burning Permits
- Community Health and Public Health Nuisance Reporting
- On-site Well and Septic Programs

Emergency Preparedness services include:

- Health Insurance and Care Coordination
- Infectious Disease (e.g., reporting, tracking, testing, and prevention)
- Seniors and Individuals with Disabilities
- Special Populations
    - Homeless/Housing Assistance
    - New Horizons Re-Entry Program
- Transportation Services
    - Behavioral Health Transportation
    - Non-Emergency Medical Transportation

The Allegany County Health Department participates in and promotes the Maryland Responds Medical Reserve Corps (MRC). The Maryland Responds MRC network is a community-based, civilian, volunteer program that helps build the public health infrastructure and response capabilities of Maryland communities. The Maryland Responds MRC network consists of dedicated responders who stand ready to volunteer their skills, expertise and time to support ongoing public health initiatives and assist during emergencies. More information

including how to register is available at https://mdresponds.health.maryland.gov/index.php.

The Allegany County Health Planning Coalition is responsible for maintaining and implementing a Local Health Action Plan (FY 22-25), which was approved on July 11, 2023. The plan combines efforts from the UPMC Western Maryland Community Health Needs Assessment 2022-2025 and the existing Allegany County LHAP. The plan focuses on four priority areas, which were identified by the community health needs assessment. These include: transportation, social determinants of health, chronic diseases management, and behavioral health.

The following transportation-related goal and associated smart objective is relevant to hazard mitigation planning efforts in the County.

Goal: "Increase access to safe, affordable, and reliable transportation to health and human services appointments."
Smart objective: "Each year of this cycle, educate at least 100 transportation users or service providers about the transportation options for appointments and of any system changes."

Lack of access to reliable transportation is a type of social vulnerability that is known to increase risk to multiple hazards, not just those related to public health. Goals and objectives as identified in the LHAP should be coordinated, as relevant, to *Project K: Update the County's Vulnerable Population Plan*. This action item was identified during the 2023 plan update process and was determined to be a high priority action item by the HMPC.

13.6 Future Conditions

Progress has been made in preventing deaths from infectious diseases, however looking forward, focus needs to be on pandemic preparedness, including detecting and containing emerging infectious disease threats while they are localized and manageable. These threats may differ widely in terms of severity and probability and also have varying consequences for morbidity and mortality, as well as for a complex set of social and economic outcomes.

The following excerpt called "Infectious Disease In An Era of Global Change" from the publication Nature Reviews Biology shows the relationship between climate change and increased infectious diseases.

"In recent decades, declines in mortality and morbidity, particularly childhood mortality, have been one of the great triumphs of public health. Greater access to care, such as therapeutics (including antibiotics), improved sanitation and the development of vaccines have been core drivers of this progress. Even as medical advances in the twenty-first century have spurred advances in population health, inequalities in access to these advances remain widespread

between and within countries. Reducing inequities in access to health care and improving surveillance and monitoring for infectious diseases in low-income and middle-income countries, and in underserved populations within countries, should be a priority in tackling pathogen emergence and spread in the future.

Climate change, rapid urbanization and changing land-use patterns will increase the risk of disease emergence in the coming decades. Climate change, in particular, may alter the range of global pathogens, allowing infections, particularly vector-borne infections, to expand into new locations. A continued uptick in global travel, trade and mobility will transport pathogens rapidly, following emergence.

A changing world requires changing science to evaluate future risks from infectious disease. Future work needs to explicitly address concurrent changes: how shifting patterns of demographic, climatic and technological factors may collectively affect the risk of pathogen emergence, alterations to dynamics and global spread. At the same time, new technologies, including advances in data collection and surveillance, need to be harnessed."[vi]

According to the CDC, the following steps can be taken by the United States to reduce or mitigate the impact climate change will have on emerging infectious diseases:

1. Continued investment in disease surveillance systems to track diseases and determine if they are increasing or shifting over time.
2. Maintain a strong national health system and workforce that can predict, prevent, detect, and respond to new diseases as they expand to new areas.
3. Develop new tools to aid in analyzing and interpreting data that is collected to predict where threats are most likely to occur.
4. Increase understanding of inequalities in how climate change impacts certain populations and use data to inform tailored prevention and response strategies for communities that are disproportionately impacted.
5. Invest in more research, environmental data collection, and disease/climate modeling efforts that help to predict and prepare for future climate scenarios.

[i] Jones K E, Patel N G, Levy M A, Storeygard A, Balk D., and others. 2008. "Global Trends in Emerging Infectious Diseases." Nature 451 (7181): 990–93.
[ii] www.ncbi.nlm.nih.gov/books/NBK525302/
[iii] sitn.hms.harvard.edu/flash/special-edition-on-infectious-disease/2014/the-fight-over-inoculation-during-the-1721-boston-smallpox-epidemic/
[iv] www.ncbi.nlm.nih.gov/pmc/articles/PMC2394684/
[v] www.cdc.gov/cholera/general/index.html
[vi] Nature Reviews Microbiology – Infectious Disease In An Era of Global Change. October 2021.

CHAPTER 14 COMMUNITY CAPABILITIES

During the update process of this plan, community capabilities as described in this chapter were reviewed for accuracy and updated if needed. Capability assessment worksheets have also been completed for the County and are included beginning on page 14-10. The worksheets include available tools/programs in place, year adopted or updated (as applicable), and current status information (as applicable). Worksheets also include available staff and technical assistance, as well as a self-assessment of capability for each of the four capability areas, which include: Planning and Regulatory, Administrative and Technical, Financial, and Public Education and Outreach. Municipalities were provided with the opportunity to complete a capability assessment survey; results of which begin in Section 14.4.

14.1 Capabilities Overview

Allegany County prides itself on its emergency response capabilities in response to a natural hazard event. Perhaps the most significant capability the County possesses is its collaboration with allied agencies. Allegany County Department of Emergency Services is confident that all agencies will respond within a moment's notice when called upon. This level of confidence in the abilities and cooperation between all partners ensures that the best possible outcomes in any situation will be achieved for the citizens of Allegany County.

Through its Emergency Management Division, Allegany County has developed a network of trained agency and volunteer personnel through the Maryland Emergency Management Assistance Compact (Maryland MEMAC), a statewide mutual aid agreement to mitigate and respond to a variety of hazards. This network includes state agencies such as the Maryland State Police, Department of Natural Resources, Department of the Environment, Department of Health and Mental Hygiene, State Highway Administration and the Maryland Emergency Management Agency. County agencies include the Public Works Department, Land Development Services, Board of Education, and the Sheriff's Office.

The County has mutual aid agreements with all surrounding counties and has also developed working relationships with volunteer organizations including the fire and rescue units that are active in incorporated communities and in rural areas. Fire and rescue units are shown on *Appendix A-14*. The County also has mutual agreements with the American Red Cross and other groups, such as the Allegany County HazMat Team, that may be called upon in special circumstances. In addition, the County has agreements to coordinate mitigation activities with private utility companies, including Potomac Edison and Verizon and with private transportation companies such as CSX for rail transportation hazmat events.

Allegany County also offers a citizen alert sign-up on the County website: Notify Me. The sign-up alert notification service is free of charge and allows citizens to enter their email and/or mobile phone number to receive emails or text alerts.

The State of Maryland was granted a license for a block of the 700MHz Band of frequencies for public safety radio communication through the FCC. This range of frequencies is used by the First Responders Radio System Team (FiRST). The Maryland FiRST initiative was developed for any local, state, or federal governmental agency that qualifies as a Public Safety provider under the FCC 700 MHz Band definition of a Public Safety agency. Maryland FiRST services expanded to Allegany County in May 2019. With this expansion, Allegany County first responders are able to have access to a standards-based interoperable 700MHz frequency band network capable of operations at the local, regional, and statewide level.

This system allows law enforcement, EMS, and fire department officials to communicate with each other on one radio, as well as communicating with surrounding states including West Virginia. Figure 14-1 below depicts the locations of the Maryland FiRST tower sites within Allegany County.

In 2021, a major boost to the FirstNet system arrived in the form of new cellular sites to boost coverage in and around Cresaptown, south of City of Cumberland. The previous year, another cell site was activated in the City of Cumberland, which boosted coverage in the area south of I-68 along McMullen Highway and near the National Guard Facility on Brown Avenue. Additionally, AT&T activated new sites in LaVale and Frostburg and added increased capabilities to existing sites in Cumberland and throughout the County. The purpose of all these sites is to provide first responders with increased access to voice and data services provided by the FirstNet system.

Figure 14-1. Source: Allegany County Department of Emergency Services.

Through Land Development Services, Allegany County has developed a system to regulate land use in sensitive areas as described in the County' Comprehensive Plan, including 100-year floodplains, stream buffer areas, wetlands and steep slopes, see *Appendix A-12* for Building Code Regulations. The County also has subdivision regulations for the creation of new lots and a zoning ordinance. Each municipality has similar regulations. A capability assessment questionnaire was mailed to municipalities for completion, and they were also given the option of completing the questionnaire online.

Additionally, the Allegany County Soil Conservation District conducts a Risk Assessment for farming operations. This entails inventorying local farm operations for hazardous materials. Additionally, a survey of structures within the 1 percent-annual-chance floodplain is conducted. Finally, the Risk Assessment includes a report of preparedness priority actions. Additional information can be found at the AgReady website: http://readyag.psu.edu/.

14.2 Weather Related Events

14.2.1 Flood

During major flood events, including thunderstorms and the passage of hurricanes, most of the agency and volunteer groups mentioned in the *Profile* are called upon for assistance by the Emergency Management Division. Allegany County's capabilities are similar to other mountainous counties that deal with chronic flooding. Utilizing the warning system, residents can be made aware of rising stream levels, particularly along major streams which have monitoring stations. Usually, roads or highways are blocked to some extent and people have to evacuate to lower lying areas. Emergency Management has a plan, which coordinates evacuation activities with the Public Works Department and State Highway Administration and with local fire and rescue units, the Health Department and the Red Cross. While Allegany County makes a great effort to mitigate flood damage, the character of the natural environment, with steep slopes and rapid runoff in narrow, confined valleys, lends itself to further mitigation efforts particularly that of moving people and structures from harm's way.

Furthermore, the County has the capability to mitigate future flood losses through Subdivision Regulations, Floodplain Management Ordinance and Stormwater Management Ordinance. The Floodplain ordinance requires the base elevation for new structures be 1 foot above the base flood level and that stream setbacks be observed in unmapped stream basins. The County also requires the electric panel box to be elevated 3 feet above the base flood elevation and all other utilities to be one foot above. Finally, the County participates in the National Flood Insurance Program (NFIP) that allows property owners to purchase insurance through this federally sponsored program. It is recommended that Allegany County begin the process of joining the Community Rating System (CRS) during the 2024-2029 planning period. CRS participants engage in activities that lower community flood risk while allowing residents to receive discounts on their flood insurance.

The Stormwater Management Ordinance was revised and approved by the Maryland Department of Environment in January 2010. The Ordinance became effective for the County in May 2010. The goal of the Stormwater Management Ordinance is to manage stormwater by utilizing an Environmental Site Design in the initial planning phase. Various environmental constraints such as steep slopes, soils, forest, wetlands and floodplains must be delineated prior to submitting Stormwater Management (SWM) design plans. Once the constraints for the site have been established, a site layout can be prepared using the new SWM requirements.

Additionally, Department of Public Works - Engineering Division supports and actively participates in the Allegany County Chesapeake Bay TMDL Watershed Implementation Plan. Projects to plant trees and restore streambanks are designed and managed through the Engineering Division to help Allegany County meet its goals to restore the Chesapeake Bay. Furthermore, forest buffers (tree plantings) have been implemented on flood buyout properties throughout the County.

14.2.2 Winter Storm

Allegany is probably one of the best equipped counties in the State of Maryland when it comes to dealing with winter storms. State Highway Administration-District 6, County Roads Department and Municipal Roads Departments have dealt with winter storms for many years and are trained and equipped to do so. The County's Department of Emergency Services, the state Department of Natural Resources and local police, fire and rescue departments are also trained to deal with winter storms and the types of situations that result from these storms.

Specific to the County's Road Division, garages have been strategically located within the County in order to ensure proper road maintenance. The garages' locations are:

- Central – Cumberland;
- Northeast – Little Orleans;
- Southeast – Oldtown; and,
- Western – Frostburg.

Since 2012, the Roads Division has purchased twelve (12) single axle dump trucks with plows and salt spreaders. The Roads Division is responsible for plowing 533 miles of county roads. Therefore, due to excessive use during the winter months, the Roads Division has identified additional equipment needs, which includes three (3) new single axle dump trucks with plows and salt spreaders per year in order to maintain these roads.

In addition to the Public Works Department and State Highway Administration, the Emergency Management Division works with both Potomac Edison and Verizon which provide electrical and telephone service respectively to the citizens of the County. Both of these utility companies clear dead or overhanging trees from utility rights-of-way during summer months so that ice and wind damage is lessened during winter storms. With respect to new construction, the county's Building Code has wind and snow loading requirements and footer depth standards that are tailored to the Allegany County climate.

Additionally, the County makes available warming centers as needed during extreme cold events. The locations of these centers can be determined by contacting the Department of

Emergency Services. The Union Rescue Mission of Western Maryland also offers an emergency shelter from November to April to individuals who need shelter from extreme cold.

14.2.3 Severe Weather

As mentioned under the Flood Hazard section of this plan, the County has purchased numerous homes in floodplain areas. These purchases were more the result of chronic stream flooding from large-scale rain or snow melt, rather than from thunderstorm events. The County does, however, enforce its Floodplain Ordinance in mapped floodplain areas prone to thunderstorm runoff and requires a setback from unmapped streams. In addition, the Stormwater Management Ordinance requires storage and release of runoff at predetermined rates in newly developing areas.

In regard to fog events, the State Highway Administration has installed digital warning signs at a number of locations in and near the most severe fog areas along Interstate 68 as one method to warn drivers to slow down in poor driving conditions. The system alerts drivers when visibility drops below 1,000 feet.

In addition, SHA has the CHART (Coordinated Highways Action Response Team) program, which is comprised of a number of sub-systems, including traffic monitoring, traveler information, incident management, and traffic management. The CHART programs conduct traffic monitoring through video verification, which is provided by Closed Circuit Television (CCTV) cameras. These cameras provide visual information on traffic congestion, incidents and roadway conditions during inclement weather. There are 11 CCTV cameras located within Allegany County and are located at:

- I-68 at Exit 62, U.S. 40;
- I-68 at Black Valley Road;
- I-68 at Cumberland (Allegany 991 TWR);
- I-68 at U.S. 220;
- I-68 at Exit 42, at U.S. 220;
- I-68 East prior to Winchester Road;
- RWIS I-68 at MD 55;
- I-68 at Exit 33 MD 736 Midlothian Road (EB);
- RWIS at Savage Mountain;
- I-68 at Savage Mountain; and,
- RWIS MD 51 at Oldtown Salt Dome.

The figure below provides a general visual of the camera locations. SHA provides an interactive map for citizens to utilized: http://chart.maryland.gov/trafficcameras/index.php.

Figure 14-2. SHA Camera Locations in Allegany County. Source: Maryland SHA CHART

14.2.4 Soil Movement

As discussed in Chapter 12, soil movement particularly on steep slopes, poses a significant hazard in Allegany County. Mitigation measures enforced include county-wide ordinances for Sensitive Areas, including steep slopes and 100-year floodplains, Sediment Control and Stormwater Management. Plans for new construction are reviewed for compliance with these ordinances by County staff and the Soil Conservation District, while inspections are performed by County staff. State agencies such as the Department of the Environment and the Bureau of Mines ensure compliance with these measures on state construction projects and during mining activities.

In addition, the County's Building Code has provisions for soil testing in areas where soil conditions are favorable to slippage or other mass movement. Furthermore, since the previous planning cycle, the USDA Natural Resources Conservation Service released the Web Soil Survey. The Web Soil Survey allows the user to access relevant soil and related information which may be needed in making land-use and management decisions. The types of soils in the area of interest are provided and the soils' characteristics are defined. This is relevant for areas that contain highly erodible soils, such as those soil types located within the Georges Creek Watershed.

According to the *2014 Allegany County Comprehensive Plan*, land suitability factors include slope, floodplain soils, and wetlands. Prime land suitable for development is therefore limited by these constraints. The Planning Regions that display the largest percentages of prime land include Greater Frostburg, Middle Potomac, LaVale, and Greater Cumberland. In addition, the 2014 Allegany County Comprehensive Plan proposes the designation of overlay zones in future zoning updates and/or amendments. An overlay zone is a mapped zone that imposes a set of requirements in addition to those of the underlying zoning district. Such zones are typically applied when there is a specific public interest in a geographic area such as steep slopes, floodplains, wetlands, ridgelines, habitat protection, cultural resources, scenic vista and geologic features. Areas that exhibit multiple constraints such as steep slopes, floodplains, highly erodible soils, and wetlands in a concentrated area are in need of protection. These areas are "Critical Areas". Designation of these areas would ensure that no development of any kind would occur, specifically regions such as Georges Creek, Upper Potomac and Flintstone Planning Regions. Large parcels containing designated "Critical Areas" could be sub-divided to protect critical lands while providing opportunities for other suitable land uses.

14.3 Technological or Other Events

14.3.1 HazMat Transportation

The County utilizes the *2015 Hazardous Materials Emergency Response Plan* when an incident occurs. This plan details the standard procedures to be utilized during a hazardous materials incident. As part of the 2024 plan update it is recommended that the County update its Hazardous Materials Emergency Response Plan. Additionally, Allegany County has a HazMat Team that is to be called when an incident occurs.

Allegany County also has a Special Operations Team which is composed of approximately 60 volunteer members – all members have at minimum Hazardous Materials Operations level training. The special operations team responds to the following: Hazardous Materials Response, Swiftwater Rescue, Collapse/Trench Rescue, High Angle Rescue, Confined Space Rescue and Search & Rescue. Members of the Special Operations Team attend specialized rail incident response training. Training courses include:

- Planning for and Managing Key Train or High Hazard Flammable Liquid Unit Train Accidents
- Introduction to Intermodal Containers
- Liquefied Gas Leak Containment – Patching
- Bakken Crude, Ethanol, and Flammable Liquids: Don't go it alone!
- AskRail – Immediate Access to Railroad Information

Training is conducted for the Special Operations Team. However, due to the COVID19 pandemic, training related to hazardous materials has slowed down significantly since 2020. As part of the 2024 plan update, it is recommended that the County continue its regular hazardous material and emergency response training over the 2024-2029 planning period. Examples of training completed in the past include:

- 2015 – A formal functional drill was conducted in February at the Federal Corrections Institute (FCI), which included participation of the 32nd Civil Support Team.
    - The scenario for the drill involved the Special Operations Team responding to a white-powder incident.
- 2016 – Members attended additional training, including the Virginia Hazmat Conference and a DOT-sponsored hazmat rail car response training, which was hosted by Allegany County.
- 2018 – Special Ops/HazMat drill with a TTX held in February.
- 2021 – Advanced HazMat IQ Above The Line/Below The Line course.
- 2023 – Battery Powered Vehicle course.

14.3.2 Wildfire

As discussed in *Chapter 10 Wildfire*, The State Department of Natural Resources Forest Service and the Federal government take the leading role in fire suppression throughout the County with the assistance from local fire departments and police. The Department of Emergency Services also assists with coordination and communication during wildfire events. In order to increase preparedness and mitigation capabilities, it is recommended that within the next five years the County and its municipalities become a Firewise Community.

Some local fire departments (of both incorporated and unincorporated communities) maintain community wildfire protection/response plans, including: Frostburg Fire Department No. 1, Corriganville Volunteer Fire Department, Bowman's Addition Volunteer Fire Company, and Orleans Volunteer Fire Company.

14.4 Capability Assessment Survey – Allegany County

Table 14-1. Capability Assessment Survey – Tools and Programs – Allegany County			
Tool/Program	Status		
	In Place	Adopted or Updated	Under Development / Comments
Hazard Mitigation Plan	**Yes**	2018	The HMP is currently in the process of being updated (2023).
Emergency Operations Plan	**Yes**	2012	EOP is currently in the process of being updated (2023)
Capital Improvement Plan	**Yes**	2022	Adopted May 2022, for 2023-2027.
Continuity of Operations Plan	**Yes**	2018	COOP is in the process of being updated (2023)
Floodplain Management Ordinance	**Yes**	2020	Effective 4/3/2020.
Zoning Regulations	**Yes**	2017	Regulations and Mapping updated in 2017.
Subdivision Regulations	**Yes**	1997	-
Comprehensive Plan	**Yes**	2014	The plan update process is expected to begin in the next year.
Stormwater Management Plan	**No**	-	-
Natural Resource Protection Plan	**No**	-	-
Parks and Recreation Plan	**Yes**	2022	Land Preservation, Parks, and Recreation Plan (revised July 2022)
Hazardous Waste Assessment/Waste Analysis Plan	**No**	-	-
Solid Waste Management Plan	**Yes**	2021	Dept. of Public Works adopted plan on April 7, 2022. For the 2021-2031 Planning Period. Household Hazardous Waste Drop-off events are included.
Firewise Community	**No**	-	-
Storm Ready	**Yes**	-	HD Ready.gov resources are utilized for public outreach
Citizen Corps	**Yes**	-	Health Dept. Maryland Responds – Allegany Unit, Volunteer Management Plan.
Building Code	**Yes**	2007	-

Table 14-2. Available Staff and Technical Assistance – Allegany County				
Staff or Personnel Resource	**Yes**	**No**	**Department or Staff Member**	**Comments**
Land Use/Development Planning	X		Economic & Community Development Department	Point of Contact: Adam Strott, Economic Development Specialist
Engineering	X		Department of Public Works - Engineering Division	Point of Contact: Daniel Dewitt, County Engineer
Emergency Manager	X		Emergency Services	Point of Contact: Carrie Hughes Emergency Planner
Floodplain Manager	X		Planning and Zoning	Point of Contact: Jerrod Cook
Staff with experience using Geographic Information Systems software	X		Planning and Zoning	Point of Contact: Jim Squires
Grant-writing staff or other fiscal staff	X		Sheriff's Office	Point of Contact: Tanya Gomer

Table 14-3. Self-Assessment of Capability			
Capability Area	**Degree of Capability**		
	Limited	**Moderate**	**High**
Planning and Regulatory Capability *Plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards.*			X
Administrative and Technical Capability *Boards, commissions, departments, staff and consulting services, along with the related skills and tools, that can be used for mitigation planning and the implementation of specific mitigation actions.*			X
Financial Capability *Includes access to or eligibility to use funding resources for hazard mitigation.*	X		
Public Education and Outreach Capability *Programs and methods already in place that could be used to support implementation of mitigation actions and communicate hazard-related information.*			X

14.4.1 Expanding Capabilities

In order to improve hazard mitigation capabilities, the County can refer to the current capabilities identified in Table 14-1 and determine the gaps that exist. The current gaps in capabilities include the need for the following:

- Develop Stormwater Management Plan
- Develop Natural Resource Protection Plan
- Develop Hazardous Waste Assessment/Waste Analysis Plan
- Become a Firewise Community

Developing these plans will increase the County's overall hazard mitigation capabilities. In some cases, developing these plans will also assist in increasing municipal capabilities, as many of the County's municipalities adopt the County's plans. As identified in Table 14-2, the County has appropriate staff members to begin developing these types of planning documents. Table 14-3 shows that the County rates its degree of capability as high for every capability area with the exception of financial capability. The County should seek grant opportunities to improve their financial capability.

14.5 Municipal Capabilities

Municipalities reported their current hazard mitigation capabilities via a municipal survey (provided via mail and digitally). These capabilities are included by jurisdiction and are categorized by the following topic areas: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach.

Note: many of the municipalities in Allegany County rely on the County for floodplain management and NFIP capabilities. This has been noted in the capabilities for each jurisdiction in sections below. Specifically, the Towns of Barton, Luke and Midland do not currently have land use or zoning authority and rely on the county's floodplain management capabilities. Municipal representatives can contact the County's Planning and Zoning Office by phone, email, or letter to receive floodplain management assistance or NFIP assistance to the extent possible. The County floodplain manager assists municipalities on an as-needed basis, and the current point of contact is Jerrod Cook. County floodplain and NFIP capabilities are included in *Appendix C*. The County, as well as municipalities, have adopted the most recent effective flood maps dated April 29, 2020.

14.5.1 Town of Barton

Table 14-4. Town of Barton - Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, June 2010. Does not include hazard risk areas.
Emergency Operations Plan	No.
Continuity of Operations Plan	No.
Stormwater Management Plan	No.
Natural Resource Protect Plan	No.
Building Code	Residents are referred to Allegany County Building Codes.
Land Use Authority/Issue building permits?	Yes.
Floodplain Ordinance	Yes, utilizes Allegany County's ordinance.
Acquired open space for public recreation?	No.

Table 14-5. Town of Barton – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
Y	Y	4	Y	1	N	0	No	0	No	0	Y	4	Y	4

Does the Town of Barton use a hazard warning/notification system?

No.

Table 14-6. Town of Barton – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	No.
Does your municipality levy taxes for specific purposes?	No.
Does your municipality use the Community Development Block Grant	No.

Table 14-6. Town of Barton – Financial	
Capability	**Status**
Has your municipality completed flood acquisition or elevation projects in the previous five years?	No.

Table 14-7. Town of Barton –Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	No.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	No.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	Yes, but no corrective actions were required.

The Town of Barton could expand its capabilities by developing an Emergency Operations Plan, Continuity of Operations Plan, Stormwater Management Plan, or Natural Resource Protection Plan. The Town could also adopt the County's plans if they choose. The Town could also consider utilizing a hazard warning/notification system for residents. Finally, the Town should consider developing ongoing public information campaigns and educate the public about natural hazards identified in the plan.

14.5.2 City of Cumberland

Table 14-8. City of Cumberland – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes (2013).
Emergency Operations Plan	No (utilizes the County-wide plan).
Continuity of Operations Plan	No.
Stormwater Management Plan	Yes (2007, State of Maryland regulations for development). Modified April 13, 2010, and codified in City Code.
Natural Resource Protect Plan	No. However, various zoning regulations apply, e.g., steep slopes. Scenic view shed, stormwater management, historic preservation.

Table 14-8. City of Cumberland – Planning and Regulatory	
Plan/Resource	**Status**
Building Code	2012 IBC.
Land Use Authority/Issue building permits?	Yes.
Floodplain Ordinance	Yes, adopted March 3, 2020, and includes freeboard.
Acquired open space for public recreation?	Yes.

Table 14-9. City of Cumberland – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
Y	Y	8	Y	7	Y	-	Y	1	Y	1	Y	5	Y	1
* Staff numbers are estimates.														

Does the City of Cumberland use a hazard warning/notification system?

Yes, notification to Allegany County PSAP/911 (referenced within the City's Emergency Action Plan for Lake Gordon Dam and Thomas W. Koon Dam.

Table 14-10. City of Cumberland –Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	Possibly – projects ands grants have yet to be identified. The City is in the process of expending a $1000,000 grant with $15,000 in kind work through MEA for a Resilient Maryland Program.
Does your municipality levy taxes for specific purposes?	Property and Special District Taxes.
Does your municipality use the Community Development Block Grant	Yes, Annual Action Plans are available at ci.cumberland.md.us. under Community Development Department.
Has your municipality completed flood acquisition or elevation projects in the previous five years?	No.

Table 14-11. City of Cumberland –Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	Yes, including vulnerable populations via the Human Relations Commission.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	Primary outreach is ongoing through the City's website, social media, and the newspaper.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	Yes, and no corrective actions were required.

The City of Cumberland could expand its capabilities by developing a Continuity of Operations Plan and Natural Resources Protection Plan. The City could also adopt the County's plans if they choose. The City could also consider utilizing a hazard warning/notification system for residents. Finally, the City should consider completing flood acquisition and/or elevation projects in the next five years.

14.5.3 City of Frostburg

Table 14-12. City of Frostburg – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, adopted in 2011. Does not include hazard risk areas or hazard mitigation information.
Emergency Operations Plan	No.
Continuity of Operations Plan	No.
Stormwater Management Plan	Yes, adopted in 2010.
Natural Resource Protect Plan	No.
Building Code	2018 IBC.
Land Use Authority/Issue building permits?	Yes.
Floodplain Ordinance	Yes, utilize Allegany County.
Acquired open space for public recreation?	Yes.

Table 14-13. City of Frostburg – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of	Y/N	# of	Y/N	# of	Y/N	# of	Y/N	# of	Y/N	# of	Y/N	# of

Table 14-13. City of Frostburg – Administrative and Technical – Department and Staff Resources														
		Staff		Staff		Staff		Staff		Staff		Staff		Staff
Y	Y	3	Y	2	Y	19	N	0	N*	0	Y	4	Y	5
* GIS work is contracted out.														

Does the City of Frostburg use a hazard warning/notification system?

No.

Table 14-14. City of Frostburg – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	No.
Does your municipality levy taxes for specific purposes?	No.
Does your municipality use the Community Development Block Grant	Yes, for sewer/water projects and childcare center.
Has your municipality completed flood acquisition or elevation projects in the previous five years?	Yes, in 2015 – MDEM trailer park buyout.

Table 14-15. City of Frostburg – Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	Environmental group: Green Team City Group.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	Occasional.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	Yes, and no corrective actions were required. The City relies on the County for this matter.

The City of Frostburg could expand its capabilities by developing an Emergency Operations Plan, Continuity of Operations Plan, or Natural Resource Protection Plan. The City could also adopt the County's plans if they choose. The City could consider hiring more fiscal staff to

write and manage grants. The City could also consider utilizing a hazard warning/notification system for residents. Finally, the City should consider continuing ongoing public information campaigns and educate the public about natural hazards identified in the plan.

14.5.4 Town of Lonaconing

Table 14-16. Town of Lonaconing – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, adopted in 2010, plan includes hazard risk areas.
Emergency Operations Plan	No.
Continuity of Operations Plan	No.
Stormwater Management Plan	Yes.
Natural Resource Protect Plan	No.
Building Code	2003 International Property Maintenance Code.
Land Use Authority/Issue building permits?	No.
Floodplain Ordinance	Yes, utilizes Allegany County.
Acquired open space for public recreation?	Yes.

Table 14-17. Town of Lonaconing – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
N	N	0	Y	1	N	0	N	0	N	0	N	0	N	0

Does the Town of Lonaconing use a hazard warning/notification system?
No.

Table 14-18. Town of Lonaconing – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	No.
Does your municipality levy taxes for specific purposes?	No.
Does your municipality use the Community Development Block Grant	Yes, this has been used to remove blighted properties.

Has your municipality completed flood acquisition or elevation projects in the previous five years?	No.

Table 14-19. Town of Lonaconing – Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	No.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	No.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	No.

The Town of Lonaconing could expand its capabilities by developing an Emergency Operations Plan, Continuity of Operations Plan, or Natural Resource Protection Plan. The Town could also adopt the County's plans if they choose. The Town could also consider utilizing a hazard warning/notification system for residents. Finally, the Town should consider developing ongoing public information campaigns and educate the public about natural hazards identified in the plan. The Town may also benefit from a FEMA NFIP Community Assistance Visit in the next five years.

14.5.5 Town of Luke

Table 14-20. Town of Luke – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, adopted Allegany County.
Emergency Operations Plan	Yes.
Continuity of Operations Plan	Unknown.
Stormwater Management Plan	Yes.
Natural Resource Protect Plan	Unknown.
Building Code	Current IBC
Land Use Authority/Issue building permits?	No.
Floodplain Ordinance	Yes, utilizes Allegany County.
Acquired open space for public recreation?	Yes.

Table 14-21. Town of Luke – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
N	N	0	Y	1	Y	2	N	0	N	0	Y	1	N	0

Does the Town of Luke use a hazard warning/notification system?

No.

Table 14-22. Town of Luke – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	Yes, on a new sewer/water system via grant funds.
Does your municipality levy taxes for specific purposes?	Yes, real estate and personal property.
Does your municipality use the Community Development Block Grant	Yes, sewer projects and Luke community building improvements.
Has your municipality completed flood acquisition or elevation projects in the previous five years?	No.

Table 14-23. Town of Luke – Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	Yes – North Branch Lions Club.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	No.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	No.

The Town of Luke could expand its capabilities by developing a Continuity of Operations and Natural Resource Protection Plan. The Town could also adopt the County's plans if they choose. The Town could also consider utilizing a hazard warning/notification system for residents. Finally, the Town should consider developing ongoing public information campaigns and educate the public about natural hazards identified in the plan. The Town may also benefit from a FEMA NFIP Community Assistance Visit in the next five years.

14.5.6 Town of Midland

Table 14-24. Town of Midland – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, adopted 2010.
Emergency Operations Plan	No.
Continuity of Operations Plan	No.
Stormwater Management Plan	No.
Natural Resource Protect Plan	No.
Building Code	Refers to the County's building code standards.
Land Use Authority/Issue building permits?	No.
Floodplain Ordinance	Refers to the County's floodplain management.
Acquired open space for public recreation?	No.

Table 14-25. Town of Midland – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
N	N	0	N	0	N	0	N	0	N	0	Y	1	N	0

Does the Town of Midland use a hazard warning/notification system?
No.

Table 14-26. Town of Midland – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	No.

Table 14-26. Town of Midland – Financial	
Capability	**Status**
Does your municipality levy taxes for specific purposes?	Yes.
Does your municipality use the Community Development Block Grant	No.
Has your municipality completed flood acquisition or elevation projects in the previous five years?	No.

Table 14-27. Town of Midland – Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, and vulnerable populations, etc.?	No.
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	No.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	No.

The Town of Midland could expand its capabilities by developing an Emergency Operations Plan, Continuity of Operations Plan, Stormwater Management Plan, or Natural Resource Protection Plan. The Town could also adopt the County's plans if they choose. The Town could also consider utilizing a hazard warning/notification system for residents. Finally, the Town should consider developing ongoing public information campaigns and educate the public about natural hazards identified in the plan. The Town may also benefit from a FEMA NFIP Community Assistance Visit in the next five years.

14.5.7 Town of Westernport

Table 14-28. Town of Westernport – Planning and Regulatory	
Plan/Resource	**Status**
Comprehensive/Master Plan	Yes, adopted 2011.
Emergency Operations Plan	No.
Continuity of Operations Plan	No.

Table 14-28. Town of Westernport – Planning and Regulatory	
Plan/Resource	**Status**
Stormwater Management Plan	No.
Natural Resource Protect Plan	No.
Building Code	2015 IBC.
Land Use Authority/Issue building permits?	Yes.
Floodplain Ordinance	Yes, adopted 2017.
Acquired open space for public recreation?	Yes.

Table 14-29. Town of Westernport – Administrative and Technical – Department and Staff Resources														
Land Use Authority	**Land Use/Development Planning**		**Public Works & Engineering**		**Emergency Services (e.g., Police & Fire)**		**Floodplain Manager**		**GIS**		**Fiscal Staff**		**Planning Commission**	
Y/N	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff	Y/N	# of Staff
Y	Y	1	Y	1	Y	1	N	0	N	0	Y	1	N	0

Does the Town of Westernport use a hazard warning/notification system?
No.

Table 14-30. Town of Westernport – Financial	
Capability	**Status**
Plan to expand funding, including grant funding, on hazard mitigation and resilience projects within the next five years?	No.
Does your municipality levy taxes for specific purposes?	Yes.
Does your municipality use the Community Development Block Grant	Yes, FY'24 funds will be used to demolish the former blighted Town Hall.
Has your municipality completed flood acquisition or elevation projects in the previous five years?	Yes.

Table 14-31. Town of Westernport – Education and Outreach	
Capability	**Status**
Does your municipality work with any local citizen groups or non-profit organizations focused	Yes.

Table 14-31. Town of Westernport – Education and Outreach	
Capability	**Status**
on environmental protection, emergency preparedness, and vulnerable populations, etc.?	
Does your municipality have any ongoing public education or information program (e.g., responsible water use, fire safety, household emergency preparedness, or environmental education)?	No.
Has your municipality had a FEMA NFIP Community Assistance Visit in the last five years? If so, were any corrective actions required?	No.

The Town of Westernport could expand its capabilities by developing an Emergency Operations Plan, Continuity of Operations Plan, Stormwater Management Plan, or Natural Resource Protection Plan. The Town could also adopt the County's plans if they choose. The Town could also consider utilizing a hazard warning/notification system for residents. Finally, the Town should consider developing ongoing public information campaigns and educate the public about natural hazards identified in the plan. The Town may also benefit from a FEMA NFIP Community Assistance Visit in the next five years.

14.6 Plan Integration

The Federal Emergency Management Agency (FEMA) considers plan integration the process by which communities look critically at their existing planning framework and align efforts with the goal of building a safer, smarter community. There are two primary ways to effectively accomplish plan integration:

1. Integrate natural hazard information and mitigation policies and principles into local planning mechanisms and vice versa by:
    a. Including information on natural hazards (past events, potential impacts, and vulnerabilities).
    b. Identifying hazard-prone areas throughout the community.
    c. Developing appropriate goals, objectives, policies, and projects.

2. Encourage collaborative planning and implementation and inter-agency coordination in the following ways:
    a. Involving key community officials with the authority to execute policies and programs to reduce risk.

b. Collaborating across departments and agencies with key staff to help share knowledge and build relationships that are important to the successful implementation of mitigation activities.

Allegany County's Hazard Mitigation Plan provides the necessary natural hazard information to incorporate into existing planning documents. The narratives, data, tables, assessments, mapping, and mitigation strategies within this plan are applicable when updating or modifying existing planning documents. Documents and other sources used as reference or to support the plan update are made available throughout the plan as sources, hyperlinks, or endnotes. The Hazard Mitigation Plan also includes 10 goals and associated objectives, including plan integration. The following goal and objectives extrapolated from the Mitigation Strategies chapter relate specifically to plan integration:

GOAL 10 Integrate plans and policies across disciplines and agencies within the County through the consideration of potential hazards and future development.

Objective 10.1 Integrate hazard mitigation into areas such as land use, transportation, climate change, natural and cultural resource protection, water resources, and economic development.

An example of plan integration is the 2014 Allegany County Comprehensive Plan. Hazard mitigation is integrated in the following chapters:

- Chapter 6: Public Facilities Element;
- Chapter 8: Sensitive Areas Element; and,
- Chapter 11: Land Use Element.

Hazard mitigation is referred to within each element's background, and is also included in comprehensive plan's goals, objectives, and recommendations. Recommendations correspond to hazard mitigation actions that were included in the previous hazard mitigation plan as well as mitigation action items that have been included in this plan update.
The County's building code also includes plan integration. In 2007, the Building Code of Allegany County was adopted and modifications to the code were made in accordance with the 2006 International Building Code and International Residential Code. In Part III – Building Planning and Construction, Chapter 3 Building Planning, the Climatic and Geographic Design Criteria were revised. The following figure provides the current Climatic and Geographic Design Criteria. These criteria, such as snow roof load, wind speed and seismic design category, are integral to mitigating damage to structures from hazards in Allegany County.

Allegany County amendments to International Residential Code

TABLE R301.2(1): Climatic and Geographic Design Criteria.

Roof Snow Load	Wind Speed[a] (mph)	Seismic Design Category[f]	Subject To Damage From:			Winter Design Temp[e]	Ice Shield Barrier Required[h]	Flood Hazards[i]	Air Freezing Index[j]	Mean Annual Temp[j]
			Weathering[b]	Frost line depth[c]	Termite[d]					
40	90	A	Severe	36"	Moderate to Heavy	12	Yes	1988	1000	50

TABLE R301.5.: All exterior decks require a 60 lb/sf minimum uniformly distributed live load design.

Figure 14-3. Allegany County amendments to International Residential Code. Source: Allegany County, Maryland, 2006 International Residential Code.

14.7 Funding Sources

The following funding sources are available for the County and its municipalities to utilize to implement mitigation strategies and expand upon their current mitigation capabilities. More information is available for each funding source by following the links below.

- FEMA Building Resilient Infrastructure and Communities (BRIC)
- FEMA BRIC Direct Technical Assistance
- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA Flood Mitigation Assistance (FMA)
- FEMA Safeguarding Tomorrow Through Ongoing Risk Mitigation Revolving Loan Fund (STORM RLF) Program
- FEMA Rehabilitation of High Hazard Potential Dam (HHPD) Grant Program
- HUD Community Development Block Grant
- HUD Community Development Block Grant Disaster Recovery (CDBG-DR) Mitigation
- EPA Green Streets, Green Jobs, Green Towns (G3) Grant Program
- Economic Development Administration (EDA) Funding Programs
- Maryland Department of the Environment Comprehensive Flood Management Grant Program

The above are the most commonly utilized funding sources for mitigation projects, however there are more options included in Appendix J: Potential Funding Sources. Appendix J includes the following information for each grant, including those listed above:

- Grant Program Name
- Contact Information
- Eligible Activities
- Cost Share Requirements
- Program Characteristics
- Application Due Date (estimated)

CHAPTER 15 MUNICIPAL SYNOPSIS

15.1 Municipal Demographics

Allegany County has seven municipalities, with a combined population of 29,953 people according to the U.S. Census of 2020. Total population for each municipality, along with population change between 2010 and 2020, is shown on table 15-1. The total municipal population has decreased by 11.7% from 2010 to 2020. The population for the entire county decreased by 6.5% in the same time frame.

Table 15-1: Municipal Populations

Municipality	2010 Population	2020 Population	% of Change (2010-2020)
Town of Barton	457	466	1.5%
City of Cumberland	20,859	19,081	-8.5%
City of Frostburg	9,002	7,029	-21.9%
Town of Lonaconing	1,214	1,002	-17.5%
Town of Luke	65	85	30.8%
Town of Midland	446	487	9.4%
Town of Westernport	1,888	1,811	-4.0%
TOTAL	**33,931**	**29,961**	**-11.7%**

Source: U.S. Census Bureau 2020 Census

Municipal populations by most vulnerable age groups are identified on Table 15-2. In total, municipalities are comprised of 6,122 residents aged 65 and older and 5,851 people under the age of 18. Of the latter age group, 1,683 people are under the age of five. The municipalities had a combined total of 15,117 housing units as of 2021 (ACS 5-year estimates).

Table 15-2: Municipal Population by Most Vulnerable Age Groups (2021 ACS 5-Year Estimates)

Municipality	Population Aged 65 and Older	Population Under the Age of 18	Population Under the Age of 5
Town of Barton	136	128	122
City of Cumberland	4,305	3,858	965
City of Frostburg	1,077	911	307
Town of Lonaconing	211	282	58
Town of Luke	7	20	6
Town of Midland	85	241	103
Town of Westernport	301	411	122
TOTAL	**6,122**	**5,851**	**1,683**
% County Population	**44.4%**	**52.4%**	**59.5%**

Source: U.S. Census Bureau 2021 ACS 5-year estimates

Allegany County's population is predominantly White (87.7% of the total population), followed by Black or African American (8.5%), Hispanic or Latino (2.0%), and Asian (0.9%). With the exception of Frostburg and Cumberland, municipalities have about the same racial and ethnic makeup as the county. The City of Frostburg is the most racially diverse municipality in the county, having a much larger Black or African American population (15.5%) than other areas.

In terms of overall percentages, as of 2020 the municipal population represents 42.7% of the total county population, while the elderly population in municipalities represented 44% of the county total for residents over age 65. The Hispanic or Latino population in municipalities represented 55.8% of the county total for this group. The municipal housing units represented 46% of the total for Allegany County.

15.2 Municipal Hazards

Part of the risk assessment conducted in *Chapter 3: Hazard Identification and Risk Assessment* includes a "community" or local perspective of hazards identified in this plan. Municipalities were asked their level of concern for each hazard, with potential responses ranging from "Not Concerned" to "Very Concerned." Survey results were aggregated for each municipality and results are presented on Table 15-3, below. Results include both public and municipal-representative responses. Full results of the Public Survey are included in *Appendix H*.

Note: NC = Not Concerned, SC = Somewhat Concerned, C = Concerned, VC = Very Concerned.

Table 15-3: Municipal Level of Concern for Hazards

HAZARD	Town of Barton	City of Cumberland	City of Frostburg	Town of Lonaconing	Town of Luke	Town of Midland	Town of Westernport
Flood	SC	SC	SC	SC	SC	C	C
Winter Storm	SC	SC	C	C	SC	VC	SC
Severe Weather	C	SC	SC	SC	SC	C	SC
HazMat Transportation	SC	C	C	SC	SC	SC	SC
Tornado	SC	SC	SC	SC	SC	SC	SC
Drought & Extreme Heat	SC	SC	SC	SC	SC	SC	SC
Wildfire	SC	SC	SC	SC	SC	C	SC
Rail Accidents	SC	C	SC	SC	C	SC	SC
Soil Movement	SC	SC	SC	SC	VC	C	C

Table 15-3: Municipal Level of Concern for Hazards							
HAZARD	**Town of Barton**	**City of Cumberland**	**City of Frostburg**	**Town of Lonaconing**	**Town of Luke**	**Town of Midland**	**Town of Westernport**
Emerging Infectious Diseases	SC	C	C	C	C	SC	SC
Dam Failure	SC	SC	SC	SC	C	C	SC
Source: Allegany County Municipalities, Municipal Hazard Risk Survey Note: NC = Not Concerned, SC = Somewhat Concerned, C = Concerned, VC = Very Concerned.							

Survey results indicate that municipal residents and representatives are at least "somewhat concerned" with all hazards identified in this plan. Hazards of greatest concern across all municipalities include Winter Storm, Soil Movement, and Emerging Infectious Diseases.

In addition to municipal levels of concern for hazards, hazard rankings were assigned for each municipality for each hazard. As part of the update, these risk rankings were updated (if necessary) to reflect changing conditions in the last five years – results are included on Table 15-4, below. For details on each hazard, the reader can refer to individual hazard profile chapters, or *Chapter 16: Vulnerability Assessment*. Hazard rankings from the 2018 plan are included in Table 15-5, for comparison.

Note: L = Low, ML = Medium Low, M = Medium, MH = Medium High, H = High.

Table 15-4: 2024 Municipal Hazard Rankings							
HAZARD	**Town of Barton**	**City of Cumberland**	**City of Frostburg**	**Town of Lonaconing**	**Town of Luke**	**Town of Midland**	**Town of Westernport**
Flood	**MH**	M	ML	MH	ML	**H**	**H**
Winter Storm	**MH**	**H**	**H**	M	M	**H**	**H**
Severe Weather	**H**	M	**MH**	M	ML	**MH**	**H**
HazMat Transportation	ML	**H**	M	L	ML	L	M
Tornado	**MH**	ML	M	L	ML	M	ML
Drought & Extreme Heat	M	M	ML	ML	M	**MH**	**MH**
Wildfire	ML	L	ML	L	ML	M	ML
Rail Accidents	L	**MH**	L	L	ML	ML	L
Soil Movement	M	ML	**MH**	ML	M	M	**MH**

Table 15-4: 2024 Municipal Hazard Rankings							
HAZARD	**Town of Barton**	**City of Cumberland**	**City of Frostburg**	**Town of Lonaconing**	**Town of Luke**	**Town of Midland**	**Town of Westernport**
Emerging Infectious Diseases	M	**MH**	M	ML	ML	M	ML
Dam Failure	L	ML	L	M	L	L	L
Source: Allegany County Municipalities, Municipal Hazard Risk Survey.							

Table 15-5: 2018 Municipal Hazard Rankings							
HAZARD	**City of Cumberland**	**City of Frostburg**	**Town of Midland**	**Town of Lonaconing**	**Town of Barton**	**Town of Westernport**	**Town of Luke**
Flood	M	ML	**H**	MH	**MH**	**H**	ML
Severe Weather	M	**MH**	**MH**	M	**H**	**H**	ML
Tornado	ML	M	M	L	**MH**	ML	ML
Winter Storm	**H**	**H**	**H**	M	**MH**	**H**	M
Drought	M	ML	**MH**	ML	M	**MH**	M
Wildfire	L	ML	M	L	ML	ML	ML
Fire	M	M	M	ML	ML	L	L
Airplane Accidents	M	L	ML	L	L	L	L
Rail Accidents	**MH**	L	ML	L	L	L	ML
Epidemic	**MH**	ML	ML	L	ML	L	L
HazMat Transportation	**H**	M	L	L	ML	M	ML
Soil Movement	ML	**MH**	M	ML	M	**MH**	M
Source: Allegany County Municipalities (2018).							

15.3 Municipal Synopsis Maps

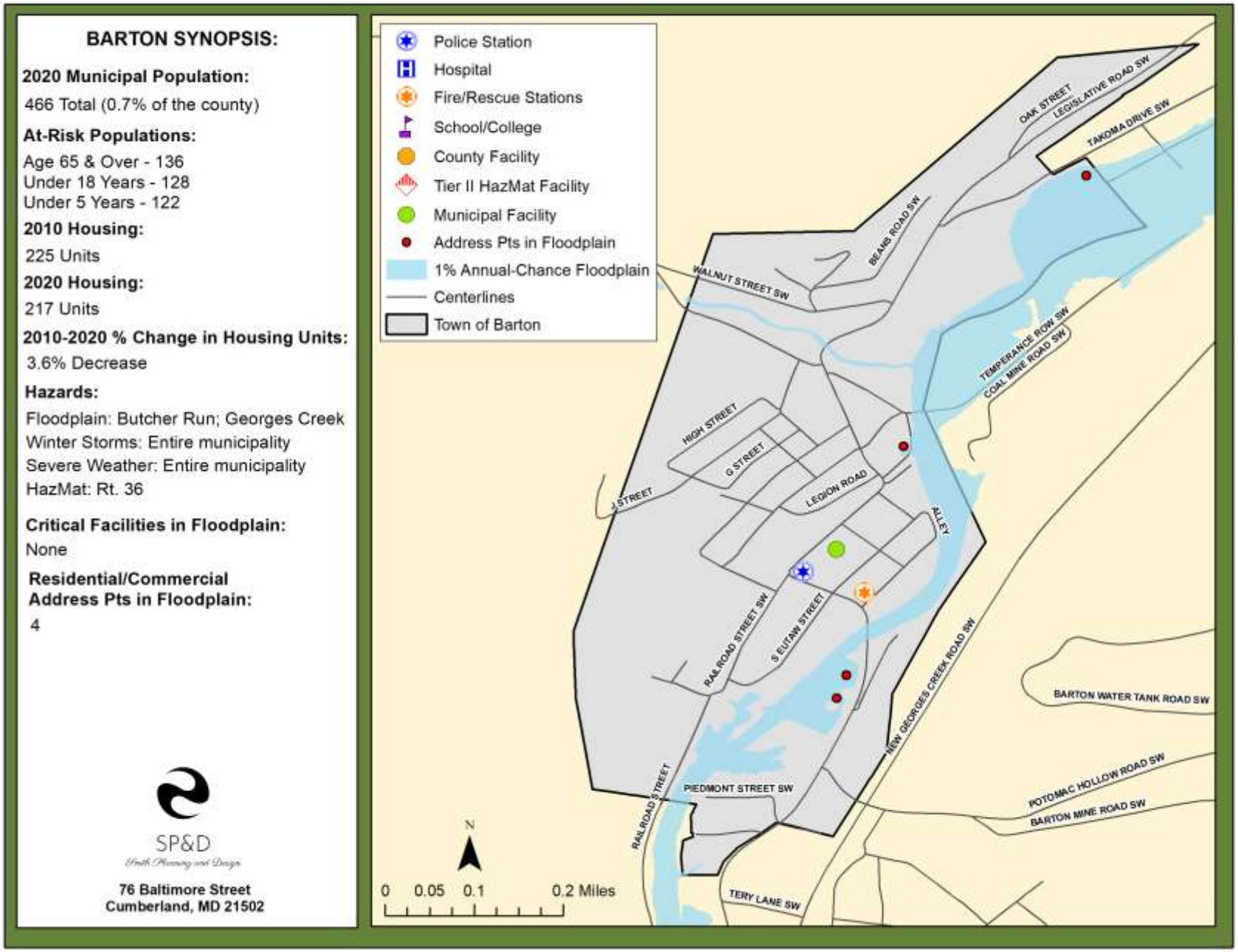
The municipalities are at-risk for many of the same hazards as the county. The following pages are in synoptic form detailing basic population and housing data for each municipality in Allegany County; as available using the 2020 U.S. Census data. Additional information included on the maps details flood hazard vulnerability for Essential and Critical Facilities within each municipality, as well as, other hazard vulnerability data.

The following municipal synopsis maps were created utilizing the 2020 effective DFIRM for Allegany County. This DFIRM was developed in 2017 and went through the community

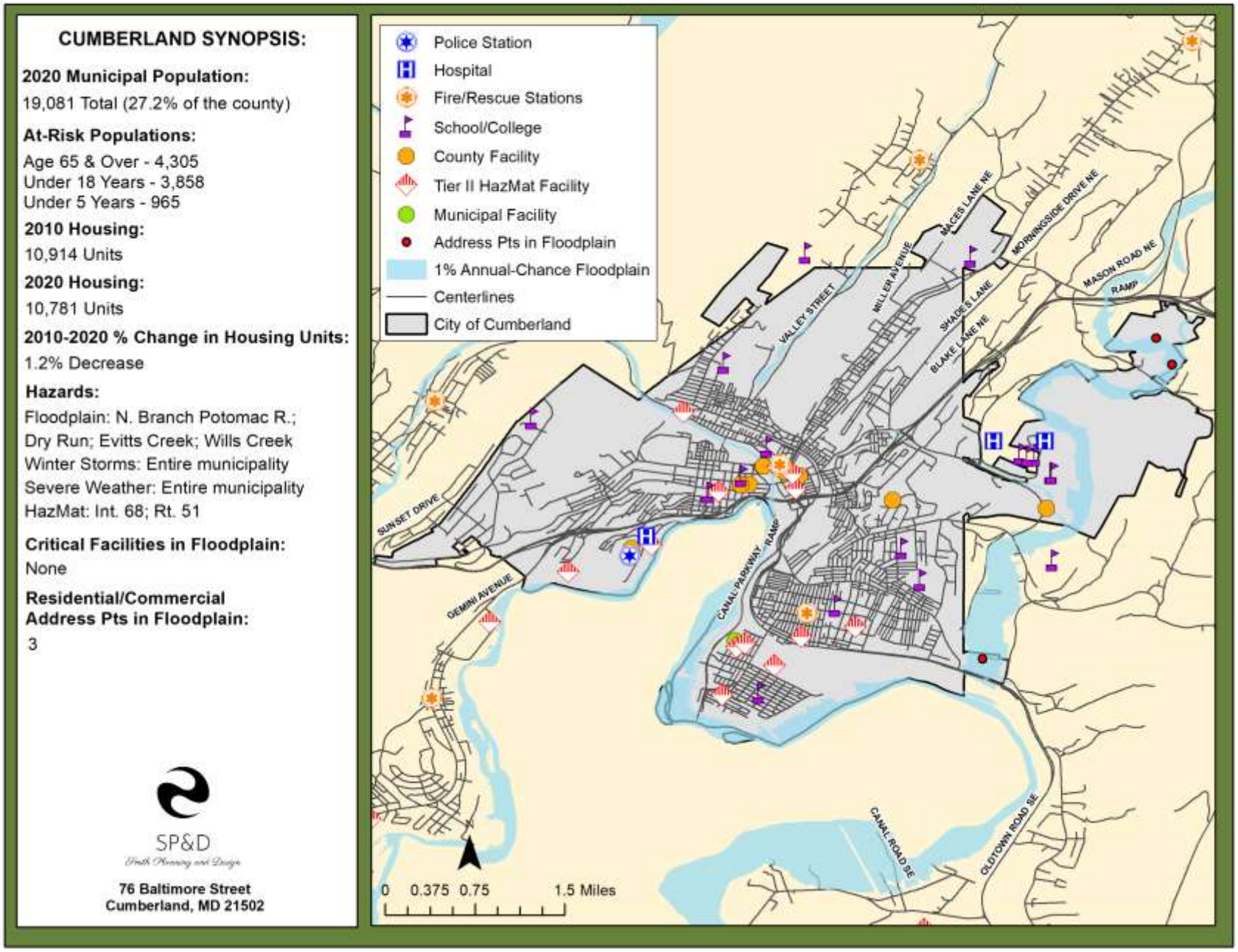
review process prior to becoming effective. Table 15-6 details the difference between structures located in the 2011 preliminary DFIRM and the 2020 effective DFIRM.

Table 15-6: Residential & Commercial Structures within 1% Annual Chance Floodplain		
Municipality	**Residential & Commercial Structures in 1% Annual Chance Floodplain**	
	2011 Preliminary DFIRM	**2020 Effective DFIRM**
Town of Barton	8	4
City of Cumberland	10	3
City of Frostburg	4	0
Town of Lonaconing	37	54
Town of Luke	0	0
Town of Midland	48	13
Town of Westernport	76	37
TOTAL	**183**	**111**

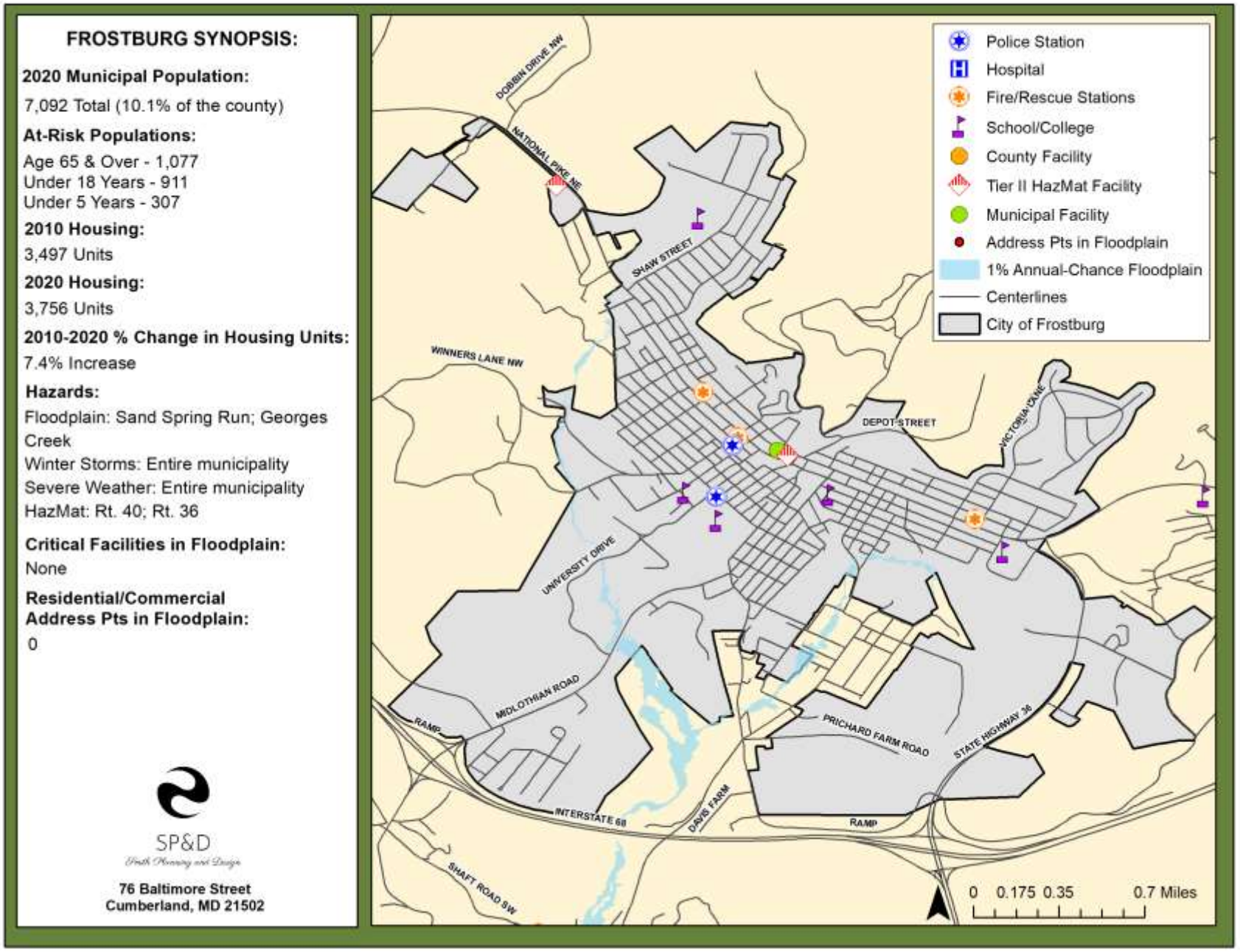
The total number of residential and commercial structures located within the 1% annual-chance-floodplain has decreased with the development of the new 2020 effective DFIRM. The number of structures affected by the 1% annual-chance floodplain decreased in all municipalities with the exception of Lonaconing. Furthermore, steep decreases were seen in both the Towns of Midland and Westernport. *Note: structures within the floodplain were determined using GIS analysis of point data available from MdPropertyView. These numbers are estimates for planning purposes and actual totals may be different. Residents can check at https://mdfloodmaps.net/ to determine if their residential or commercial structure is within the 1% annual-chance floodplain.*



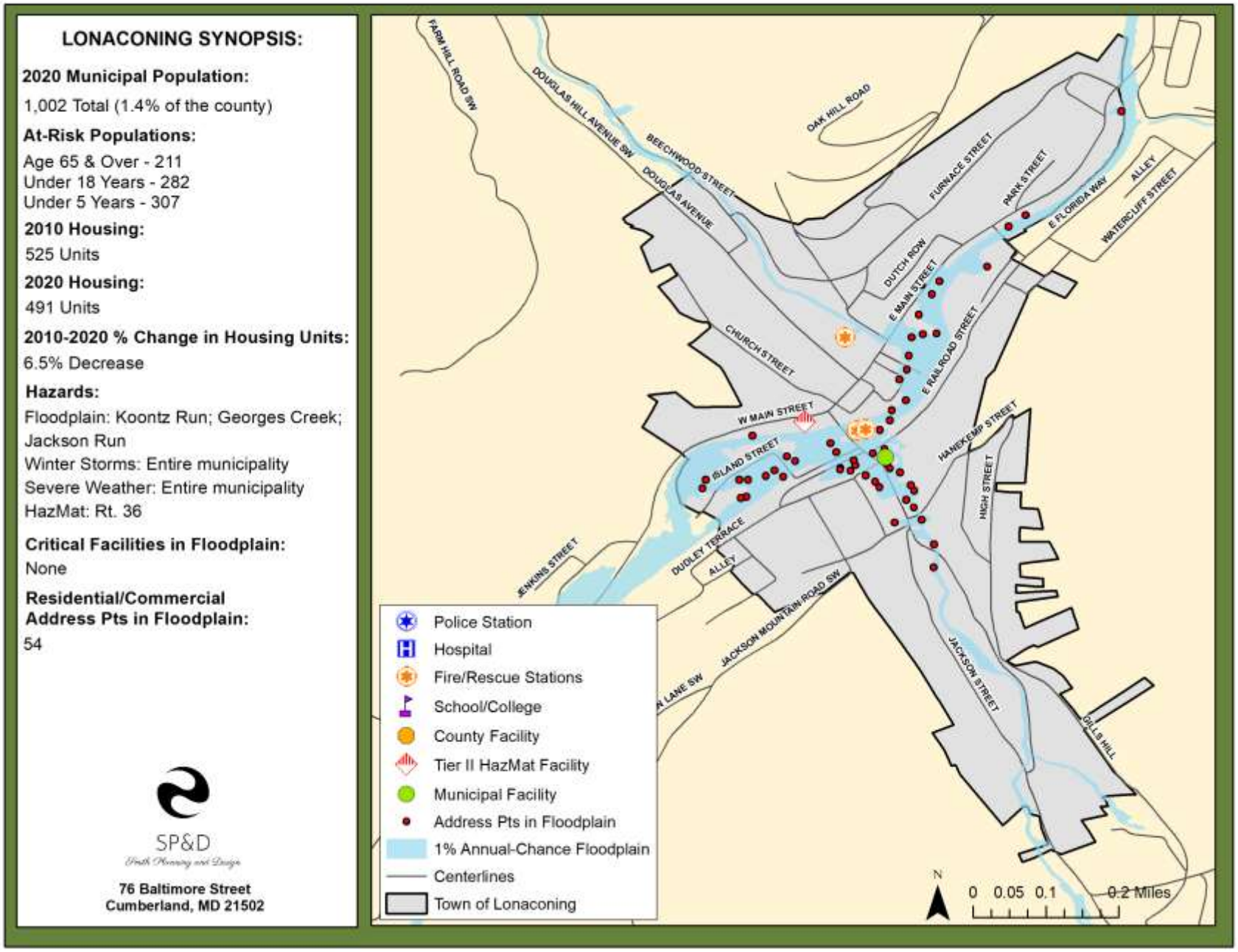
Map 15-1. Town of Barton Synopsis Map



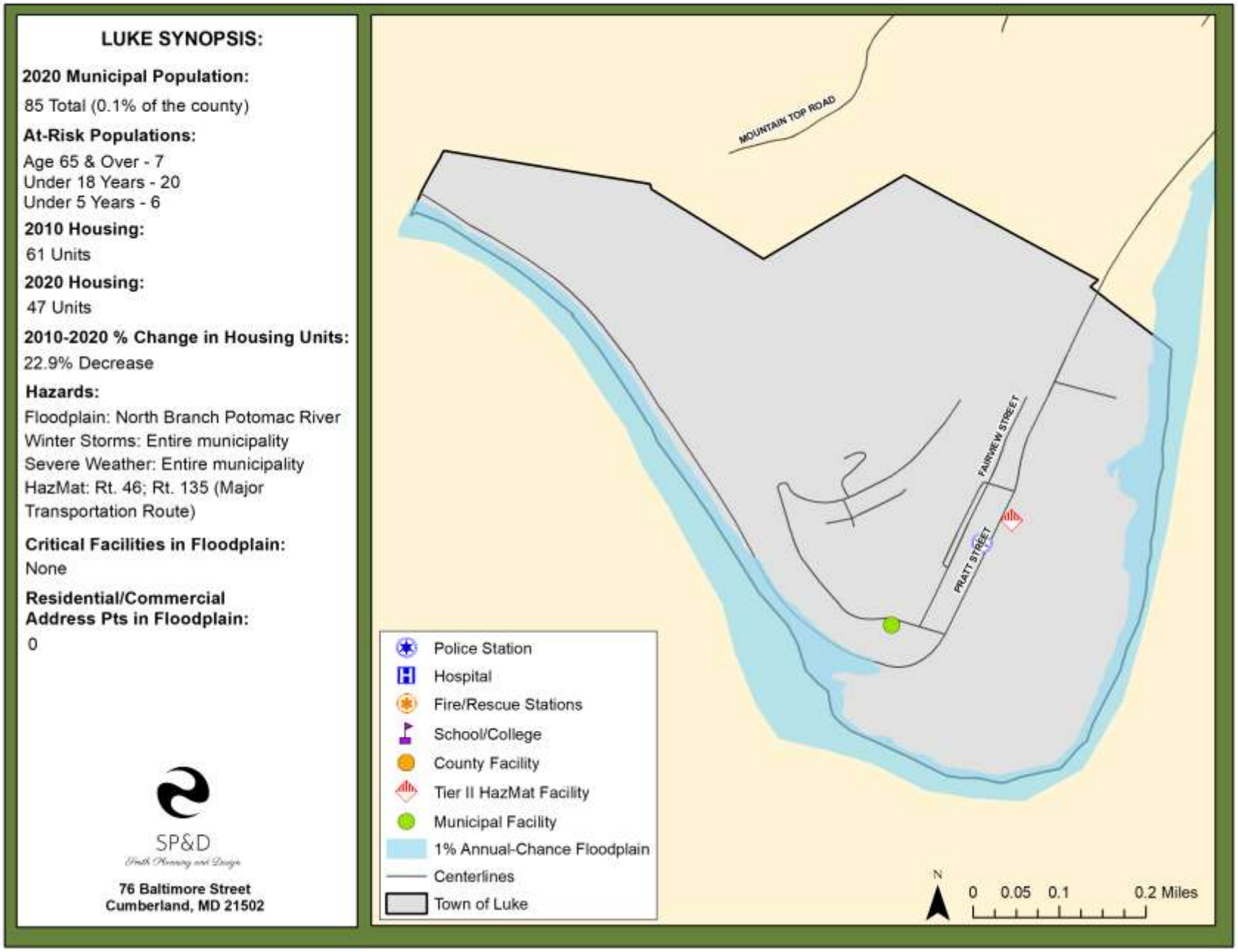
Map 15-2. City of Cumberland Synopsis Map



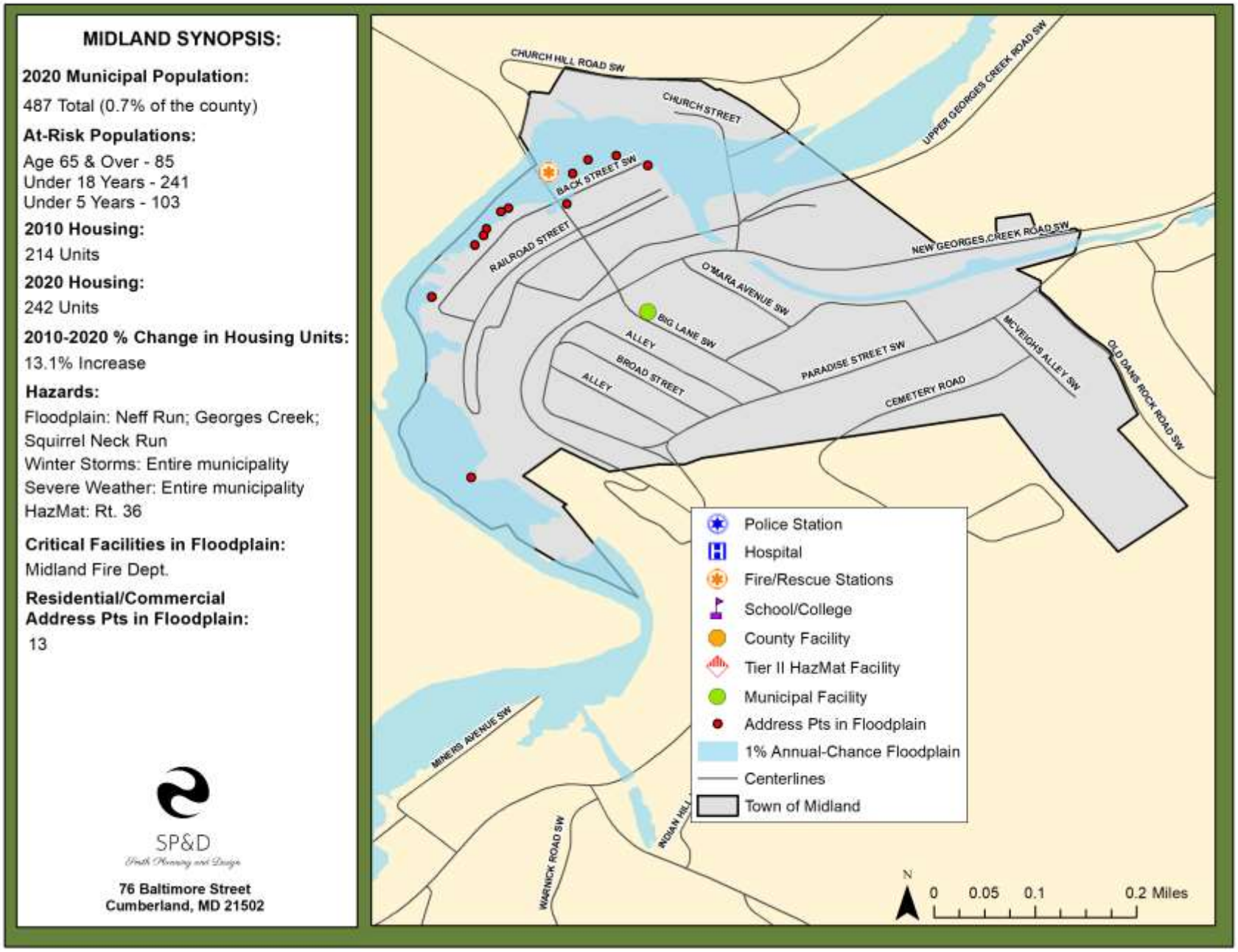
Map 15-3. City of Frostburg Synopsis Map



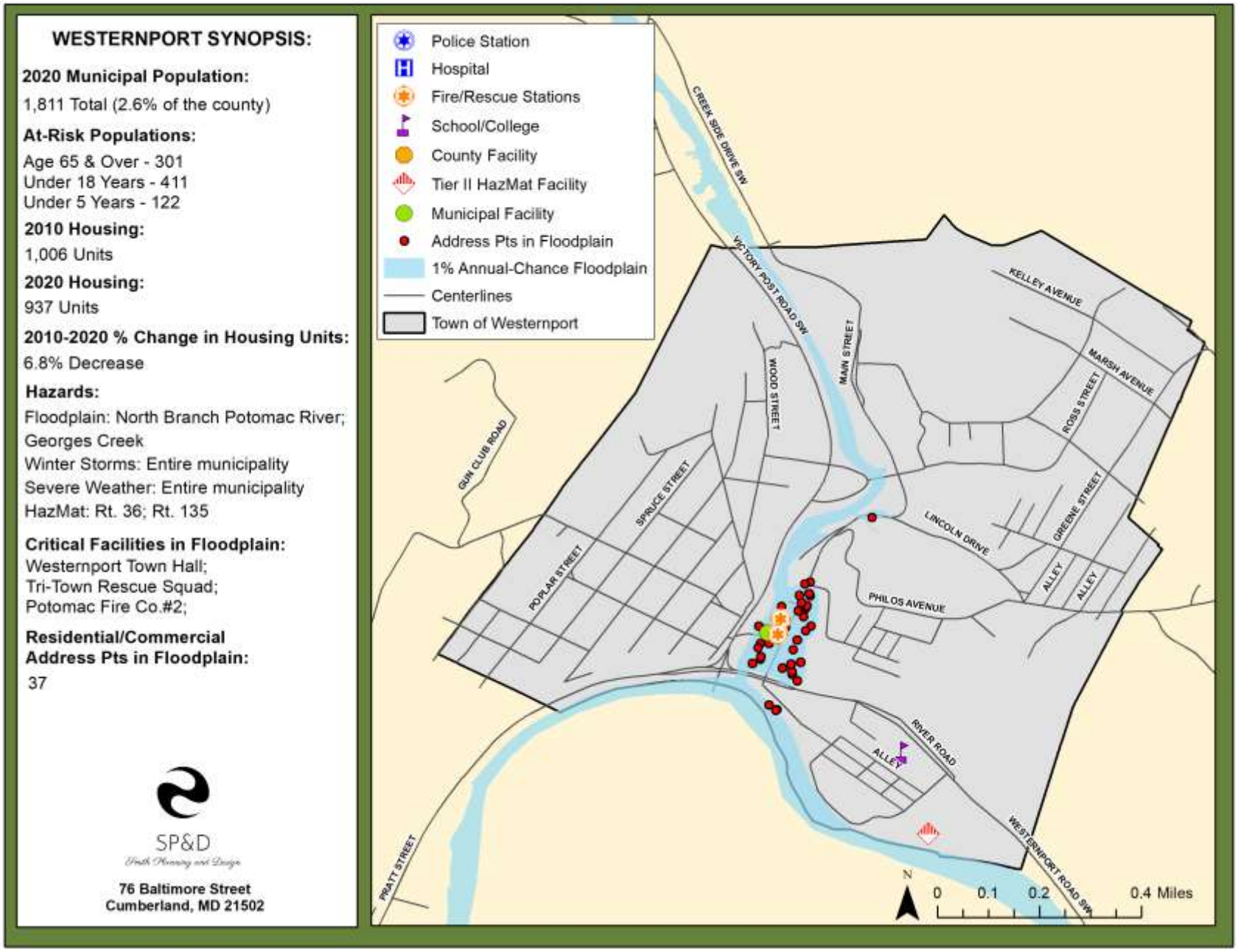
Map 15-4. Town of Lonaconing Synopsis Map



Map 15-5. Town of Luke Synopsis Map



Map 15-6. Town of Midland Synopsis Map



Map 15-7. Town of Westernport Synopsis Map

CHAPTER 16 VULNERABILITY ANALYSIS

16.1 Vulnerability Analysis

The vulnerability analysis has been based on both the 2023 Hazard Identification and Ranking Assessment (HIRA) and the geographic extent of hazards. For this assessment, the following hazards have been included based on their HIRA ranking and/or their well-defined geographic extent: Flood, Winter Storm, Severe Weather and HazMat Transportation. These hazards have been assessed with essential/critical facilities, as defined in the next section.

Results of the Hazus flood loss estimation model, as conducted in the Flood Risk Report for Allegany County, have also been included. In addition to flood loss estimations, the Hazus model provided debris generation estimates and potential shelter needs.

Note: data contained in this vulnerability section, including tables and mapping, was reviewed for accuracy during the 2024 plan update.

16.2 Critical Facilities

Critical/essential facilities are facilities that the state determines must continue to operate before, during, and after an emergency and/or hazard event and/or are vital to health and safety. In May 2015, the State of Maryland published the *Local Hazard Mitigation Plan Guidance* to ensure continuity between local and State Hazard Mitigation Plan documents. According to the *2021 State of Maryland Hazard Mitigation Plan* there are various perspectives on types of facilities designated as critical, therefore, the HAZUS-MH User's Manual essential facility definition and facility types were adopted as the basis for the minimum critical facility types in Maryland. As part of the local guidance, the State determined at a minimum the following essential facilities must be included in both the State and local plan update process:

- Fire Stations
- Hospital and Medical Clinics
- Police Stations
- Emergency Operations Center
- Schools (K-12 & Colleges)

The critical facility listing for Allegany County was vetted by committee members during the plan development process to ensure accuracy. As a result, a combined total of 78 critical facilities are located within Allegany County; Map 16-1. Table 16-1 details each facility type, number of facilities and estimated building value. Values are based on improvement values obtained through the 2017-2018 Maryland Department of Planning Property View Data for Allegany County (lasted updated May 2023).

Table 16-1: Critical Facilities		
Facility Type	**Number of Structure**	**Estimated Building Value**
Emergency Operations Center (EOC)	1	$916,300
Fire/Rescue Stations	28	$17,023,100
Hospital & Medical Clinics	7	$19,650,900
Police Stations	6	$ 225,250,500
Schools (K-12 & Colleges)	36	$367,389,300
Total	**78**	**$630,230,100**
Source: 2021 State of Maryland Critical Facility Database & Hazus analysis (Version 3.1) results stored as the Essential Facilities Flood Risk Assessment Dataset in the Flood Risk Database.		

16.3 Critical Facilities – Hazus Loss Estimations

In addition, the Maryland Department of Emergency Management (MDEM) obtained funding through FEMA in order to produce a Flood Risk Report (FRR) that provides refined loss data for user defined facilities, essential facilities, and state assets vulnerable to the 1-percent-annual-chance flood event. Flood risk assessment results reported in the FRR were developed using a FEMA flood loss estimation tool, Hazus (www.fema.gov/hazus). Hazus is a nationally applicable and standardized risk assessment tool that estimates potential losses from earthquakes, floods, and hurricanes.

The Hazus flood model utilized integrated user-supplied data in order to yield more accurate loss estimates and risk assessments for critical facilities located within Allegany County. The damage for critical facilities is determined on a site-specific basis (i.e., the depth of flooding at the location of the facility). Potential flood losses for the 1-percent-annual-chance flood event were calculated using Hazus-MH, version 3.1, and the results are presented in Table 16-2.

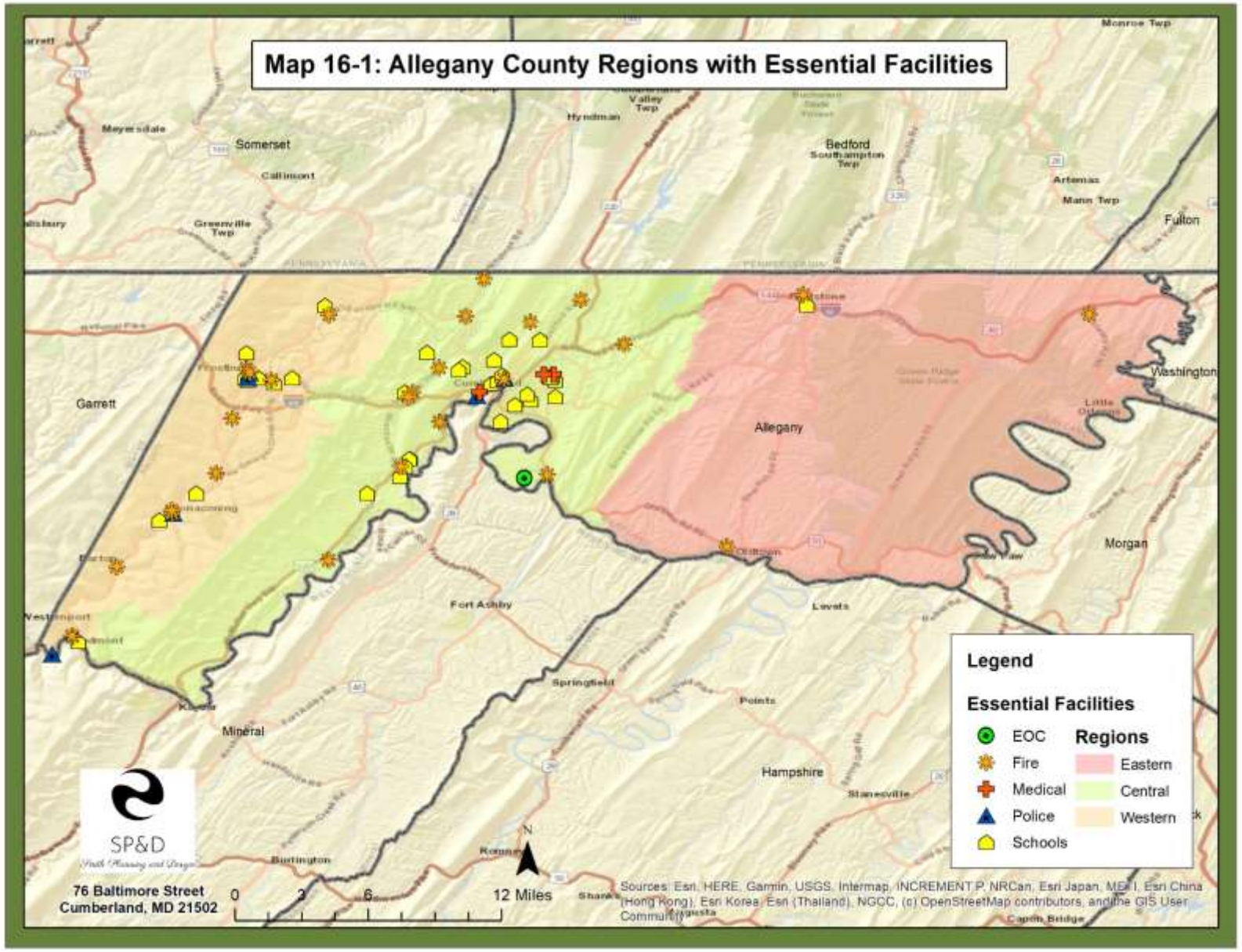
Table 16-2: Allegany County, Maryland – Building & Content Loss Estimates Summary for 1%-Annual-Chance Flood Event Refined Losses (Critical Facilities in Riverine Areas)					
Type	**Total 1% (100-yr) Dollar Losses (Building & Content)**	**Total Building Loss**	**Building Loss Percentage of Total**	**Total Content Loss**	**Content Loss Percentage of Total**
Fire Station	$382,886.30	$80,073.50	21%	$302,812.80	79%
School	$4,930,499.00	$619,045.20	13%	$4,311,453.80	87%
TOTAL	**$5,313,385.30**	**$699,118.70**	**N/A**	**$4,614,266.60**	**N/A**
Source: 2016 State of Maryland Critical Facility Database & Hazus analysis (Version 3.1) results stored as the Essential Facilities Flood Risk Assessment Dataset in the Flood Risk Database.					

Results from the 1-percent-annual-chance flood event analysis indicate eight (8) critical facilities are at-risk. These facilities include six (6) fire stations and two (2) schools. In order to

further assess the flood risk to these facilities, the depth of flooding was determined using each structure's lowest adjacent grade, depth of flooding from FEMA flood model, and the digital elevation model. Two (2) facilities, Flintstone Elementary School and Calvary Christian Academy, were determined to a have a flood depth exceeding 5 feet of water. Flood depths for each facility are provided below along with the identified facilities.

- Tri Towns Rescue Squad – 2.4'
- Potomac Fire Company #2 – 2.0'
- Corriganville Volunteer Fire Department – 3.8'
- Georges Creek Ambulance Service – 4.1'
- Midland Fire Company – 1.5'
- Baltimore Pike Volunteer Fire Department – 1.1'
- Flintstone Elementary School – 5.9'
- Calvary Christian Academy – 7.1'

In addition to identifying critical facilities, local jurisdictions are encouraged at their discretion to include additional facilities they deemed critical, such as county-owned facilities or utilities. Those facilities are discussed in section 16.8. Critical & Public Facilities, following.


Map 16-1: Allegany County Regions with Essential Facilities
Monroe Twp
Meyersdale
Somerset
Hyndman
Bedford
Southampton Twp
Artemas
Mann Twp
Fulton
Callimont
Greenville Twp
Garrett
Allegany
Washington
Morgan
Fort Ashby
Levels
Springfield
Points
Mineral
Hampshire
Romney
Burlington
Legend
Essential Facilities
EOC
Fire
Medical
Police
Schools
Regions
Eastern
Central
Western
SP&D
76 Baltimore Street
Cumberland, MD 21502
0
3
6
12 Miles
N
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

16.4 Residential & Commercial Structures – Hazus Loss Estimates

Residential structures at-risk for riverine flooding were also identified by Region and Municipality. Allegany County has not identified residential structures at risk for other hazards, but certainly recognizes that most structures are vulnerable to winter storms, tornado activity, wildfire, and hazardous material events. Once again, because of the nature of these hazards it would be difficult to quantify the risk for residential structures.

During the 2024 Update, residential structure permits (including single family dwellings and mobile homes) that were issued between 2018 and 2021 were analyzed. During this planning cycle 84 new single family dwelling permits were issued, and 24 new mobile home permits were issued. No permits issued for single family dwellings or mobile homes were developed within the 1 percent-annual-chance floodplain. New data collected reflects Allegany County's commitment to flood mitigation considering no structures were built within the floodplain during this planning cycle or the previous panning cycle (2012 to 2017).

Table 16-3: New Residential Structures – Permits Issued (2018-2021)

Land Use Type	New Units	Number in 1 percent-annual-chance floodplain	Total Value
Single Family Dwelling	84	0	$21,124,424
Mobile Homes	24	0	-

Source: Allegany County Department of Planning and Zoning, Annual Audit (2018-2021).

According to the Flood Risk Report, scenario-based flood losses were calculated using Hazus Version 3.1 for the 1-percent-annual-chance flood event. Flood losses were estimated in the 'refined' study using User Defined Facilities (UDFs), which were created using local parcel, assessor, and building footprint data. The user defined facilities refined loss data provided data results for the following facility types: Residential Building & Contents; Commercial Building & Contents; Other Building & Contents. According to the plan, at total of 607 residential, commercial and other (industrial, religion, etc.) structures are at-risk to the 1-percent-annual-chance flood event (Map 16-2). Results for Allegany County are detailed in Table 16-4 and 16-5.

Table 16-4: Estimated Potential Losses for 1%-Annual-Chance Flood Event Refined Losses (UDFs in Riverine Areas)

Type	Inventory Estimated Value	% of Total	1% Flood Dollar Losses[1]	Total Buildings Impacted by 1% Flood
Residential Building & Contents	$39,400,000	40%	$5,400,000	476
Commercial Building & Contents	$33,300,000	34%	$7,800,000	81

Table 16-4: Estimated Potential Losses for 1%-Annual-Chance Flood Event Refined Losses (UDFs in Riverine Areas)				
Type	**Inventory Estimated Value**	**% of Total**	**1% Flood Dollar Losses[1]**	**Total Buildings Impacted by 1% Flood**
Other Building & Contents	$25,300,000	26%	$7,700,000	50
Total Building & Contents[3]	$98,000,000	100%	$20,900,000	607
Business Disruption[4]	N/A	N/A	$5,400,000	N/A
TOTAL[5]	**$98,000,000**	**100%**	**$26,300,000**	**607**

Source: Flood Risk Report, Allegany County, Maryland – 2019.

[1]Losses shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000.
[2]Loss ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.
[3]Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.
[4]Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.
[5]Total = Total Building and Contents + Business Disruption

The FRR also provided the degree of damages summary for structures at-risk to the 1-percent-annual-chance flood event. According to Table 16-5, the majority of structures impacted by the 1-percent-annual-chance flood event will have l0% or less degree of damage to the structure. However, 48 structures will experience a 50% or greater degree of damage with a total loss estimate of $2,500,000 for building and contents.

Table 16-5: Degree of Damage Summary for 1%-Annual-Chance Flood Event Refined Losses (UDFs in Riverine Areas)							
Degree of Damage[1]	**Building Count**	**% of Total Building Count**	**Value of Buildings and Contents[2]**	**Value per Building**	**Total Damage[2]**	**Damage per Building**	**% of Total Damage**
Less than 1%	44	7	$9,300,000	$200,000	$60,000	<$10,000	0
1 – 10%	262	43	$43,800,000	$200,000	$6,100,000	$20,000	29
10 – 20%	168	28	$34,100,000	$200,000	$10,600,000	$60,000	51
20 – 30%	40	7	$6,000,000	$100,000	$1,900,000	$50,000	9
30 – 40%	28	5	$1,700,000	$60,000	$800,000	$30,000	4
40 – 50%	17	3	$500,000	$30,000	$200,000	$10,000	1
50% or More	48	8	$2,500,000	$50,000	$1,300,000	$30,000	6
TOTAL	**607**	**100**	**$98,000,000**	**$900,000**	**$20,900,000**	**$30,000**	**100**

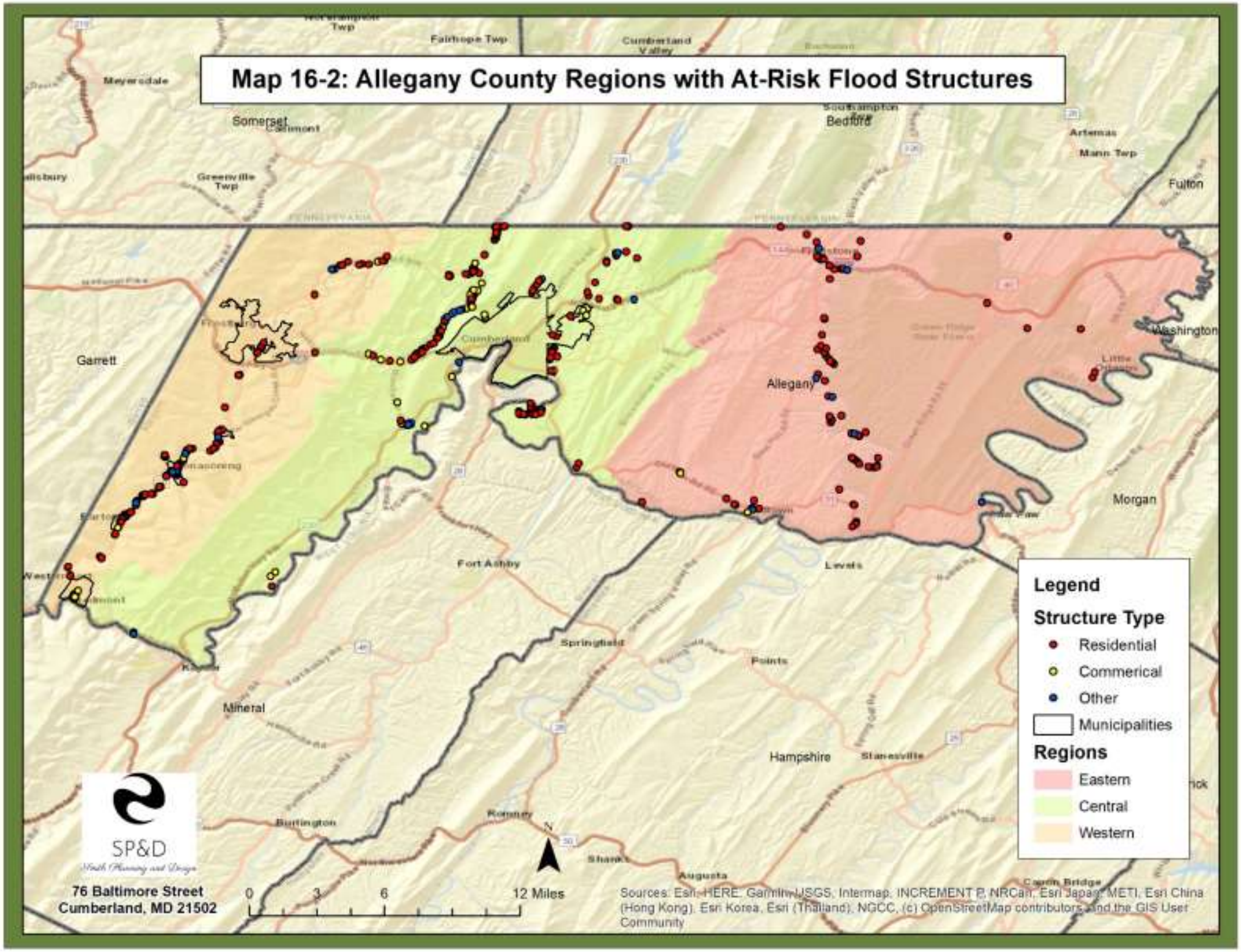
Source: Flood Risk Report, Allegany County, Maryland – 2019.

[1] Degree of Damage is the estimated financial loss to a building and its contents from flooding as a percentage of the total assessed value of the building and its contents.
[2] Value and damages shown are rounded to nearest $10,000 for values under $100,000 and to the nearest $100,000 for values over $100,000. The figures in these tables only represent information within the Allegany County, Maryland Study.

Analysis of at-risk structures by region and municipalities is provided below. Map 9 illustrates a general overview of these structures and their location, while Table 16-6 provides the

number of at-risk structures per region and municipality. In reviewing the table, the Central Region contains the highest concentration of overall at-risk structures and at-risk residential structures, 261 and 205, respectively.

Table 16-6: At-Risk Structures per Planning Region				
Location	**Residential**	**Commercial**	**Other**	**Total**
Western Region	118	9	9	**136**
Central Region	205	41	15	**261**
Eastern Region	89	2	8	**99**
Municipalities				
Midland	10	0	3	**13**
Lonaconing	44	6	4	**54**
Frostburg	0	0	0	**0**
Barton	1	1	2	**4**
Westernport	8	20	9	**37**
Cumberland	1	2	0	**3**
Total	**476**	**81**	**50**	**607**
Source: Flood Risk Report, Allegany County, Maryland – 2019 – Geodatabase.				


Map 16-2: Allegany County Regions with At-Risk Flood Structures
Legend
Structure Type
Residential
Commerical
Other
Municipalities
Regions
Eastern
Central
Western
SP&D
76 Baltimore Street
Cumberland, MD 21502
0 3 6 12 Miles
Garrett
Allegany
Cumberland
Mineral
Hampshire
Morgan
Fort Ashby
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

16.5 Debris Generation – Hazus Estimates

The Flood Risk Report provided debris generation and projected shelter needs based on the 1 percent-annual-chance flood event. In regard to debris generation, the HAZUS flood model debris estimation methodology evaluates building-related debris by major component yet recognizes a fundamental difference in the type of debris generated, most flood-related debris are contents and finishes. Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris. The debris module will determine the expected amounts of debris generated within each census block. Output from this module is the debris weight (in tons).

The model estimates that a total of 14,669 tons of debris will be generated, which is detailed on Table 16-7 below. Of the total amount, Finishes comprises 29% of the total, Structure comprises 39% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 587 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Table 16-7: Allegany County, Maryland –Debris Generation Summary for 1%-Annual-Chance Flood Event (Riverine Areas)

Debris Types	Total (tons)	Percentage of Total	Total Truckloads (@25 tons/truck)
Finishes	4,266	29%	170
Structure	5,689	39%	228
Foundation	4,714	32%	189
TOTAL	**14,669**	**100%**	**587**

Source: Hazus 3.1: Flood Module – Allegany County Study Area/ General Building Stock.

16.6 Potential Shelter Needs – Hazus Estimates

In terms of projected shelter needs, the displaced population is based on the inundation area. Individuals and households will be displaced from their homes when the home has suffered little or no damage either because they were evacuated (i.e., a warning was issued) or there is no physical access to the property because of flooded roadways. Those displaced persons using shelters will most likely be individuals with lower incomes and those who do not have family and friends within the immediate area. Consequently, modification factors for flood are based primarily on income. Age plays a secondary role in that there are some individuals who will seek shelter even though they have the financial means of finding their own shelter. These will usually be younger, less established families and elderly families.

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodation in temporary public shelters. The model estimates 651 households will be displaced due to the flood. Displacement includes households evacuated from within, or very near, to the inundated area. Of these, 794 people (out of a total population of 75,087) will seek temporary shelter in public shelters.

Table 16-8: Allegany County, Maryland – Projected Shelter Needs Summary for 1%-Annual-Chance Flood Event (Riverine Areas)

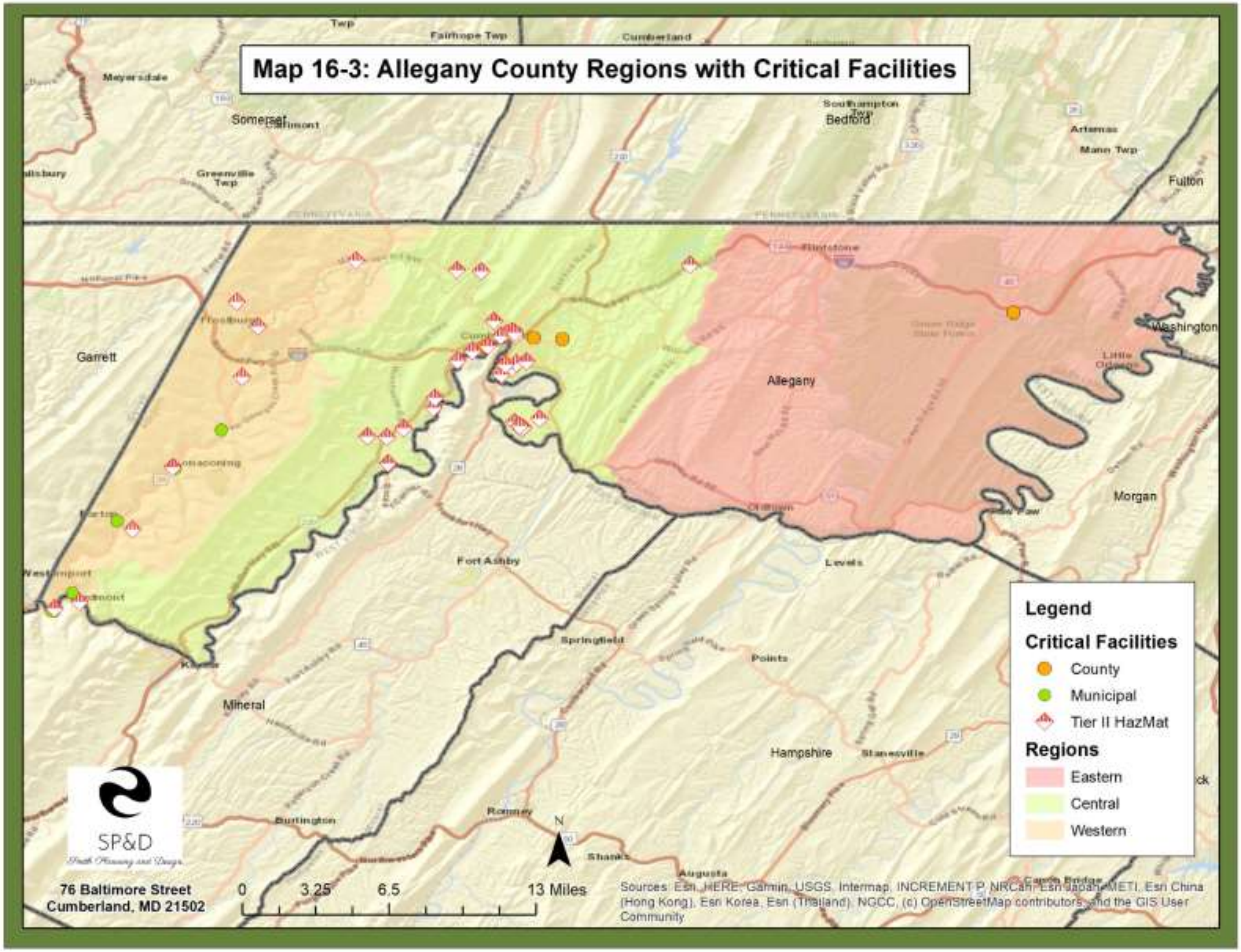
Projected Shelter Needs	Total Number of Households Affected	Displaced Population	Population in need of Temporary Shelter
Sheltering	651	1,952	794

Source: Hazus 3.1: Flood Modual – Allegany County Study Area/ General Building Stock.

16.7 Critical & Public Facilities

Allegany County has chosen to identify and classify critical and public facilities by Region (based on watersheds). The critical facility inventory includes county and municipally owned buildings and hazmat facilities based on Tier II Reports; Map 16-3. The public facility inventory consists of parks, libraries, post offices, utilities, communication towers, bridges and railroad crossings. Additionally, Tables 16-4 through 16-19 provide the vulnerability for each critical and public facility to the following hazards: flood, winter weather, severe weather, and HazMat transportation. Critical and public facilities located within each municipality and region are detailed on Maps 16-4 through 16-14.

The Planning Committee chose to estimate critical and public facility values for those facilities that were at risk of flooding. As part of the update, all critical facilities' flood vulnerability were analyzed utilizing the new Preliminary Digital Flood Insurance Rate Maps (DFIRM). As a result, three (3) critical facilities were identified as being at risk for 1-percent-annual-chance flood event. 135 public facilities were identified as being at risk for the 1-percent-annual-chance flood event.


Map 16-3: Allegany County Regions with Critical Facilities
Legend
Critical Facilities
County
Municipal
Tier II HazMat
Regions
Eastern
Central
Western
Garrett
Allegany
Morgan
Hampshire
Mineral
Fort Ashby
Springfield
Levels
Points
Romney
Burlington
Somerset
Bedford
Fulton
Washington
Meyersdale
Artemas
Mann Twp
SP&D
76 Baltimore Street
Cumberland, MD 21502
0 3.25 6.5 13 Miles
N
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

16.7.1 Estimated Value

The estimated replacement value totals for at-risk Critical and Public Facilities are provided on Tables 16-10 and 16-11. The replacement value for critical and public facilities is nearly $316,697,000 of which more than $298,000,000 is for bridges and $16,500,000 is for utilities. The value of bridges and utilities is not based on FEMA guidelines but is estimated from information provided by local construction engineers. Table 16-11 is a compilation of flooding damage estimates for both critical and public facilities.

Note: All Critical Facility damage estimates have remained the same, there were no Critical Facilities constructed in the 1 percent-annual-chance floodplain during the Plan Update.

Table 16-10: Critical & Public Facilities Flood Damage Estimates per Region & Municipality

Location	Facility Type							Critical & Public Total
	Library	Gov't Building	Post Office	Utility	Electric	Communi-cation	Bridge	
Western Region	$0	$0	$0	$11,000,000	$500,000	$0	$114,000,000	**$125,500,000**
Frostburg	$0	$0	$0	$0	$0	$0	$3,200,000	**$3,200,000**
Midland	$0	$0	$50,000	$0	$0	$0	$15,500,000	**$15,550,000**
Lonaconing	$0	$250,000	$0	$0	$0	$0	$11,500,000	**$11,750,000**
Barton	$0	$0	$0	$0	$0	$0	$7,000,000	**$7,000,000**
Westernport	$250,000	$200,000	$150,000	$0	$0	$0	$20,000,000	**$20,600,000**
Central Region	$0	$0	$297,000	$3,000,000	$0	$0	$87,000,000	**$90,297,000**
Eastern Region	$0	$0	$100,000	$500,000	$0	$0	$40,200,000	**$40,800,000**
Critical & Public Total	**$250,000**	**$450,000**	**$597,000**	**$16,500,000**	**$500,000**	**$0**	**$298,400,000**	**$316,697,000**

Source: Digital Flood Insurance Rate Map (DFIRM) – April 2020.
Estimates for utilities: WWTP- $1,000,000, $10,000,000; or $20,000,000 depending on size
WTP - $500,000; $1,000,000; or $10,000,000 depending on size
Transfer Station -$50,000
Estimates for bridges: County - $500,000, 1,000,000, 5,000,000 depending on size
State - $5,000,000; or $10,000,000 depending on size

Table 16-11: Critical & Public Facilities Flood Damage Estimates Totals

Type of Facility	Number of Structures	Value in Dollars
Library	1	$250,000
Gov't Bldg.	2	$450,000
Post Office	4	$597,000
Utility	12	$16,500,000
Electric	2	$500,000
Communication	0	$0
Bridge	114	$298,400,000
Critical & Public Total	**135**	**316,697,000**

16.8 Historic Properties Vulnerable to Flood

Historic properties in Allegany County were assessed for vulnerability to the flood hazard. Specifically, the State's register of historic properties was assessed for properties within the Special Flood Hazard Area in Allegany County and its municipalities. Properties within the SFHA are especially vulnerable to impacts and damage associated with the flood hazard. These properties are listed below, sorted by their location. Properties are depicted on Map 16-4, page 16-15. In total, 56 historic properties were identified as being vulnerable to the flood hazard. These properties primarily consist of structures, houses, bridges, locks, and districts.

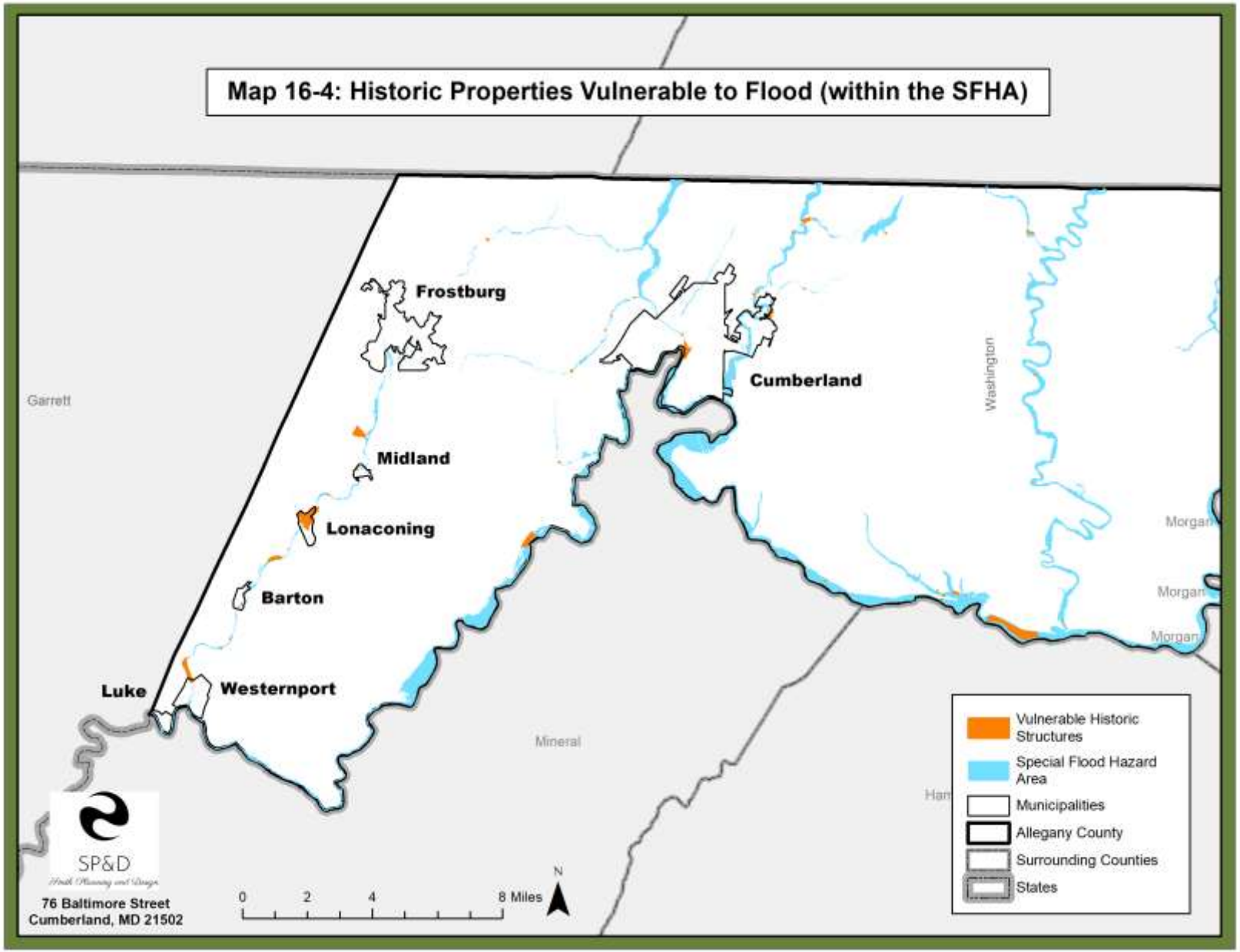
The unincorporated areas of the County have a total of 32 vulnerable historic properties. There are 24 total properties within municipalities that are vulnerable to flooding, including:

- Town of Barton (1)
- City of Cumberland (13)
- Town of Lonaconing (6)
- Town of Midland (3)
- Town of Westernport (1)

Table 16-12: Historic Properties Vulnerable to the Flood Hazard

Name Of Historic Property	Location
SHA Bridge 1019 (1011910)	Barton
Cresaptown Log Church	Cresaptown
Blue Bridge (Bridge 1066 (SHA), Cumberland-Ridgeley Bridge, George Washington's Crossing)	Cumberland
Bridge AC0510 (SHA), Market Street Bridge	Cumberland
C&O Canal National Historical Park: Western Terminus	Cumberland
Colonial Manor	Cumberland
Folck's Mill	Cumberland
Hendrickson House	Cumberland
J.A. Row House	Cumberland
Jane Frazier House, site	Cumberland
Malamphy Log House, site	Cumberland
Minke's Pool Property	Cumberland
Murphy House	Cumberland
Union Grove Campground	Cumberland
Union Grove Schoolhouse	Cumberland
Hast/Allman Farm	Dickens
Lybarger Brick House	Ellerslie

Table 16-12: Historic Properties Vulnerable to the Flood Hazard	
Name Of Historic Property	**Location**
Bridge A113 (SHA)	Flintstone
Kyle Brick House	Flintstone
Moser Frame House	Flintstone
Roland Log House	Flintstone
Twigg Saltbox	Flintstone
Wigfield Blacksmith Shop	Flintstone
Franklin Survey District	Franklin
Joe Higgins Canal House	Green Ridge
Bridge 0100200	La Vale
Bridge A-6610 (SHA)	La Vale
Bridge A-6710 (SHA)	La Vale
Christa McKenzie Property	La Vale
Shrout Property	La Vale
Bridge A-1013 (SHA), site	Lonaconing
First Presbyterian Church	Lonaconing
Harris Store, site	Lonaconing
Lonaconing Historic District	Lonaconing
Pekin (Nikep) Survey District	Lonaconing
World War I Doughboy Monument	Lonaconing
Frame Duplex, 409-413 Main Street, site	Midland
Frame Duplex, 413-415 Main Street, site	Midland
Harriet Taylor House, site	Midland
Morrison Log House	Morrison
Acme Hall	Mount Savage
Haus Saltbox House	Mount Savage
Mount Savage Jail	Mount Savage
Waitekunas Saltbox House	Mount Savage
Elmo C. Alderton House	Oldtown
Greensprings Road Toll Bridge	Oldtown
Lock House #70 & Lift Lock	Oldtown
Methodist Parsonage	Oldtown
Rickenburg Log House	Oldtown
Shawnee Old Fields Village Archeological Site	Oldtown
Herman Barton Indian Village Archeological Site	Pinto
Dean-Zihlman-Cunningham Property	Spring Gap
Bridge A-1047 (SHA), Town Creek Through Truss Bridge	Town Creek
Reynolds Pratt Truss Bridge	Westernport
Woodland Survey District	Woodland
Lester Raines Barn, site	Yonkers


Map 16-4: Historic Properties Vulnerable to Flood (within the SFHA)
Frostburg
Cumberland
Midland
Lonaconing
Barton
Luke
Westernport
Garrett
Washington
Mineral
Vulnerable Historic Structures
Special Flood Hazard Area
Municipalities
Allegany County
Surrounding Counties
States
0
2
4
8 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502

16.9 Hazard Vulnerability Ranking System

The vulnerability analysis conducted and described herein, identified all Essential, Critical and Public Facilities and their vulnerability to the following hazards: Flood, Winter Storm, Severe Weather and HazMat Transportation, shown on Tables 16-13 through 16-19. An overview of the hazard vulnerability rankings methodology used in the vulnerability analysis is described in the table below.

Table 16-13: Vulnerability Analysis Overview

Hazard	Ranking Value Used	Facilities Potentially Affected
Flood	"High" (H) - The facility is located in the 100-year floodplain (Preliminary DFIRM, November 2017).	All
Winter Storm	*"High" (H) – The facility was constructed 1967 and prior and has a flat roof.	All
	"Low" (L) - Due to the widespread impact which generally may affect any facility.	
Severe Weather (Thunderstorm, Lightning Strike, Hail & Fog)	"Low" (L) – All facilities are considered vulnerable due to the frequency of occurrences and random nature of the hazards.	All
HazMat Transportation	"Low" (L) – Bridges and railroads are at-risk throughout the county due to the random nature of HazMat incidents.	Transportation (Bridges and Railroads)
*Note: Applies to Essential Facilities only due to the importance of these facilities remaining operational during a hazard event.		

16.10 Vulnerability Analysis & Data Compilation

The vulnerability analysis, Tables 16-13 through 16-19, is composed of a listing of Essential, Critical and Public Facilities along with specific hazard rankings that correspond to each facility. A more detailed vulnerability analysis of each municipality can be found in *Chapter 15: Municipal Synopsis*.

The ranking system used for this assessment and methodology is described above in section *16.9 Hazard Vulnerability Ranking System*. Critical and public facility tables from the 2018 Allegany County Hazard Mitigation Plan Update were modified to reflect changing conditions. Facilities that no longer exist and/or operational have been removed. Those facilities located within the floodplain have an associated estimated value.

Essential, Critical and Public Facilities
Allegany County
Hazard Data

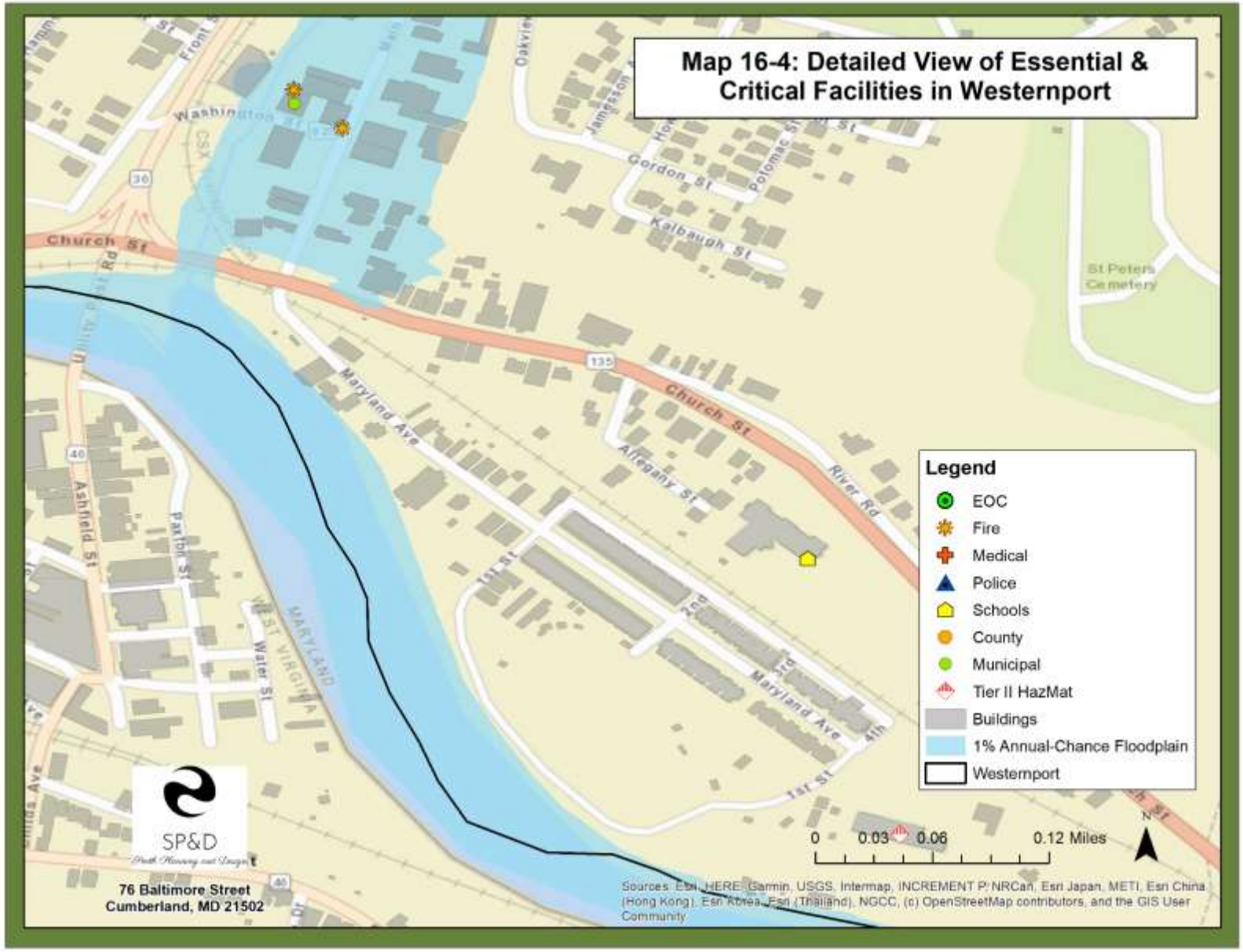
Table 16-14: Westernport and Luke

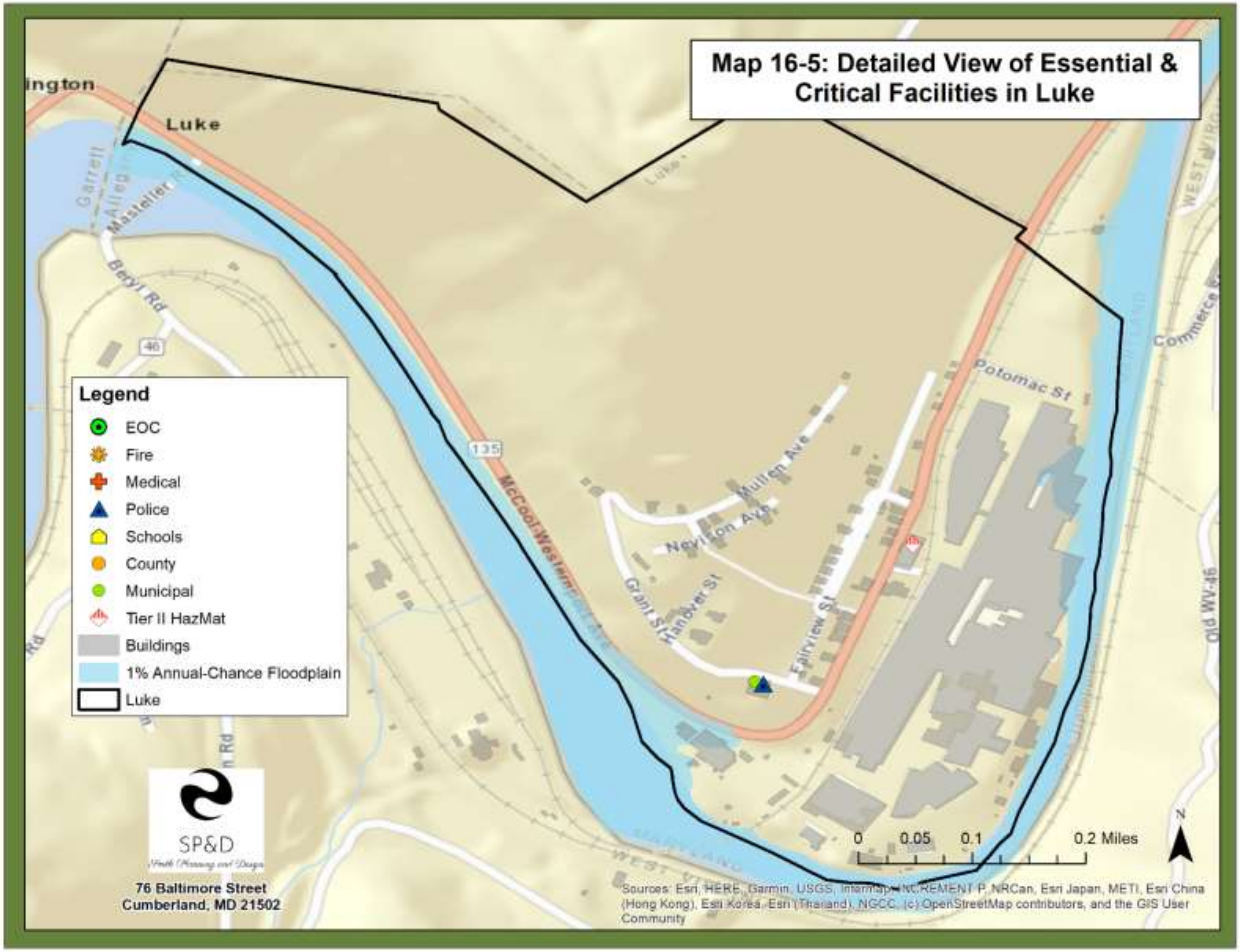
Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value	
			Flood	Winter	Severe Weather	HazMat		Building & Content Cost	Building & Content Loss Estimate
Essential Facilities									
Westernport	School	Westernport E.S.		H	L		Church St.		
	Fire/Rescue	Tri-Town EMS Co. # 50	H	H	L		59 Main St.	$262,750	$28,797.40
		Potomac Fire Co. # 2	H	H	L		61 Main St.	$328,750	$38,792.50
Luke	Fire/Rescue	Luke Co 21		L	L		300 Pratt St.		
	Police	Luke Police		L	L		510 Grant St.		
Critical Facilities									
Westernport	Town Hall	Westernport Town Hall	H	L	L		Washington St.	$200,000	
Luke	Town Hall	Luke Town Hall		L	L		510 Grant St.		
Public Facilities									
Westernport	Park	Westernport Memorial Park	H				Third St.		
		Creekside Park	H				Waverly Street		
	Library	Westernport Library	H	L	L		66 Main St.	$250,000	
	Post Office	Westernport PO	H	L	L		72 Main St.	$150,000	
	Utility	Upper Potomac WWTP					Maryland Ave. Ext.		
		Horse Rock Water PS					Cosgrove Lane		
		Westernport Water Tank					Cosgrove Lane		
		Baughman Ln Water PS					Baughman Lane		
		Lincoln Dr. Water PS					Lincoln Drive		
		Chestnut St. WTP					Chestnut St.		
	Communication	Emergency Mgt. Tower		L	L		Westernport		
	Bridge	Waverly St. at Rt. 36		L	L	L	Westernport		
		Waverly St. at Georges Cr.	H	L	L	L	Westernport	$5,000,000	
		Rt. 36 at Potomac River	H	L	L	L	Westernport		
		Rt. 135 at Georges Cr.	H	L	L	L	Westernport	$10,000,000	
		St. at Georges Cr.	H	L	L	L	Westernport	$5,000,000	
		CSX RR at Georges Cr.	H	L	L	L	Westernport		
		CSX RR at Georges Cr.	H	L	L	L	Westernport		
	RR Xing	Rt. 135 @ MD Ave.	H	L	L	L	Westernport		
		RT 36 near Rt. 135	H	L	L	L	Westernport		
		Waverly St.	H	L	L	L	Westernport		
Luke	Utility	Luke Water Tank					Grant St.		

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-14: Westernport and Luke

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
	Post Office	Luke PO		L	L		119 Pratt St.	
Luke		Luke Water PS					Pratt St.	
Con't	Industry	Mead Westvaco Corp.	H				300 Pratt St.	
	Bridge	RT 135 to Beryl Woodyard	H	L	L		Luke	
		CSX RR at Potomac River	H	L	L		Luke	
		CSX RR at Potomac River	H	L	L		Luke	
		Piedmont Bridge	H	L	L		Luke	
	RR Xing	Westvaco Rds	H	L	L		Luke	


Map 16-4: Detailed View of Essential & Critical Facilities in Westernport
Legend
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
Buildings
1% Annual-Chance Floodplain
Westernport
0 0.03 0.06 0.12 Miles
N
Church St
Maryland Ave
Allegany St
River Rd
Gordon St
Kalbaugh St
St Peters Cemetery
Ashfield St
Parish St
Water St
1st St
3rd St
4th St
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community


Map 16-5: Detailed View of Essential & Critical Facilities in Luke
Legend
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
Buildings
1% Annual-Chance Floodplain
Luke
Luke
McCoole-Western
Potomac St
Mullen Ave
Nevison Ave
Grant St
Hanover St
Fairview St
Beryl Rd
Mastelier
Commerce
Old WV-46
135
46
0 0.05 0.1 0.2 Miles
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-15: Western Region

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value	
		Essential Facilities						Building & Content Cost	Building & Content Loss Estimate
Western Region	School	Mt. Savage School		L	H		13201 New School Rd.		
		Eckhart Center		L	H		17000 National Pike		
		Frost ES		L	H		260 Shaw Street		
		Georges Creek ES		L	L		15600 Lower Georges Creek Rd.		
		Westmar MS		L	H		16915 Lower Georges Creek Rd.		
	Fire/Rescue	Mt. Savage Co. 15		L	L		15701 Iron Rail Street		
		Clarysville Co. 14		L	L		16304 Clarysville Rd.		
		Shaft Co 17		L	H		19303 Shaft Road		
		Public Facilities							
Western Region	Park	Allegheny Highlands Trail					Former Western Md. RW		
		Dans Mt. WMA					Dans Mountain		
		Dans Mt. State Park					Water Station Run Rd.		
		Dan's Rock Overlook Park					Old Dan's Rock Rd.		
		Savage River St. Forest					Big Savage Mtn.		
		Finzel Swamp Nature Preserve					Big Savage Mtn.		
		Mt. Savage Comm. Park					Foundry Row		
		Mt. Savage Hist. Park					Old Row		
		Hoffman Ball Field					Hoffman Hollow Rd.		
	Museum	Mt. Savage Bank		L	L		15607 Mt. Savage Rd.		
	Post Office	Mt. Savage PO		L	L		12700 New School Rd.		
		Eckhart Mines PO		L	L		10501 Eckhart Mines Rd.		
		Midlothian PO		L	L		19911 Old Midlothian Rd.		
	Nursing Home	Moran Manor		L	L		25701 Shady Lane		
	Transportation	County Roads Garage		L	L		13201 Old Legislative Rd.		
		SHA Salt Dome		L	L		12101 New Geo. Cr. Rd.		
		SHA Salt Dome		L	L		20800 Lower Geo. Cr. Rd.		
	Industrial Park	Tri-Towns Ind. Park		L	L		Rt. 135 east of Westernport		
	Utility	Georges Creek WWTP	H	L	L		25018 Old Reynolds Rd.	$10,000,000	
		Wrights Xing Sewage PS	H	L	L		11427 Upper Geo. Cr. Rd.	$500,000	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-15: Western Region

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		Knapps Meadow Water PS	H	L	L		Brodie Rd.	$500,000
		Tri-Towns Ind Pk. WWTP		L	L		Rt. 135 east of Westernport	
		Mt. Savage Water		L	L		Near Mile Lane	
		Barrellville Water		L	L		Old Mine Rd.	
Western Region		Depot St. Water Meter		L	L		Depot St.	
Con't		Water Pres. Reducing Vault		L	L		New Hope Rd.	
		Water Pres. Reducing Vault		L	L		Zihlman	
		Carlos Water Tank		L	L		Carlos Rd.	
		Master Water Meter		L	L		Midlothian Rd.	
		Water Pres. Reducing Vault		L	L		Old Legislative Rd.	
		Water Pres. Reducing Vault		L	L		Harvey Hill Rd.	
		Water Pres. Reducing Vault		L	L		Grahamtown	
		Water Pres. Reducing Vault		L	L		Rt. 36	
		Water Pres. Reducing Vault		L	L		Rt. 36	
		Water Pres. Reducing Vault		L	L		Rt. 36	
		Water Pres. Reducing Vault		L	L		RT. 36	
		Midlothian Water		L	L		Winebrenner Run	
		Shaft Water		L	L		Staub Run	
		Klondike Water		L	L		Klondike Rd.	
		Laurel Run Water Tank		L	L		Laurel Run Rd.	
		Midland- Lon. WTP & Tank		L	L		Buskirk Hollow Rd.	
		Charlestown WTP & Tank		L	L		Charlestown Rd.	
		Koontz WTP & Tank		L	L		Beechwood Rd.	
		Water Pumping Vault		L	L		Brophytown	
		Moran Manor Water Tank		L	L		Near Moran Manor	
	Solid Waste	Mountainview Landfill		L	L		13300 New Geo. Cr. Rd.	
	Natural Gas	Columbia Gas Trans.					19001 Jackson Mt. Rd.	
	Substation	Westernport SS	H	L	L		21518 Creek Side Dr.	$250,000
		Lonaconing SS	H	L	L		17205 Lower G. Cr. Rd.	$250,000
		Wrights Crossing SS		L	L		11409 Upper Geo Cr. Rd.	
	Communication	Verizon		L	L		14809 Mt. Savage Rd.	
		Crown Castle Tower		L	L		10024 Piney Mt. Rd.	
		General Cellular		L	L		Dans Rock Rd.	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-15: Western Region

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		Nextel Tower		L	L		16930 Old Dans Rock Rd.	
		US Cellular		L	L		Dans Rock Rd.	
		American Tower		L	L		16901 Old Dans Rock Rd.	
		Two Way Radio		L	L		17000 Old Dans Rock Rd.	
		Dans Rock Tower		L	L		Dans Rock Rd.	
Western Region	Bridge	Rt 47 at Trib to Jennings Run	H	L	L	L	Near Wellersburg	$1,000,000
Con't		Rt 47 at Trib to Jennings Run	H	L	L	L	Near Barrellville Outdoor Club	$1,000,000
		Rt 47 at Trib to Jennings Run	H	L	L	L	Near Barrellville	$1,000,000
		Rt 47 at No. Br. Jennings Run	H	L	L	L	Near Barrellville Outdoor Club	$5,000,000
		Rt 47 at No. Br. Jennings Run	H	L	L	L	Near Barrellville	$5,000,000
		Rt. 36 at No. Br. Jennings Run	H	L	L	L	Near Barrellville	$10,000,000
		Woodcock Hol. Rd. at Jen. Run	H	L	L	L	Near Barrellville	$5,000,000
		Rt. 36 at Jennings Run	H	L	L	L	Near Newtown	$5,000,000
		Rt 36 at Jennings Run	H	L	L	L	East end of Mt. Savage	$5,000,000
		Rt. 36 at Jennings Run	H	L	L	L	Mt. Savage	$5,000,000
		Cobblestone Rd. at Jen. Run	H	L	L	L	Mt. Savage	$500,000
		Iron Rail St. At Jennings Run	H	L	L	L	Mt. Savage	$500,000
		New Row at Jennings Run Trib	H	L	L	L	Mt. Savage	$500,000
		Slabtown Rd. at Jennings Run	H	L	L	L	Near Morantown	$500,000
		Rt. 36 at Jennings Run	H	L	L	L	Near Morantown	$1,000,000
		Rt. 36 at Jennings Run	H	L	L	L	Near Morantown	$1,000,000
		Rt. 638 at W. Md. Scenic RR		L	L	L	Near Morantown	
		W. Md. Scenic RR at All. High		L	L	L	Near Frostburg	
		W. Md. Scenic RR at All. High		L	L	L	Near Frostburg	
		I-68 at Clarysville		L	L	L	Clarysville	
		I-68 at Rt. 36		L	L	L	Near Frostburg	
		I-68 at Rt 936		L	L	L	Near Frostburg	
		I-68 at Midlothian Rd.		L	L	L	Near Frostburg	
		Alt. Rt. 40 at Braddock Run	H	L	L	L	Clarysville	$5,000,000
		Welsh Hill Rd. at Georges Cr.	H	L	L	L	Near Frostburg	$500,000
		Old Leg. Rd. at Winebrenner Run	H	L	L	L	Midlothian	$500,000
		Harvey Rd. at Winebrenner Run	H	L	L	L	Midlothian	$500,000
		Shaft Rd. at Georges Cr.	H	L	L	L	Shaft	$500,000

Essential, Critical and Public Facilities
Allegany County
Hazard Data

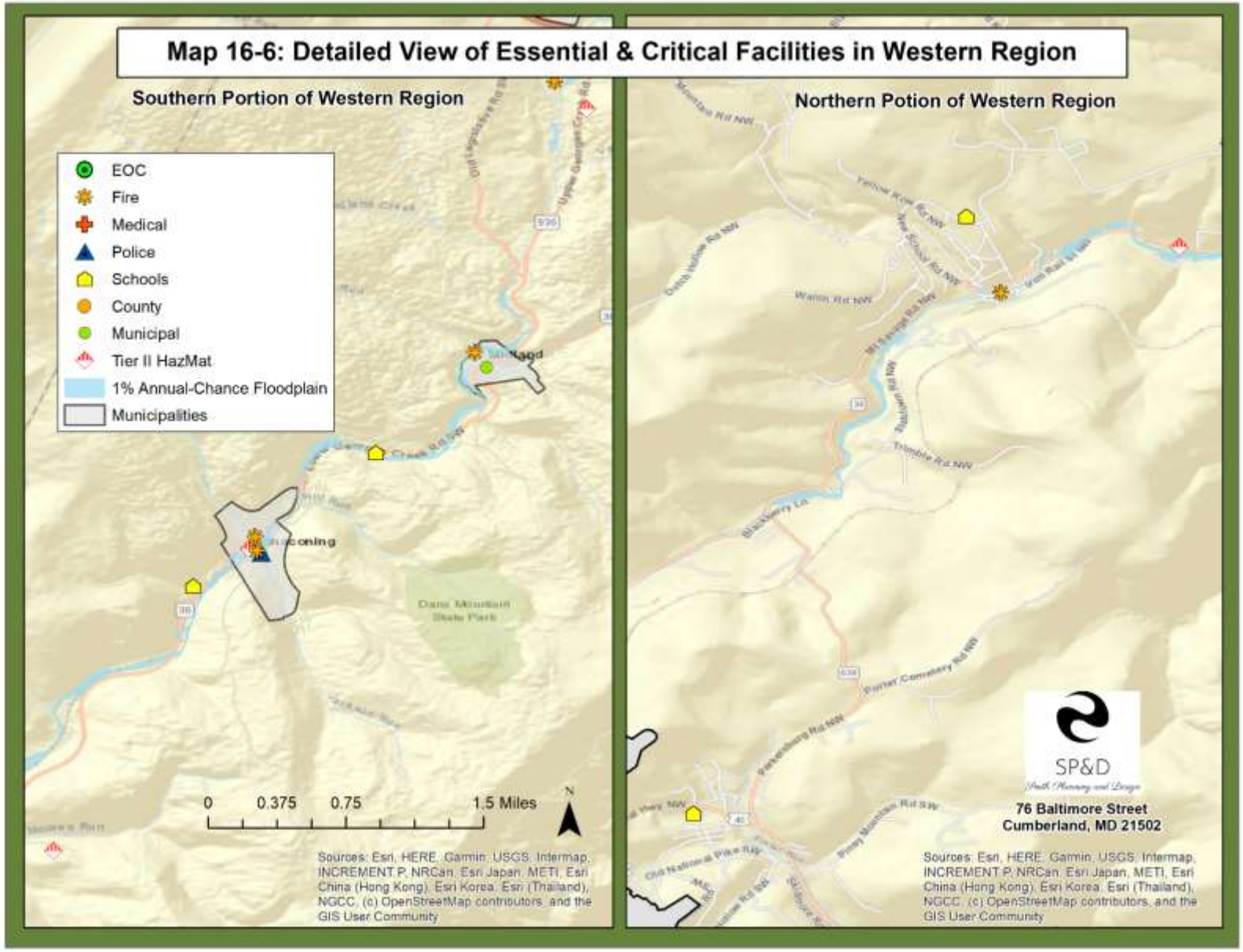
Table 16-15: Western Region

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		Klondike Rd. at Georges Cr.	H	L	L	L	Near Carlos	$1,000,000
		Old Leg. Rd. at Woodland Run	H	L	L	L	Klondike	$500,000
		Old Leg. Rd. at Sq. Neck Run	H	L	L	L	Near Midland	$500,000
		Sq. Neck Rd. at Georges Cr,	H	L	L	L	Near Midland	$1,000,000
		Rt. 36 at Neff Run	H	L	L	L	North of Midland	$5,000,000
		Old Dans Rock Rd. at Neff Run	H	L	L	L	Near Midland	$500,000
Western Region		Buskirk Hollow Rd. at Elklick	H	L	L	L	Gilmore	$500,000
Con't		Rt. 36 at Georges Cr.	H	L	L	L	Gilmore	$5,000,000
		Rt. 36 at Georges Cr.	H	L	L	L	North of Lonaconing	$5,000,000
		Rt. 36 at Georges Cr.	H	L	L	L	At Lonaconing Corp. Limit	$5,000,000
		Cliff St. At Water Station Run	H	L	L	L	Near Lonaconing	$500,000
		Jackson Run Rd. at Jack. Run	H	L	L	L	Near Lonaconing	$500,000
		Robbins St. at Jack. Run	H	L	L	L	Near Lonaconing	$500,000
		Rt. 36 at Georges Cr.	H	L	L	L	South of Detmold	$10,000,000
		Rt. 935 at Georges Cr.	H	L	L	L	Pekin	$5,000,000
		Waterside Rd. At Georges Cr.	H	L	L	L	Moscow	$500,000
		Laurel Run Rd. at Laurel Run	H	L	L	L	Near Moscow	$500,000
		Laurel Run Rd. at Laurel Run	H	L	L	L	Near Moscow	$500,000
		Laurel Run Rd. at Laurel Run	H	L	L	L	Near Moscow	$500,000
		Laurel Run Rd. at Laurel Run	H	L	L	L	Near Moscow	$500,000
		Rt. 935 at Moores Run	H	L	L	L	Near Barton	$1,000,000
		Lower G. Cr. Rd. at Georges Cr.	H	L	L	L	Near Barton	$5,000,000
		Mill Run Rd. at Mill Run	H	L	L	L	Near Barton	$500,000
		Mill Run Rd. at Mill Run	H	L	L	L	Near Barton	$500,000
		Rt. 36 at Georges Cr.	H	L	L	L	Near Westernport	$10,000,000
		CSX RR at Georges Cr.	H	L	L	L	Near Midland	
		CSX RR at Georges Cr.	H	L	L	L	Near Gilmore	
		CSX RR at Georges Cr.	H	L	L	L	Near Lonaconing	
		CSX RR at Georges Cr.	H	L	L	L	Detmold	
		CSX RR at Georges Cr.	H	L	L	L	Pekin	
		CSX RR at Georges Cr.	H	L	L	L	Moscow	
		CSX RR at Georges Cr.	H	L	L	L	Reynolds	
		CSX RR at Georges Cr.	H	L	L	L	Near Reynolds	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-15: Western Region

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		CSX RR at Georges Cr.	H	L	L	L	Near Reynolds	
	RRXing	Woodcock Hollow Rd.		L	L	L	Near Barrellville	
		Patty Baker Rd.		L	L	L	Near Mt. Savage	
		Trimble Rd.		L	L	L	Near Mt. Savage	
		Klondike Rd.		L	L	L	Near Carlos	
		Miners Ave.		L	L	L	Gilmore	
		Old Legislative Rd.		L	L	L	Near Lonaconing	
		Rt. 36		L	L	L	Near Lonaconing	
		Water Station Run		L	L	L	Near Lonaconing	
Western Region		Rt. 36		L	L	L	Detmold	
Con't		Connection to Rt. 36		L	L	L	Moscow	
		Waterside St.		L	L	L	Moscow	
		Midway Dr.		L	L	L	Moscow	
		Lower Georges Cr. Rd.		L	L	L	Near Barton	
		Reynolds Rd.		L	L	L	Near Barton	
		Rt. 36		L	L	L	Near Westernport	
	Tunnel	Borden Tunnel (Abnd)					Near Frostburg	


Map 16-6: Detailed View of Essential & Critical Facilities in Western Region
Southern Portion of Western Region
Northern Potion of Western Region
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Municipalities
0
0.375
0.75
1.5 Miles
N
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
SP&D
76 Baltimore Street
Cumberland, MD 21502

Essential, Critical and Public Facilities
Allegany County
Hazard Data

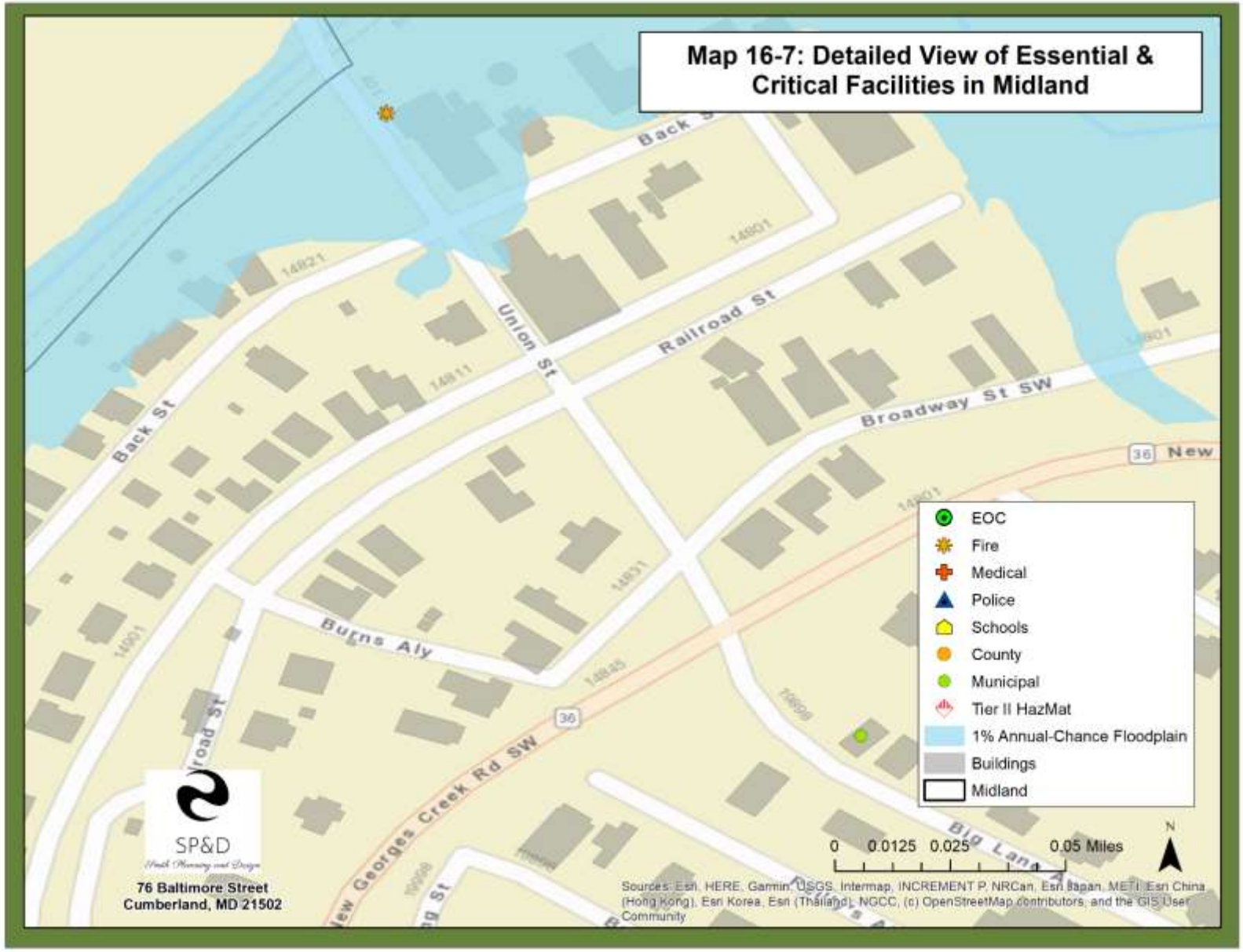
Table 16-16: Midland, Lonaconing, and Barton

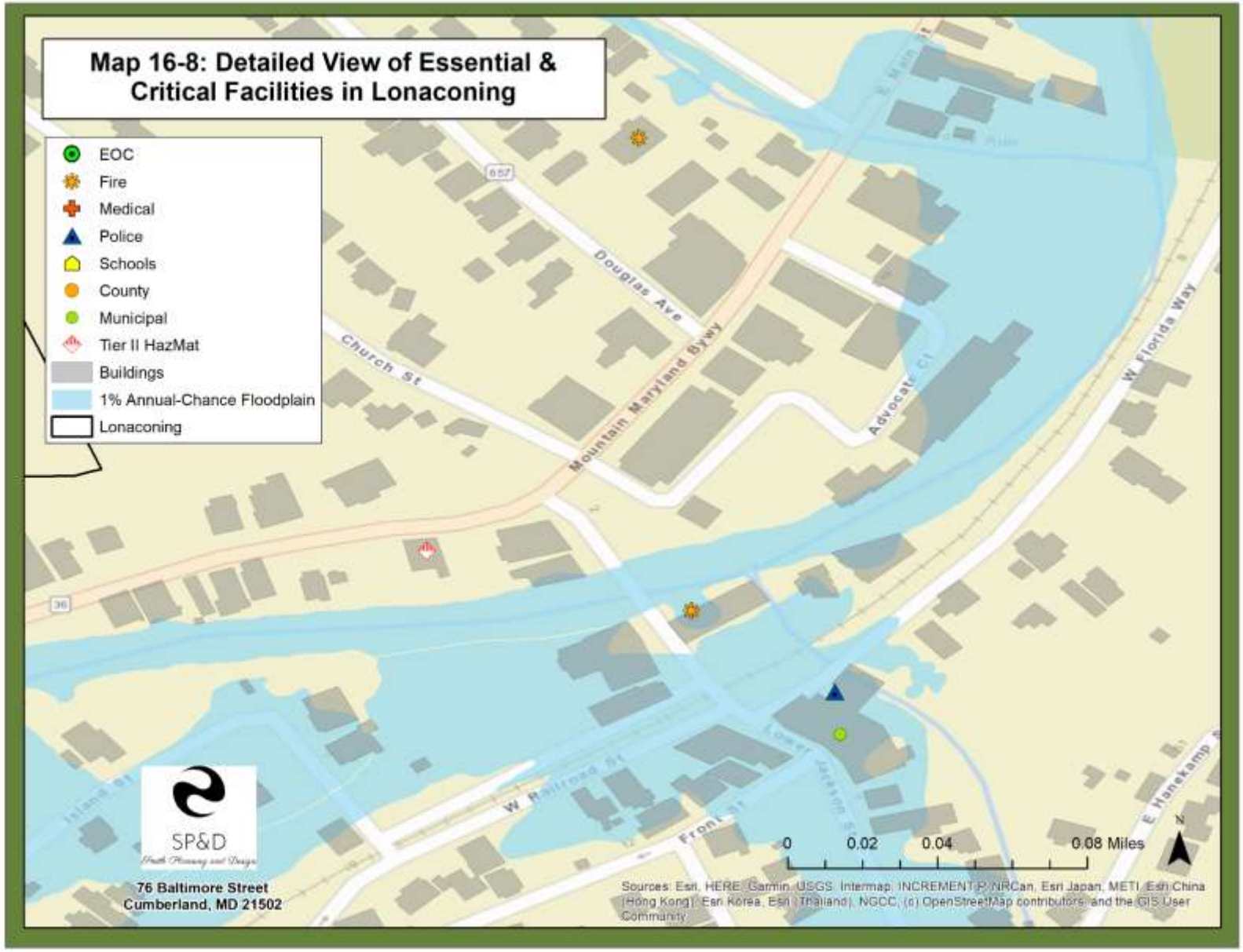
Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value	
			Flood	Winter	Severe Weather	HazMat		Building & Content Cost	Building & Content Loss Estimate
Essential Facilities									
Midland	Fire/Rescue	Midland Co. # 18	H	L	L		20001 Union St.	$665,250	$20,223.60
Lonaconing	Fire/Rescue	Goodwill Co		L	L		6 Douglas Ave.		
		Georges Creek Ambulance Service	H	L	L		19 Union St.	$309,500	$80,717.60
	Police	Lonaconing Police Dept.		L	L		7 Jackson St.		
Barton	Fire/Rescue	Barton Hose Co 19		L	L		19202 Legislative Rd.		
Critical Facilities									
Midland	Town Gov't.	Midland Town Hall		L	L		19823 Big Lane		
Lonaconing	Town Gov't	Lonaconing Town Hall	H	L	L		7 Jackson St.	$250,000	
Barton	Town Gov't	Barton Town Hall		L	L		19018 Legislative Rd.		
Public Facilities									
Midland	Park	Lionel D. Baker Memorial Park	H				Back St.		
	Post Office	Midland Post Office	H	L	L		14811 Broadway St.	$50,000	
	Bridge	Church Hill Rd. at Georges Cr.	H	L	L	L	Midland	$500,000	
		Rt 36 at Neff Run	H	L	L	L	Midland	$10,000,000	
		Rt. 936 at Neff Run	H	L	L	L	Midland	$5,000,000	
		CSX RR at Georges Cr.	H	L	L	L	Midland		
	RRXing	Church Hill Rd.	H	L	L	L	Midland		
		Squirrel Neck Rd.	H	L	L	L	Midland		
Lonaconing	Park	Iron Furnace Hist. Pk.					Main St		
		Lonaconing Park	H				Railroad St.		
	Library	Lonaconing Library		L	L		76 Main St.		
	Post Office	Lonaconing PO		L	L		9 E. Main St.		
	Nursing Home	Eagle Nursing Home		L	L		57 Jackson St.		
	Communication	Verizon		L	L		4 W. Main St.		
	Bridge	Union St. at Georges Cr.	H	L	L	L	Lonaconing	$5,000,000	
		Bridge St. at Georges Cr.	H	L	L	L	Lonaconing	$5,000,000	
		Robbins St. at Jackson Run	H	L	L	L	Lonaconing	$500,000	
		Island Ave. at Jackson Run	H	L	L	L	Lonaconing	$500,000	
		Beechwd Rd. at Koontz Run	H	L	L	L	Lonaconing	$500,000	
	RRXing	Jackson St.	H	L	L	L	Lonaconing		

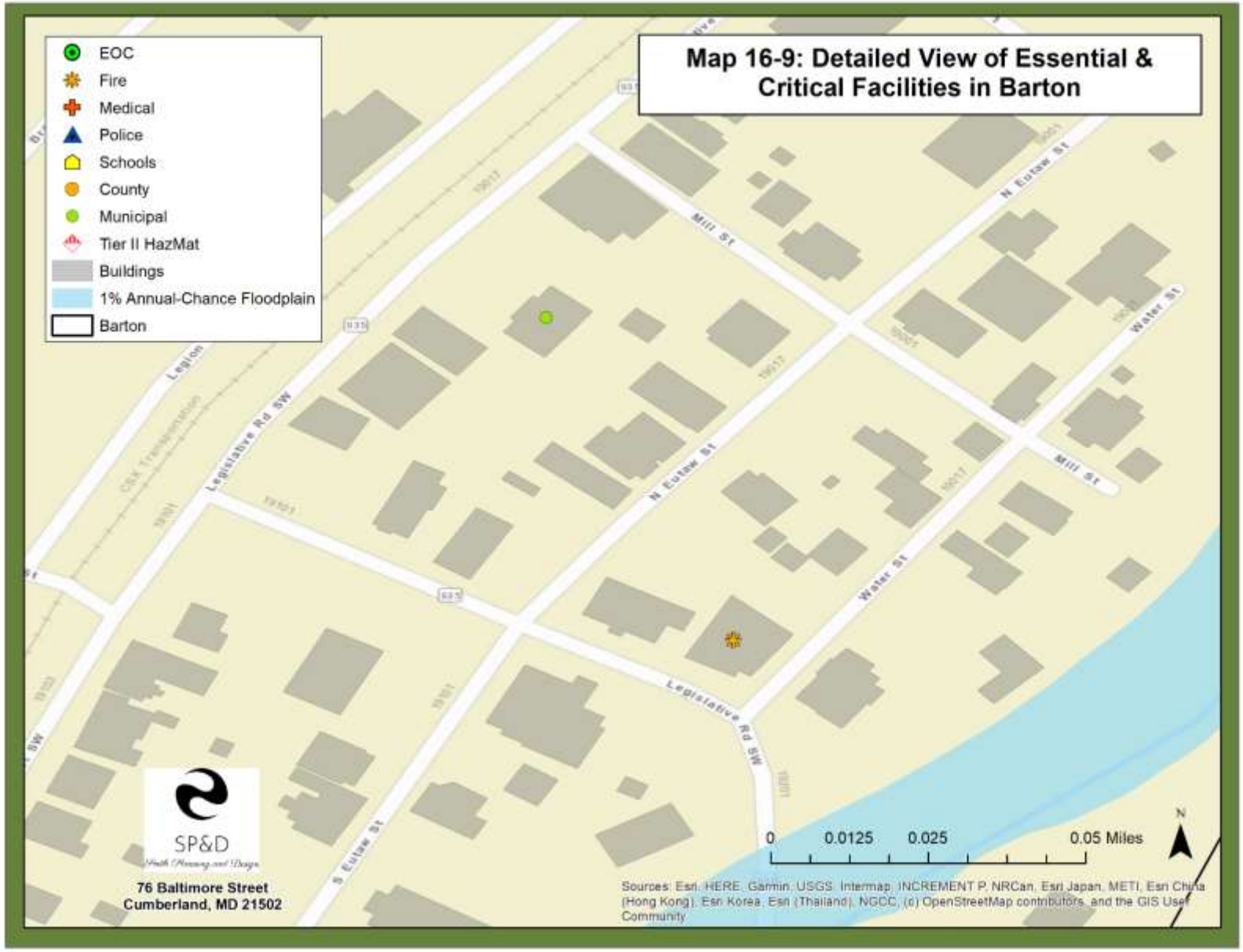
Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-16: Midland, Lonaconing, and Barton

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
		Island Ave.	H	L	L	L	Lonaconing	
Barton	Park	Barton Park					Barton	
		Barton Ballfield					Barton	
	Post Office	Barton PO		L	L		19112 So. Railroad St.	
	Transportation	Barton Town Garage		L	L		23805 Hill St.	
Barton	Bridge	Rt. 36 at Potomac Hollow		L	L	L	Barton	
Con't		Rt. 935 at Georges Cr.	H	L	L	L	Barton	$5,000,000
		Rt. 935 At Bartlett Run	H	L	L	L	Barton	$500,000
		Bart. Run Rd. at Bart. Run	H	L	L	L	Barton	$500,000
		Temp. Row at Georges Cr.	H	L	L	L	Barton	$1,000,000
		CSX RR at Georges Creek	H	L	L	L	Barton	
	RRXing	Rt. 935	H	L	L	L	Barton	
		Hill St	H	L	L	L	Barton	
		German St.	H	L	L	L	Barton	


Map 16-7: Detailed View of Essential & Critical Facilities in Midland
Back St
Union St
Railroad St
Broadway St SW
Burns Aly
New Georges Creek Rd SW
36
14801
14811
14821
14831
14845
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Buildings
Midland
0 0.0125 0.025 0.05 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community


Map 16-8: Detailed View of Essential & Critical Facilities in Lonaconing
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
Buildings
1% Annual-Chance Floodplain
Lonaconing
Douglas Ave
Church St
Mountain Maryland Bywy
Advocate Ct
W Florida Way
W Railroad St
Front St
E Hanekamp
657
36
0
0.02
0.04
0.08 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri Thailand, NGCC, (c) OpenStreetMap contributors, and the GIS User Community


Map 16-9: Detailed View of Essential & Critical Facilities in Barton
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
Buildings
1% Annual-Chance Floodplain
Barton
Mill St
N Eutaw St
Water St
Legislative Rd SW
S Eutaw St
Legion
CSX Transportation
0
0.0125
0.025
0.05 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Essential, Critical and Public Facilities
Allegany County
Hazard Data

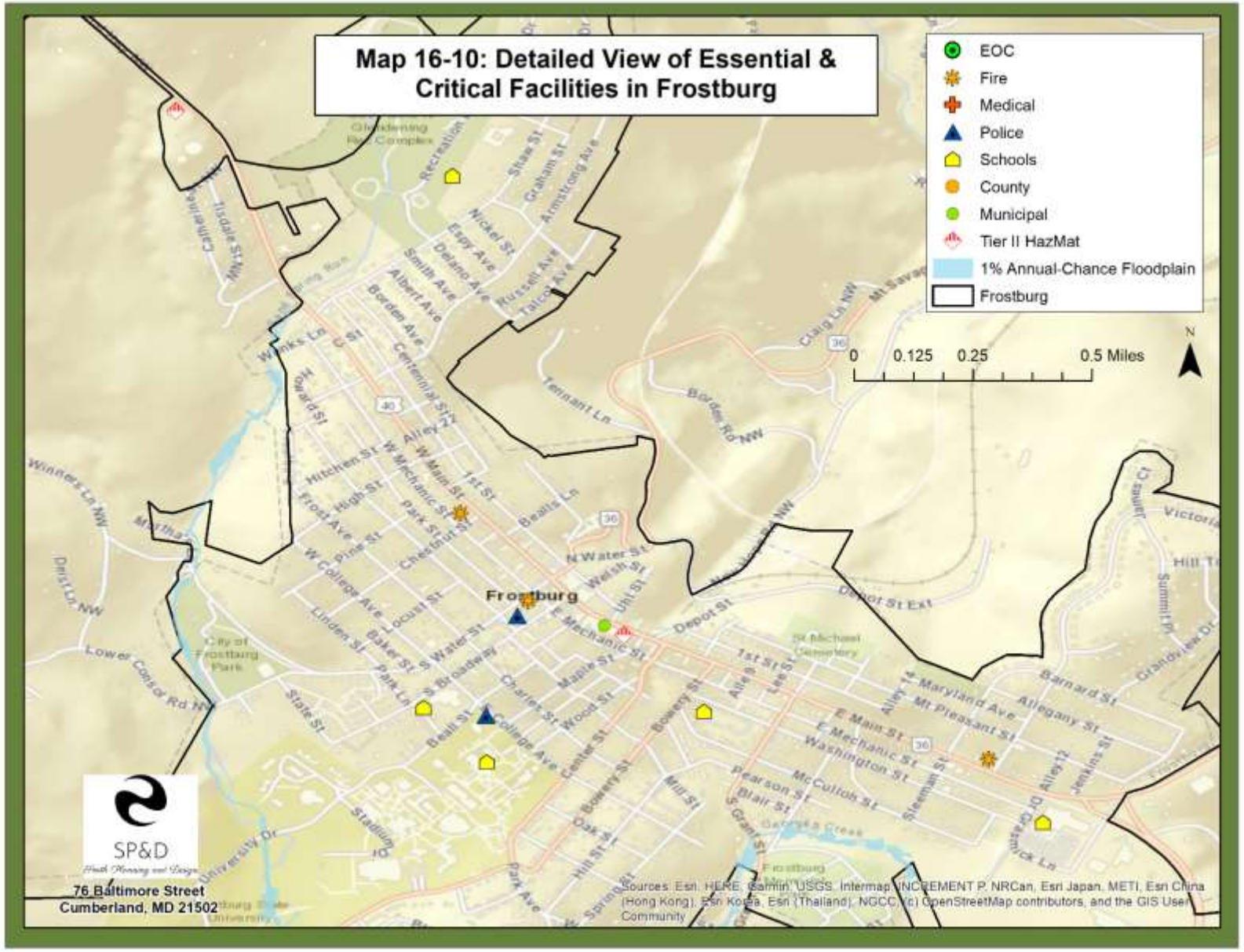
Table 16-17: Frostburg

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value	
		Essential Facilities						**Building & Content Cost**	**Building & Content Loss Estimate**
Frostburg	School	Beall E.S.		L	L		3 West College Ave.		
	College	Frostburg State University		L	L		101 Braddock St.		
	Fire/Rescue	Company 16 Station 1		H	L		75 South Water St.		
		Company 16 Station 2		H	L		298 East Main St.		
		Ambulance Co. 53		L	L		86 W. Main St.		
	Police	Frostburg Police		H	L		37 Broadway St.		
	School	Mountain Ridge High		L	L		100 Dr. Nancy S. Grasmick Ln		
	Police	FSU University Police Department		L	L		East College Ave.		
		Critical Facilities							
Frostburg	Town Gov't.	City Hall		L	L		Main St.		
		Public Facilities							
Frostburg	Park	Allegheny Highlands Trail Ex.					Depot St.		
		Mountainside Park					Rt. 40 West		
		Mt. Pleasant Park					Pleasant Avenue		
		Lions Club Park					Shaw St.		
		Glendening Rec. Com.					Shaw St.		
		Frostburg Comm. Park					Water St.		
	Museum	Thrasher Carriage Museum		L	L		19 Depot St.		
		Univ. of MD App. Envir. Lab		L	L		301 Braddock St.		
	Library	Lewis Ort Library (FSU)		L	L		Loop Road		
		Frostburg Library		L	L		65 E. Main St.		
	State Gov't	MDE and DNR		L	L		160 South Water St.		
	Federal Gov't.	USGS		L	L		Tawes Hall FSU.		
	Community	Community Bldg.		L	L		27 North Water St.		
	Post Office	Frostburg Post Office		L	L		37 West Main St.		
	Nursing Home	St. Vincent DePaul NH		L	L		48 Tarn Terrace		
		Frost Village		L	L		1 Kaylor Circle		
	Industrial Park	Frostburg Industrial Park		L	L		New Georges Creek Rd.		
		Allegany Business Center		L	L		Braddock St.		
	Transportation	W. Md. Scenic RR Depot		L	L		Depot St.		

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-17: Frostburg

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
	Utility	Frostburg WTP		L	L		19400 National Highway	
		Frostburg Water Tank		L	L		19400 National Highway	
		Master Water Meter		L	L		Frostburg Industrial Park	
		Water Pressure Reducer		L	L		Frostburg Industrial Park	
		Water Pressure Reducer		L	L		Frostburg Industrial Park	
Frostburg		Beall St. Sewage PS		L	L		Beall St.	
	Communication	US Cellular		L	L		11401 Frost. Ind. Pk. Rd.	
		Horizon Cellular		L	L		11400 Frost. Ind. Pk. Rd.	
		Verizon		L	L		77 E. Main St.	
	Bridge	Braddock St. at Sand Spring	H	L	L	L	Frostburg	$500,000
		Loop Rd, at Sand Spring	H	L	L	L	Frostburg	$1,000,000
		Water St. at Sand Spring	H	L	L	L	Frostburg	$500,000
		Upper Consol Rd. at Sand Sp.	H	L	L	L	Frostburg	$500,000
		Main St. at Sand Spring	H	L	L	L	Frostburg	$500,000
		Geo. Cr. At Grant St.(culvert)	H	L	L	L	Frostburg	$100,000
		Geo. Cr. At Green St.(culvert)	H	L	L	L	Frostburg	$100,000
	RRXing	Depot St.		L	L	L	Frostburg	
	Tunnel	C&P Tunnel (Abnd)					Frostburg	


Map 16-10: Detailed View of Essential & Critical Facilities in Frostburg
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Frostburg
0 0.125 0.25 0.5 Miles
N
Frostburg
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-18: Cumberland

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value	
		Essential Facilities						**Building & Content Cost**	**Building & Content Loss Estimate**
Cumberland	EOC	Emergency Services		L	L		11400 PPG Rd.		
	Hospital	WMHS		L	L		12500 Willowbrook Rd		
	Medical	Tri-State Health Center		L	L		621 Kelly Road		
	School	Bishop Walsh School		H	L		Bishop Walsh Rd.		
		Braddock M.S.		H	L		909 Holland St.		
		Allegany H.S.		H	L		616 Sedgewick St.		
		Westside E.S.		H	L		425 Paca St.		
		Fort Hill H.S.		H	L		500 Greenway Ave.		
		Washington M.S.		H	L		200 N. Massachusetts Ave.		
		South Penn E.S.		H	L		500 E. Second St.		
		John Humbird E.S.		H	L		120 E. Mary St.		
		Head Start		L	L		441 N. Centre St.		
		Head Start		L	L		301 Cumberland St.		
		Lighthouse Christ. Acad.		L	L		2020 Bedford St.		
		Humpty Dumpty Learn. Cent.		L	L		217 N. Centre St.		
		Learning Tree Nursery Sch.		L	L		11 Washington St.		
	College	Allegany College of MD		L	L		12401 Willowbrook Rd.		
	Fire Rescue	Company 1 Station 1		H	L		411 Frederick St.		
		Company 1 Station 2		H	L		20 Bedford St.		
		Company 1 Station 3 (Storage)		H	L		Race St.		
	Police	Cumberland City Police		H	L		20 Bedford St.		
	Police	County Sheriff		L	L		695 Kelly Road		
		Critical Facilities							
	County Gov't.	Allegany Co. Office Complex		L	L		701 Kelly Road		
		ALCO 911 Center		L	L		414 Hudson Ave.		
		Health Dept.		L	L		12501 Willowbrook Rd.		
		Court House		L	L		30 Washington St.		
		County Jail		L	L		59 Prospect Square		
		Human Resources Dev.		L	L		19 Frederick St.		

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-18: Cumberland

Community	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		County Housing Div.		L	L		112 Baltimore St.	
		Board of Education		L	L		108 Washington St.	
		Bd. Of Education Maint.		L	L		211 Market St.	
	City Gov't.	City Hall		L	L		57 N. Liberty St.	
		Public Safety Building		L	L		20 Bedford St.	
		Municipal Service Center		L	L		215 Bowen St.	
Public Facilities								
Cumberland	Major Park	Canal Place					13 Canal St.	
		Chesapeake & Ohio Nat. Park	H				Canal St.	
		Allegheny Highlands Trail					Baltimore St.	
		Constitution Park					Reservoir Ave.	
		South End Rec. Area	H				Offut St.	
		YMCA Riverside					601 Kelly Road	
		YMCA Baltimore Ave.					205 Baltimore Ave.	
		Narrows Scenic Park					Bishop Walsh Dr.	
	Museum	History House		L	L		218 Washington St.	
		Gilchrist Gallery		L	L		3 Pershing St.	
		Allegany Co. Museum		L	L		Harrison St.	
	Library	Washington St. Library		L	L		31 Washington St.	
		South Cumberland Library		L	L		100 Seymour St.	
	State Gov't	District Court		L	L		123 S. Liberty St.	
		Employment Services		L	L		239 N. Mechanic St.	
	Federal Gov't	Social Security		L	L		1 Frederick St.	
	Post Office	Cumberland PO		L	L		215 Park St.	
		South End. PO		L	L		119 Virginia Ave.	
	Nursing Home	Allegany Co. Nursing Home		L	L		730 Furnace St.	
		Lions Manor		L	L		901 Seton Drive	
		Cumberland Nursing Center		L	L		512 Winifred Rd.	
	Military	National Guard Armory		L	L		1100 Brown Ave.	
	Transportation	CSX Rail Yard		L	L	L	16 E. Offutt St.	
		Amtrak Station		L	L		Rear Park St.	
		W. Md. Scenic RR Station		L	L		13 Canal St.	
		Allegany Co. Rds. Garage		L	L		701 Kelly Road	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

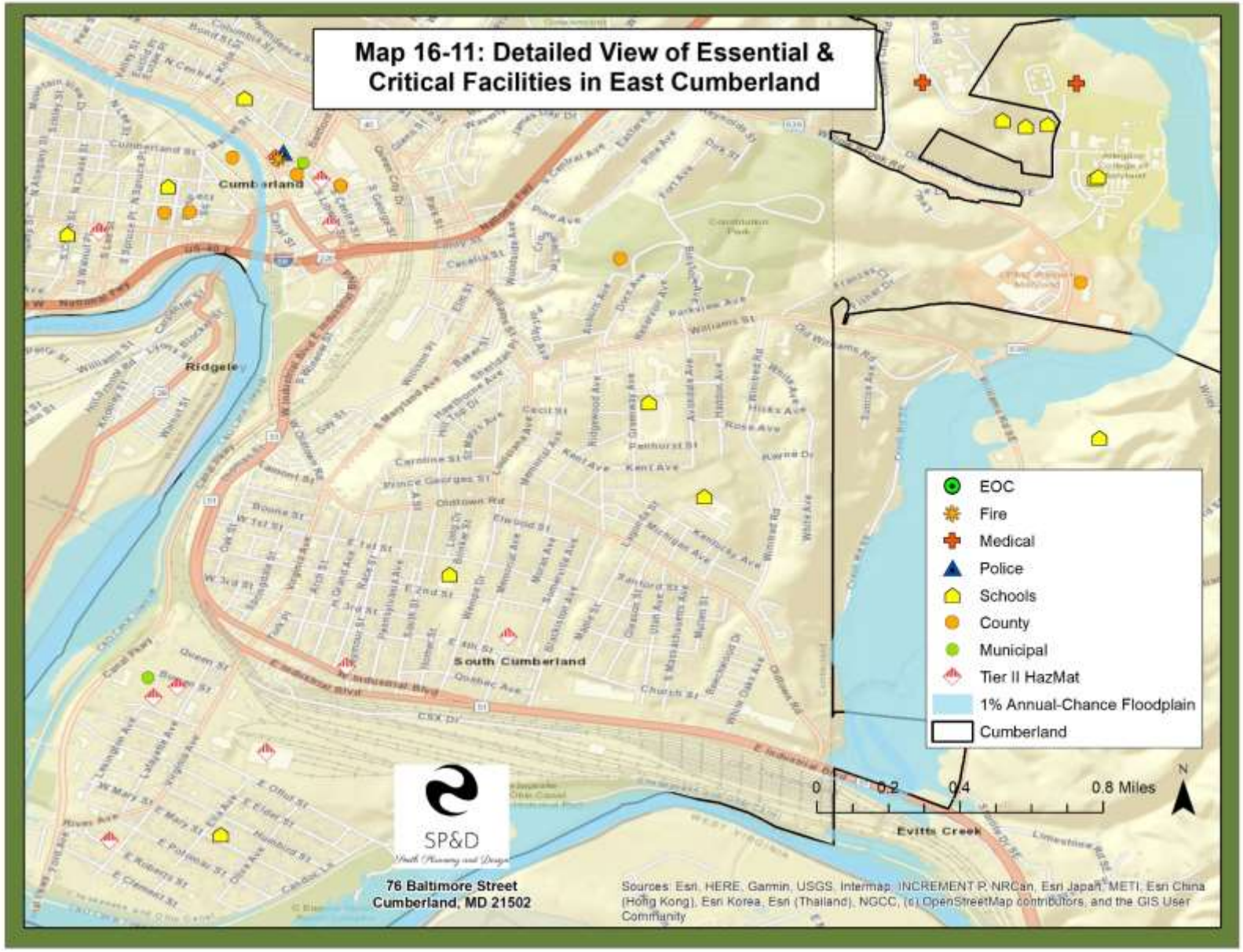
Table 16-18: Cumberland

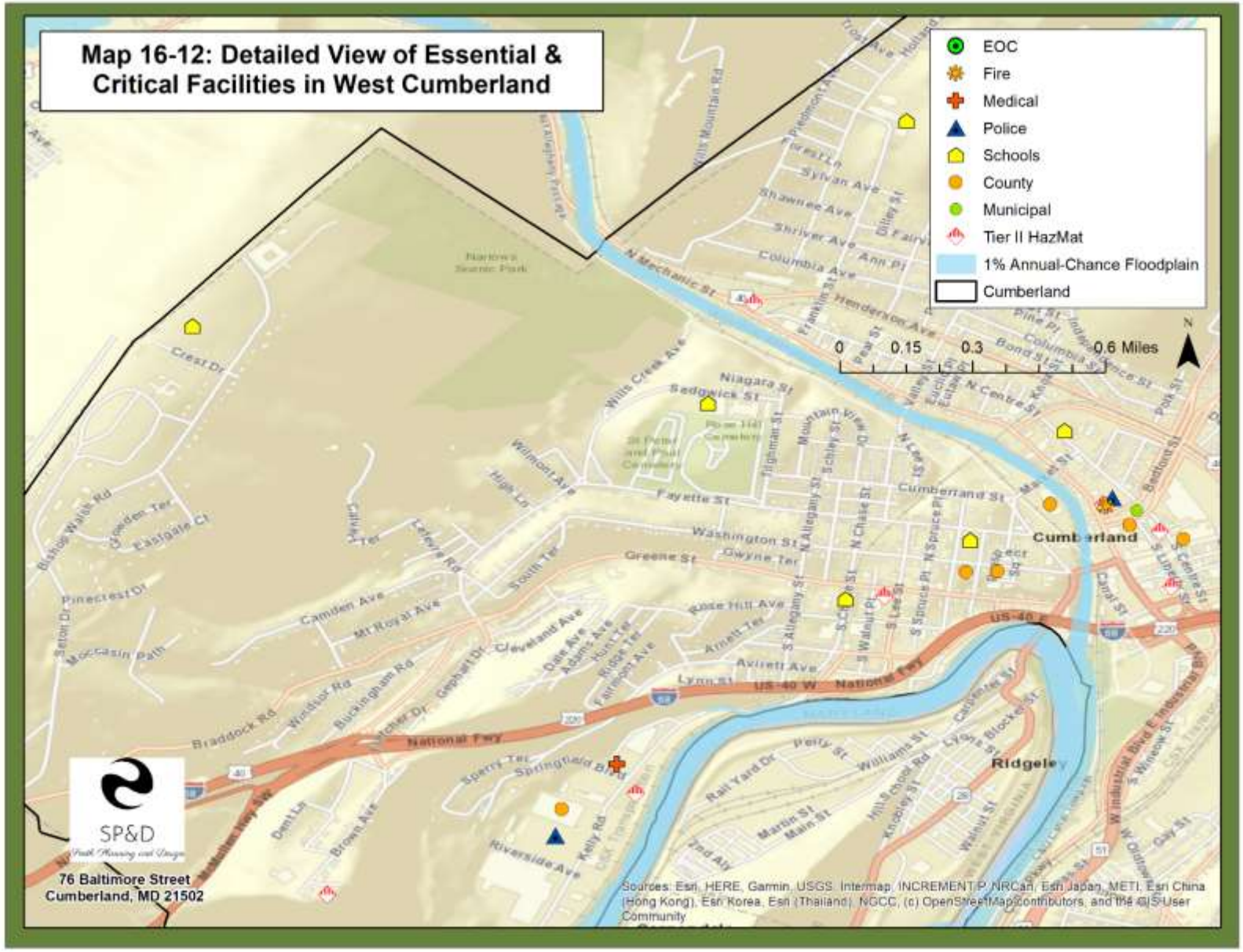
Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
Cumberland		Allegany County Transit		L	L		1000 Lafayette Ave.	
Con't	Industrial	Kelly Site		L	L		Kelly Road	
	Utility	Cumberland WWTP		L	L		Offutt St.	
		Kelly Sewage PS		L	L		701 Kelly Road	
		North End Water Tank		L	L		Piedmont Ave. Ext.	
		North End Pump Station		L	L		Piedmont Ave.	
		McNamee Hill Water Tank		L	L		Rosewood St.	
		McNamee Hill Pump Station		L	L		Rosewood St.	
		Haystack Mt. Water Tank		L	L		Bishop Walsh Dr.	
		Nemacolin Ave. Water Tank		L	L		Nemacolin Ave.	
		Fort Hill Water Tank		L	L		Reservoir Ave.	
		Fort Hill Park Reservoir		L	L		Reservoir Ave.	
		Ridgedale Water Tank		L	L		Lake Ave.	
		Brown Ave Water Tank		L	L		Brown Ave.	
		Brown Ave. Pump Station		L	L		Brown Ave.	
		Wills Cr. Ave. Pump Station		L	L		Wills Creek Ave.	
	Solid Waste	County Recycling Cent.		L	L		Kelly Road	
	Elect/Subst.	Allegheny Power		L	L		700 Fourth St.	
		Cumberland		L	L		Canal Parkway	
		Kelly Site		L	L		Kelly Road	
	Communication	Verizon		L	L		123 S. Liberty St.	
		Verizon		L	L		24 S. Centre St.	
		Level (3) Communications		L	L		700 Kelly Rd.	
		AT&T		L	L		20 Bedford St.	
		County Court House Tower		L	L		30 Washington St.	
		Ft. Hill High School Tower		L	L		500 Greenway Ave.	
		Haystack Mt. Tower		L	L		600 Bishop Walsh Rd.	
		Public Safety Bldg. Tower		L	L		20 Bedford St.	
		Emergency Ops. Tower		L	L		414 Hudson Ave.	
	Bridge	I-68 Crosstown Bridge		L	L	L	Cumberland	
		I-68 at Willowbrook Rd.		L	L	L	Cumberland	
		I-68 at Kelly Rd.		L	L	L	Cumberland	
		I-68 at Patterson Ave.		L	L	L	Cumberland	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-18: Cumberland

Community	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
		I-68 at Rt. 220		L	L	L	Cumberland	
Cumberland		Gephart Drive at I-68		L	L	L	Cumberland	
Con't		Marion St. at I-68		L	L	L	Cumberland	
		Alt Rt. 40 at CSX RR		L	L	L	Cumberland	
		John J. McMullen Br. At CSX		L	L	L	Cumberland	
		Rt. 51 at CSX RR		L	L	L	Cumberland	
		Canal Pkwy at Potomac R.		L	L	L	Cumberland	
		Blue Bridge at Potomac R.		L	L	L	Cumberland	
		Valley St. at Wills Cr.		L	L	L	Cumberland	
		Market St. at Wills Cr.		L	L	L	Cumberland	
		Baltimore St. at Wills Creek		L	L	L	Cumberland	
		Wills Creek Walking Bridge		L	L	L	Cumberland	
		C&O Canal Walking Bridge		L	L	L	Cumberland	
		CSX RR at Kelly Rd.		L	L	L	Cumberland	
		CSX RR at Green St.		L	L	L	Cumberland	
		Washington St. at CSX RR		L	L	L	Cumberland	
		Fayette St. at CSX RR		L	L	L	Cumberland	
		Cumberland St. at CSX RR		L	L	L	Cumberland	
		CSX Viaduct		L	L	L	Cumberland	
		W. Md. S RR at Wills Cr.		L	L	L	Cumberland	
		W. Md. S RR at Pot. River		L	L	L	Cumberland	
		Abnd. RR Br. at Wills Cr.		L	L	L	Cumberland	
	RRXing	Beall St.		L	L	L	Cumberland	
		Franklin St.		L	L	L	Cumberland	
		Pear St.		L	L	L	Cumberland	
		Valley St.		L	L	L	Cumberland	
		Knox St.		L	L	L	Cumberland	
		Baltimore St.		L	L	L	Cumberland	
		Canal Parkway		L	L	L	Cumberland	
		Baltimore St.(Scenic RR)		L	L	L	Cumberland	


Map 16-11: Detailed View of Essential & Critical Facilities in East Cumberland
Cumberland
Ridgeley
South Cumberland
Evitts Creek
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Cumberland
0
0.2
0.4
0.8 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community


Map 16-12: Detailed View of Essential & Critical Facilities in West Cumberland
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Cumberland
0
0.15
0.3
0.6 Miles
N
SP&D
76 Baltimore Street
Cumberland, MD 21502
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value	
Essential Facilities								**Building & Content Cost**	**Building & Content Loss Estimate**
Central Region	School	Northeast ES		H	L		11001 Forest Ave.		
		Cash Valley ES		L	L		10601 Cash Valley Rd.		
		Parkside ES		H	L		50 Parkside Ave.		
		Allegany Co. Vo-Tech		L	L		14211 McMullen Highway		
		Cresaptown ES		H	L		13202 Sixth Ave		
		Bel Air ES		L	L		14501 Barton Blvd.		
		Calvary Christian Academy	H	L	L		14513 McMullen Highway	$2,743,800	$1,550,247
		Willowbrook Christ. Acad.		L	L		12235 Williams Rd.		
	Fire/Rescue	District 16 Co.7		H	L		12100 No. Branch Rd.		
		Baltimore Pike Co. 4	H	H	L		15010 Baltimore Pike	$752,000	$11,430.40
		Bedford Rd. Co 3		L	L		13200 Bedford Road		
		Bowmans Add. Co. 11		H	L		11710 Boardwalk Ave.		
		Ellerslie Co. 6		H	L		14200 Ellerslie Rd.		
		Corriganville Co. 5	H	H	L		12510 Corrigan Dr.	$813,000	$202,924.80
		LaVale Co. 2-Stat. 1		L	L		421 National highway		
		LaVale Co. 2-Stat. 2		H	L		National Highway		
		LaVale Rescue Squad. 52		L	L		977 National Highway		
		Rawlings Co. 47		L	L		18900 Volunteer Drive		
		McCoole Co. 23		L	L		24931 Crooks Lane		
		Bowling Green Co. 8		H	L		12420 McMullen highway		
		Cresaptown Fire Dept.		L	L		Warrior Drive		
Critical Facilities									
	Local Gov't	Allegany Co. Det. Center		L	L		14300 McMullen Highway		
	Federal Gov't	Western Corr. Inst.	H	L	L		McMullen Highway	$115,600,300	
		Fed. Corr. Inst.		L	L		14601 Burbridge Rd.		
	Local Gov't	ALCO Commissioners		L	L		Headquarters Drive		
Public Facilities									
Central Region	Park	C&O Canal National Park	H				Potomac River		
		Allegheny Highlands Trail					Western Md. Railway		
		Rocky Gap State Park					12500 Pleasant Valley Rd.		

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		Dans Mt. WMA					Dans Mountain	
		Selinger Marsh Preserve					Danville-Dawson	
Central Region		Limestone Rd. Ballfield					Rt. 51 near Evitts Creek	
Con't		St. Peter & Paul Field	H				Mason Road	
		Union Grove	H				Mason Road	
		Smouses Mill Rec. Area	H				Evitts Creek	
		Wills Mt. State Park			L		Nr. Cumberland	
		Ellerslie Comm. Park					Ellerslie	
		Corriganville Ballfield	H				Corriganville	
		LaVale District Park					LaVale	
		LaVale Lions Park	H				Braddock Rd.	
		Cardinal Sheehan Field	H				LaVale	
		Allegany County Fairgrounds	H				11400 Moss Ave.	
		Potomac Park Field					Potomac Park	
		Cresaptown Comm. Park	H				Cresaptown	
		Bel Air Comm. Park					Bel Air	
		Rawlings Comm. Park					Rawlings	
	Library	LaVale Library		L	L		815 National Highway	
	State Gov't	MVA		L	L		12200 Winchester Rd.	
		MFRI		L	L		13928 Hazmat Drive	
	Federal Gov't	NRCS		L	L		12407 Naves Cross Road	
		IRS		L	L		Braddock Square	
	Post Office	Spring Gap PO		L	L		13400 Oldtown Rd.	
		Ellerslie PO		L	L		14302 Ellerslie Rd.	
		Corriganville PO		L	L		10814 Kreigbaum Rd.	
		LaVale PO		L	L		National Highway	
		Cresaptown PO	H	L	L		12836 McMullen Highway	$297,000
		Rawlings PO		L	L		19000 McMullen Highway	
	Hosp/N.Home	Thomas B. Finan Center		L	L		10102 Country Club Rd.	
		Brandenberg Center		L	L		10100 Country Club Rd.	
		Devlin Manor		L	L		10301 Christie Rd.	
	Transportation	SHA District Garage		L	L		1251 Vocke Rd.	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
		SHA Salt Dome		L	L		16900 Baltimore Pike	
		Mexico Farms Landing Field	H	L	L		11025 Mexico Farms Rd.	
		CSX Railyard		L	L		Rt. 51-Evitts Creek	
Central Region	Military	National Guard Armory		L	L		14418 McMullen Highway	
Con't.	Industrial Park	Mexico Farms Ind. Park		L	L	L	Mexico Farms	
		Upper Potomac Ind. Park	H	L	L	L	Bowling Green	
		Barton Farm Ind. Park		L	L	L	McMullen Highway	
	Utility	Celanese WWTP	L	L	L		13850 Hazmat Drive	
		WCI Sew. PS		L	L		Arnel Ave.	
		Detention Center WW		L	L		McMullen Highway	
		Sludge Control Building		L	L		13850 Hazmat Dr.	
		Cresaptown Sewage PS	L	L	L		Watson Street	
		Upper Pot. Ind. Park Sew. PS		L	L		Milnor Ave.	
		Bowling Green Sewage PS		L	L		Birch Ave.	
		LaVale Sewage PS	H	L	L		Greenpoint Rd.	$500,000
		Eckhart Jnct. Sewage PS	H	L	L		10804 Locust Grove Rd.	$500,000
		Corriganville Sew. PS	H	L	L		Beachview Dr.	$500,000
		Homewood Sew. PS		L	L		Iowa St.	
		Bowmans Add. WW Meter		L	L		Bowmans Addition	
		Irene Dr. Sew PS		L	L		Irene Dr.	
		Bealls Mill Rd. Sewage PS	H	L	L		13605 Bealls Mill Rd.	$500,000
		Hillcrest Sew PS.		L	L		Hillcrest Dr.	
		DeHaven Rd. Sew. PS		L	L		DeHaven Rd.	
		Evitts Cr. Sewage PS	H	L	L		Evitts Creek nr. RT. 51	$500,000
		Mexico Farms Sewage PS		L	L		12319 Goldens Lane	
		Biers Lane WWTP		L	L		Biers Lane	
		Rawlings STL		L	L		Nr. CSX RR	
		Bel Air STL		L	L		Nr. CSX RR	
		McCoole Sewage PS		L	L		Red Rock Rd.	
		McCoole Sewage PS		L	L		21304 Queens Point Rd.	
		Barton Farm WWTP		L	L		Nr. CSX RR	
		Rocky Gap WWTP		L	L		16401 Gorge Rd.	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
		Rocky Gap WTP		L	L		Campers Hill Dr.	
		Rocky Gap Water Tank		L	L		Nr. Pleasant Valley Rd.	
		Spring Gap Water		L	L		Brice Hollow Rd.	
		Ellerslie Water Meter		L	L		Mason Dixon View	
Central Region		Ellerslie Water Tank		L	L		Mason Dixon View	
Con't		Laber Springs Water Supply		L	L		14507 Labers Lane	
		LaVale Water Tank		L	L		Valley View Dr.	
		Cash Valley Water Tank		L	L		Ramblewood Dr.	
		Allegany Grove Water Tank		L	L		Near Alt. RT. 40	
		Braddock Sq. Water PS		L	L		Richard Way	
		Center St. Water PS		L	L		Center St.	
		Valley View Water PS		L	L		Valley View Dr.	
		Henry Dr. Water PS		L	L		Henry Dr.	
		Shinnamon Dr. Water PS		L	L		Shinnamon Dr.	
		Mill St. Water PS.	H	L	L		Mill St.	$500,000
		Peavine Run Water PS		L	L		Bedford Rd.	
		Master Water Meter		L	L		Willowbrook Rd.	
		Mexico Farms Water Meter		L	L		Nr. PPG Rd.	
		Mexico Farms Water PS		L	L			
		CC Mall Water Tank		L	L		Vocke Dr.	
		Bel Air Water Tank		L	L		Bourbon St.	
		Bel Air WTP		L	L		14606 Bourbon St.	
		Bel Air Water PS		L	L		Bourbon St.	
		Bowling Green Water PS		L	L		Mallard St.	
		Bowling Green Water Tank		L	L		Division Ave.	
		Cresaptown Water Tank		L	L		Brant Rd.	
		Cresaptown Water PS		L	L		14602 Winchester Rd.	
		Barton Farm Water Tank		L	L		Nr. Rt. 220	
		Rawlings Water Supply		L	L		Mountain Club Ave.	
		McCoole Water PS.		L	L		21304 Queens Point Rd.	
		McCoole Water Tank		L	L		24325 Pond Hill Rd.	
		Thomas B. Finan Water Tank		L	L		Finan Center	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Flood	Winter	Severe Weather	HazMat	Location	Estimated Value
	Natural Gas	Columbia Gas		L	L		16320 McMullen Highway	
		Columbia Gas		L	L		Kreigbaum Rd.	
	Substation	Black Oak Substation		L	L		18100 Black Oak Rd.	
		Corriganville Substation		L	L		Ellerslie Rd.	
		Messick Rd. Substation		L	L		12201 Messick Rd.	
Central Region	Power Plant	AES Power Plant		L	L		11500 Mexico Farms Rd.	
Con't	Communication	Mexico Farms RR. Tower		L	L		11720 Brehm Rd.	
		CSX RR Tower		L	L		11900 Oldtown Rd.	
		AT&T		L	L		12221 Moores Hollow Rd.	
		Atlantic BB		L	L		Moores Hollow Rd.	
		Clearshot Man. Tower		L	L		12711 Moores Hollow Rd.	
		Crown Castle Tower		L	L		Aerie Rd.	
		Cumberland Cellular		L	L		Nr. Bishop Walsh Rd.	
		Guaranty Towers		L	L		Nr. Smouses Mill Rd.	
		Nextel		L	L		10900 Jeffries Rd.	
		Nextel		L	L		14203 Six Mile Rd.	
		Nextel		L	L		13001 Alfalfa Street	
		Nextel		L	L		13700 Chemin de Fer Lane	
		Tri-Star Comm.		L	L		13500 Siehler Ridge Rd.	
		Tri-Star Comm.		L	L		13700 Trestle Bridge Rd.	
		Verizon		L	L		11301 McMullen Highway	
		Verizon		L	L		13781 Stone Point Rd.	
		Verizon		L	L		14909 Winchester Rd.	
	Bridge	I-68 at Pleasant Valley Rd.		L	L	L	Nr. Rocky Gap	
		I- 68 at Rocky Gap Rd.		L	L	L	Baltimore Pike	
		I-68 at Rt. 144		L	L	L	Baltimore Pike	
		I-68 at Ali Ghan Rd.		L	L	L	Nr. Baltimore Pike	
		I-68 at Christie Rd.		L	L	L	Nr. Baltimore Pike	
		I-68 at Hillcrest Dr.		L	L	L	Nr. Cumberland	
		I-68 at Vocke Rd.		L	L	L	LaVale	
		I-68 at Rt. 53 (Winchester Rd.)		L	L	L	LaVale	
		Rt 220 at I-68		L	L	L	Nr. Baltimore Pike	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

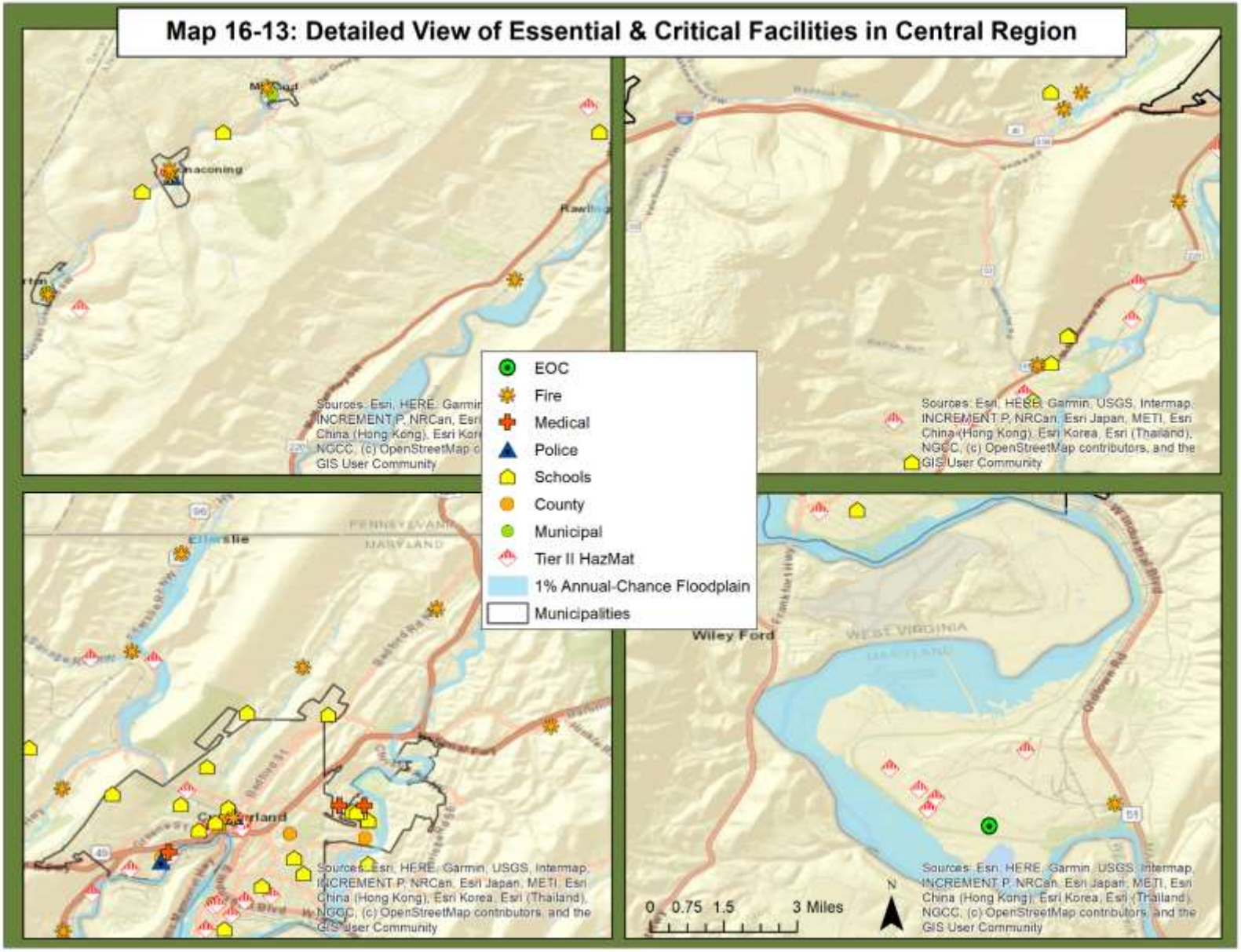
Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
				Flood	Winter	Severe Weather	HazMat	
		Rt 220 at Evitts Creek		L	L	L	Mason Rd.	
		Rt 220 at Mason Rd.		L	L	L	Mason Rd.	
		Rt. 220 at Bealls Mill Rd.		L	L	L	Nr. Mason Rd.	
		Old Rt. 220 at Pea Vine Run	H	L	L	L	Bedford Rd.	$1,000,000
		Smouses Mill Rd. at Evitts Cr.	H	L	L	L	Nr. Mason Rd.	$1,000,000
		Mason Rd. at Evitts Cr.	H	L	L	L	Mason Rd.	$1,000,000
Central Region		Mt. Pleasant Rd. at Evitts Cr.	H	L	L	L	Nr. Mason Rd.	$1,000,000
Con't		Mason Rd. at Pea Vine Run	H	L	L	L	Mason Rd.	$1,000,000
		Christie Rd. at Evitts Creek	H	L	L	L	Christie Rd	$5,000,000
		Williams Rd. at Evitts Creek	H	L	L	L	Nr. Cumberland	$5,000,000
		Mexico Farms Rd. at CSX RR		L	L	L	Mexico Farms	
		PPG Rd. at CSX RR		L	L	L	North Branch	
		CSX RR at Potomac River			L	L	North Branch	
		Alt. Rt. 40 at Wills Creek		L	L	L	Nr. Cumberland	
		Alt. Rt. 40 at Braddock Run	H	L	L	L	LaVale	$10,000,000
		Alt. Rt. 40 at Braddock Run	H	L	L	L	LaVale	$5,000,000
		Rt. 36 at Braddock Run	H	L	L	L	LaVale	$10,000,000
		Rt. 36 at Jennings Run	H	L	L	L	Corriganville	$10,000,000
		CSX RR at Wills Cr.	H	L	L	L	Motor City	
		Locust Gr. Rd. at Wills Cr.	H	L	L	L	LaVale	$5,000,000
		Kings Gr. Rd. at Wills Creek	H	L	L	L	Ellerslie	$5,000,000
		Old Rt. 36 at Jennings Run	H	L	L	L	Corriganville	$1,000,000
		Old Rt. 36 at Braddock Run	H	L	L	L	LaVale	$1,000,000
		Cash Valley Rd. at Gram. Run	H	L	L	L	LaVale	$500,000
		Oaklawn Ave. at Brad. Run	H	L	L	L	LaVale	$500,000
		Shortest Day Rd. at Dressman	H	L	L	L	LaVale	$500,000
		Campground Rd. at Brad. Run	H	L	L	L	LaVale	$500,000
		Rt. 53 at Warrior Run	H	L	L	L	Cresaptown	$5,000,000
		Warrior Dr. at Warrior Run	H	L	L	L	Cresaptown	$5,000,000
		Warrior Dr. at Warrior Run	H	L	L	L	Cresaptown	$5,000,000
		Craddock Rd. at Warrior Run	H	L	L	L	Cresaptown	$500,000
		Rt. 220 at Warrior Run	H	L	L	L	Cresaptown	$5,000,000

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-19: Central Region

Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
				Flood	Winter	Severe Weather	HazMat	
		Industrial Park St. at CSX RR		L	L	L	Bowling Green	
		Rt. 220 at Moss Ave.	H	L	L	L	Potomac Park	$1,000,000
		Rt. 220 at Bel Air	H	L	L	L	Bel Air	$1,000,000
		Pinto Rd. at Bel Air	H	L	L	L	Bel Air	$500,000
		Rt. 956 at CSX RR		L	L	L	Pinto	
		Rt. 220 at Rt. 135		L	L	L	McCoole	
		Rt. 220 at Potomac River		L	L	L	McCoole	
Central Region		CSX RR at 21st Bridge		L	L	L	McCoole	
Con't		CSX RR at Potomac River		L	L	L	McCoole	
	RRXing	Kings Grove Rd.		L	L	L	Ellerslie	
		Milnor Ave.		L	L	L	Bowling Green	
		Moss Ave.	H	L	L	L	Potomac Park	
		Hazmat Dr.	H	L	L	L	Western Corr. Inst.	
		21st Bridge Lane		L	L	L	McCoole	
		Cash Valley Rd.		L	L	L	LaVale	
		Dakota Ave.		L	L	L	LaVale	
	Tunnel	Brush Tunnel					Near Corriganville	

Note: The Evitts Creek Valley is downstream from Lakes Gordon and Koon in Bedford Co. PA.
The Potomac Valley is downstream from the Savage River and Bloomington Dams located in Garrett Co.


Map 16-13: Detailed View of Essential & Critical Facilities in Central Region
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Municipalities
Ellerslie
Cumberland
Wiley Ford
PENNSYLVANIA
MARYLAND
WEST VIRGINIA
0 0.75 1.5 3 Miles
N
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-20: Eastern Region

Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value	
			Flood	Winter	Severe Weather	HazMat		Building & Content Cost	Building & Content Loss Estimate
Essential Facilities									
Eastern Region	School	Flintstone Elementary School	H	H	L	L	22000 National Pike	$8,895,400	$3,380,252
	Fire/Rescue	Orleans Co. 43		H	L	L	12210 Orleans Road		
		Oldtown Co. 13		L	L	L	18712 Oldtown Road		
		Flintstone Co. 12		L	L	L	21701 Flintstone Drive		
Critical Facilities									
Eastern Region	State Gov't	Natural Resources Police		L	L	L	11701 Mountain Road		
		Green Ridge Youth Center	H	L	L	L	10700 15 Mile Cr. Rd.	$500,000	
		Maple Run Youth Center		L	L	L	13701 Jacobs Rd.		
	County Gov't	County Roads Garage		L	L		Headquarters Drive		
Public Facilities									
Eastern Region	Park	C&O Canal National Park	H				Potomac River		
		Green Ridge State Forest	H				Green Ridge area		
		Sideling Hill WMA	H				Sideling Creek		
		Billmeyer WMA					11701 Mtn. Rd.		
		Belle Grove WMA					Piney Plains		
		Warrior Mt. WMA					Warrior Mountain		
		Oldtown Community Park					Cemetary Road		
		Orleans Ballfield					Mann Road		
		Flintstone Community Park					Flintstone Drive		
	Museum	Michael Cresap House		L	L	L	Opessa Street		
	State Gov't	Green Ridge Forest HQ		L	L	L	28700 Headquarters Dr.		
		Green Ridge For. Maint.		L	L	L	28800 Headquarters Dr.		
	Federal Gov't	C&O Canal Maint.		L	L	L	18907 Green Sp. Rd.		
	Post Office	Little Orleans P.O.		L	L	L	32319 Roby School Rd.		
		Oldtown P.O.	H	L	L	L	19104 Opessa St.	$100,000	
		Flintstone P.O.		L	L	L	21600 National Pike		
	Transportation	County Rds. Facility		L	L	L	11306 Orleans Rd.		
		County Rds. Facility		L	L	L	17619 Maniford Rd.		
		SHA Oldtown		L	L	L	20110 Oldtown Road		
		SHA Orleans		L	L	L	31712 Beautiful Plains Rd.		

Essential, Critical and Public Facilities
Allegany County
Hazard Data

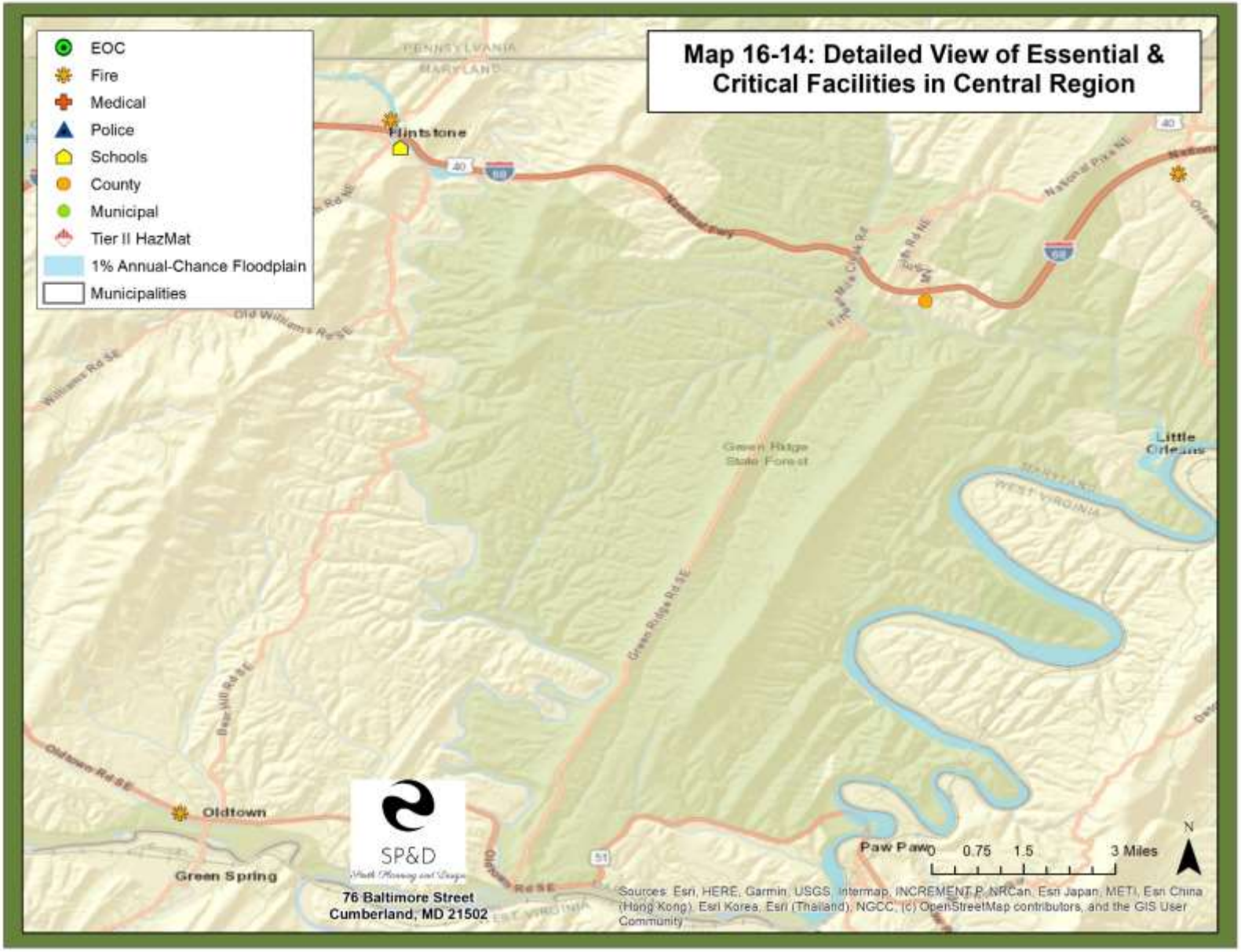
Table 16-20: Eastern Region

Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
	Utility	Flintstone WWTP	H	L	L		22810 Gilpin Road	$1,000,000
		Oldtown WWTP	H	L	L		Opessa St.	$1,000,000
		Orleans Sew. Lagoon		L	L		Oldtown Orleans Rd.	
		Green Ridge WWTP	H	L	L		10700 !5 Mile Cr. Rd.	$500,000
Eastern Region		Maple Run WWTP		L	L		13701 Jacobs Rd.	
Con't	Solid Waste	Flintstone Disposal Site		L	L		26706 National Pike	
		Oldtown Disposal Site		L	L		18514 L. Town Cr. Rd.	
		Orleans Disposal Site		L	L		Price Rd.	
	Substation	Flintstone Substation		L	L		12805 Murley Br. Rd.	
	Communication	Verizon		L	L		18799 E. Wilson Rd.	
		Verizon		L	L		National Pike	
		Antenna		L	L		17904 E. Wilson Rd.	
		Crown Castle Tower		L	L		11605 House Dr.	
		Crown Castle Tower		L	L		12900 Mann Rd.	
		Crown Castle Tower		L	L		13320 Bedrock Rd.	
		General Cellular		L	L		Sunset Orchard Rd.	
		Nextel Tower		L	L		11417 Turkey Farm Rd.	
		Nextel Tower		L	L		10601 Wonder What Rd.	
		Nextel Tower		L	L		12100 Troutman Rd.	
		Nextel Tower		L	L		13330 Sunset Orchard Rd.	
		Nextel Tower		L	L		13310 Sunset Orchard Rd.	
		Bell Atlantic Tower		L	L		13300 Sunset Orchard	
		American Tower		L	L		11900 Tower Rd.	
		CSX Tower		L	L		12000 Tower Rd.	
		Town Hill Tower		L	L		Tower Rd.	
		Warrior Mt. Tower		L	L		Spanish Leather Rd.	
	Bridge	I-68 at Sc. 40 & !5 Mile Cr.		L	L	L	Green Ridge	
		I-68 at Mountain Rd.		L	L	L	Green Ridge	
		I- 68 at MV. Smith Rd.		L	L	L	Green Ridge	
		I-68 at High Germany Rd.		L	L	L	Sideling Hill	
		I-68 at Sideling Creek		L	L	L	Sideling Hill	
		I-68 at Orleans Rd.		L	L	L	Piney Plains	
		I-68 at Scenic 40 at Mann Rd.		L	L	L	Piney Plains	

Essential, Critical and Public Facilities
Allegany County
Hazard Data

Table 16-20: Eastern Region

Fire District	Facility Type	Facility Name	Hazard Type				Location	Estimated Value
			Flood	Winter	Severe Weather	HazMat		
		Scenic 40 at Sideling Creek	H	L	L	L	Sideling Hill	$1,000,000
		Scenic 40 at 15 Mile Creek	H	L	L	L	Green Ridge	$5,000,000
		15 Mile Cr. Rd. at 15 Mile Cr.	H	L	L	L	Green Ridge	$500,000
		Orleans Rd. at 15 Mile Cr.	H	L	L	L	Little Orleans	$500,000
		H. Germany Rd. at Sideling Cr.	H	L	L	L	Sideling Hill	$1,000,000
Eastern Region		Ziegler Rd. at Sideling Cr.	H	L	L	L	Little Orleans	$1,000,000
Con't		I-68 at Polish Mtn. Rd.		L	L	L	Polish Mountain	
		I-68 at Town Creek		L	L	L	Gilpin	
		I-68 at Dry Ridge Rd.		L	L	L	Gilpin	
		I-68 at Flintstone Creek		L	L	L	Flintstone	
		I-68 at Rt. 144		L	L	L	Martins Mountain	
		Rt. 144 at Town Creek		L	L	L	Gilpin	
		Old Gilpin Rd. at Town Creek	H	L	L	L	Gilpin	$1,000,000
		Town Creek Rd. at Murley Br.	H	L	L	L	Town Creek	$500,000
		Town Creek Rd. at Town Cr.	H	L	L	L	Town Creek	$5,000,000
		Town Creek Rd. at Town Cr.	H	L	L	L	Town Creek	$5,000,000
		Black Valley Rd. at Flint. Cr.	H	L	L	L	Flintstone	$1,000,000
		Murley Br. Rd. at Murley Br.	H	L	L	L	Murley Branch	$100,000.00
		Packhorse Road at Town Cr.		L	L	L	Packhorse Rd.	$5,000,000
		Rt. 51 at Potomac River	H	L	L	L	Paw Paw	
		Rt. 51 at Town Creek	H	L	L	L	Town Creek	$10,000,000
		Green Sp. Rd. at No. Br. Pot.	H	L	L	L	Oldtown	
		Rt. 51 at Mill Run	H	L	L	L	Oldtown	$1,000,000
		Rt. 51 at Sawpit Run	H	L	L	L	Oldtown	$1,000,000
		Williams Rd. at Collier Run	H	L	L	L	Collier Run	$500,000
		Hinkle Rd. at Collier Run	H	L	L	L	Collier Run	$100,000
		Rt. 51 at Sawpit Run	H	L	L	L	Town Creek	$1,000,000
		CSX RR at Potomac River		L	L	L	Green Ridge	
		CSX RR at Potomac River		L	L	L	Green Ridge	
	Tunnel (Active)	CSX RR at Graham Tunnel		L	L	L	Green Ridge	
	Tunnel (Inactive)	Kessler Tunnel					Green Ridge	
	Communication	Warrior Mtn. Tower Site		L	L		Spanish Leather Road	


Map 16-14: Detailed View of Essential & Critical Facilities in Central Region
EOC
Fire
Medical
Police
Schools
County
Municipal
Tier II HazMat
1% Annual-Chance Floodplain
Municipalities
Flintstone
Oldtown
Green Spring
Paw Paw
Little Orleans
Green Ridge State Forest
SP&D
76 Baltimore Street
Cumberland, MD 21502
0 0.75 1.5 3 Miles
N
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

CHAPTER 17: MITIGATION STRATEGIES

17.1 Goals and Objectives

The goals and objectives presented herein help to guide Allegany County and its municipalities in identifying and selecting mitigation strategies to address hazard vulnerabilities. The actions address the vulnerabilities discussed in the hazard profile chapters by identifying measures that will help the County and municipalities avoid, prevent, or otherwise reduce damage and downtime resulting from hazards.

This chapter identifies goals, objectives, and specific mitigation actions that address the risk and vulnerabilities identified in the natural hazard chapters of this plan. Mitigation strategies have been developed with county and municipal capabilities and gaps in mind, which were identified in Chapter 14: Community Capabilities. Table 17-1 defines goals, objectives, and action items.

Table 17-1: Goals, Objectives, and Mitigation Projects	
Goal	Goals are general guidelines that explain what you want to achieve. They are usually broad policy-type statements, long-term and represent global visions.
Objective	Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, they are specific and measurable.
Mitigation Projects & Action Items	Are the specific steps (projects, policies, and programs) that advance a given objective. They are highly focused, specific, and measurable.

The goals and objectives from the 2018 hazard mitigation plan were reviewed by stakeholders during the Mitigation Workshop held on August 31, 2023. Hazard Mitigation Planning Committee (HMPC) members in attendance at the meeting revised the goals and objectives as necessary and created additional goals and objectives for inclusion in the 2024 Plan Update. Revisions made to the goals and objectives are documented in the meeting notes for the mitigation workshop (see *Appendix B: HMPC Meeting Notes*). These goals and objectives represent Allegany County's vision for reducing damage caused by natural hazards identified within the plan for the next five years and beyond.

Goals and objectives have been categorized into **four broad categories:**

1. **Local Planning and Regulations (LPR)**: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
2. **Structure and Infrastructure Projects (SIP)**: Actions that involve the modification of existing critical and public facilities, buildings, structures, and public infrastructure to

protect them from hazards. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and infrastructure modification.

3. **Education and Awareness Programs (EAP)**: Undertake actions to inform and educate citizens, elected officials, and property owners about potential ways to mitigate hazards that can occur in the County and its municipalities. Such actions include outreach programs, projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
4. **Natural Systems Protection (NSP)**: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural protection systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration preservation.

Note: goals and objectives added in this plan update are in green, and the modified portions of goals and objectives are shown in orange.

Goal #1: Maintain and enhance Allegany County's Department of Emergency Service's capacity to continuously make Allegany County less vulnerable to hazards, specifically for those hazards rated as medium-high and high.

Objectives:

1.1 Institutionalize hazard mitigation
1.2 Improve organizational efficiency.
1.3 Maximize utilization of best technology.
1.4 Ensure a well-funded GIS Office to enable Allegany County DES to maximize utilization of GIS software and applications.
1.5 Maximize use of hazard vulnerability data, such as Hazus Risk Map products.
1.6 Keep current with changing science related to climate change threats.

Goal #2: Build and support municipal capacity and commitment to become continuously less vulnerable to hazards.

Objectives:

2.1 Increased awareness and knowledge of hazard mitigation principles and practice among local and municipal public officials.
2.2 Aid municipal officials and municipalities obtain funding for mitigation planning and project activities.
2.3 Prepare technical reports for critical facilities as necessary.

Goal #3: Improve coordination and communication with other relevant organizations.

Objectives:

3.1 Establish and maintain lasting partnerships.
3.2 Streamline policies to eliminate conflicts and duplication of effort.

3.3 Incorporate hazard mitigation into activities of other organizations.

Goal #4: Increase public understanding, support, and demand for hazard mitigation.

Objectives:

4.1 Identify hazard specific issues and needs.

4.2 Heighten public awareness of natural hazards.

4.3 Publicize and encourage the adoption of appropriate hazard mitigation actions.

4.4 Within 2 years, increase the number of businesses that have developed a business risk reduction plan.

4.5 Within 3 years, increase by 10% the proportion of businesses and residences that have flood insurance.

4.6 Increase the total number of NFIP policyholders outside the 1 percent-annual-chance FEMA flood zone.

4.7 Prioritize vulnerable populations when conducting public hazard mitigation outreach.

4.8 Increase public awareness and preparedness specific to emerging infectious diseases, always utilizing data and information from verified and trustworthy public health sources.

Goal #5: Protect existing and future properties (residential, commercial, public, and critical facilities).

Objectives:

5.1 Utilize the most effective approaches to protect buildings from flooding, including acquisition and elevation.

5.2 Enact and enforce regulatory measures to ensure that new development will not increase hazard threats from flooding, steep slope failure and the threat of wildfire at the urban/forest interface.

5.3 With exception to buildings damaged/blighted from previous flooding, within 5 years reduce by 20% the number of houses in the floodplain that are subject to repetitive losses from flooding.

5.4 Within 5 years, increase by 25% the number of critical facilities that have carried out mitigation measures to ensure their functionality in a 100-year flood event, winter storm or high wind event.

5.5 Review Building Codes to ensure that manufactured housing, including mobile homes, are constructed and installed in a manner to minimize wind damage.

5.6 Encourage existing high risk residential structures to utilize retrofitting techniques to mitigate repetitive flooding.

Goal #6: Ensure that public funds are used in the most efficient manner.

Objectives:

6.1 Prioritize new mitigation projects, starting with sites facing the greatest threat to life, health, and property.

6.2 Use public funding to protect public services and critical facilities.

6.3 Maximize the use of outside funding sources.

6.4 Encourage property-owners self-protection measures.

Goal #7: Promote sustainable development to improve the quality of life.

Objectives:

7.1 Establish open space parks and recreational areas in flood hazard areas.

7.2 Provide for the conservation and preservation of natural resources.

7.3 Limit additional housing (especially elderly and high density) in areas of high hazard risk.

7.4 Prioritize forest conservation and tree planting to mitigate extreme temperatures and to provide stormwater benefits. Consider potential for carbon offset program.

Goal #8: Prevent destruction of forests and structures in the Urban Wildland Interface.

Objectives:

8.1 Development of communications protocol and management between municipal and County emergency management and law enforcement personnel.

8.2 Identify specific high hazard areas in the Urban Wildland Interface and notify residents of measures to protect their property from wildfire damage.

8.3 Develop evacuation procedures to enable residents near forested areas to evacuate safely.

8.4 Continue to work with the Maryland Department of Natural Resources to develop Community Wildfire Protection Plans, which promote safe urban-wildland interface.

Goal #9: Protect public infrastructure.

Objectives:

9.1 Upgrade or replace public roads and stormwater management features to include mitigation into the project design and construction.

9.2 Improve routes utilized in flood hazard events to mitigate life-threatening road conditions and road closures.

9.3 Mitigate problem road sections within the County and municipalities.

9.4 Encourage and ensure to the greatest extent possible continuous power supply to critical and public facilities.

Goal #10: Integrate plans and policies across disciplines and agencies within the County through the consideration of potential hazards and future development.

Objectives:

10.1 Integrate hazard mitigation into areas such as land use, transportation, climate change, natural and cultural resource protection, water resources, and economic development.

10.2 Solicit participation and offer opportunities for various departments to work together on a regular basis.

10.3 Clearly define roles of, and improve intergovernmental coordination between planners, emergency managers, engineers, and other staff, and municipal and regional partners in improving disaster resiliency.

10.4 Integrate the new 2024 Hazard Mitigation Plan into existing plans, policies, codes, and programs that guide development.

17.2 Mitigation Action Item Update

Mitigation strategies from the 2018 plan were reviewed as part of the 2024 plan update. Status updates were provided by members of the HMPC. *Appendix F: Mitigation Action Progress Report* details the process implemented to gather feedback and updates to action items from the 2018 Hazard Mitigation Plan.

The HMPC determined that twenty two (22) mitigation action items would be carried forward into the 2024 plan update. Of these action items, fourteen (14) were identified as "delayed" and eight (8) were identified as "on schedule". These items were reviewed and updated to reflect current conditions within Allegany County. In addition to these action items, new action items were developed by stakeholders throughout the plan update process. During the mitigation workshop held on August 31, 2023, HMPC members were given the time and opportunity to review newly recommended action items and modify them as needed.

Notes for this meeting, as well as other HMPC meetings, are available in *Appendix B: HMPC Meeting Notes* and on the project website: www.alleganymdhazards.org. In addition to the expertise and guidance of stakeholders, results from the public survey (see *Appendix H: Public Survey Summarized Results*) were considered in the development of mitigation action items. The public indicated a strong desire for the following types of mitigation projects:

1. Replace inadequate or vulnerable bridges.
2. Work on improving damage resistance of utilities (electricity, communications, water/sewer, etc.)
3. Retrofit and strengthen essential facilities such as police, fire, emergency medical services, hospitals, schools, etc.
4. Retrofit infrastructure, such as elevating roadways and improving drainage systems.
5. Assist vulnerable property owners with securing funding to mitigate impacts to their property.

17.3 Mitigation Action Items

Upon completing the review of the goals and objectives established during the 2024 planning process, the HMPC members attending the mitigation workshop reviewed the four broad categories of mitigation action items. These mitigation categories, as identified in section 17.1, include (1) Local Planning and Regulations, (2) Structure and Infrastructure Projects, (3) Natural Systems Protection, and (4) Education and Awareness Programs. Workshop attendees were placed into small working groups based on these four identified mitigation categories. To the greatest extent possible, attendees were grouped based upon their professional position and individual expertise. Mitigation ideas were discussed and identified throughout the plan update process and during the review of draft hazard chapters by stakeholders.

Pictures (left and right): Participants attend the Mitigation Workshop held on August 31, 2023, at the County's Emergency Operations Center. They worked in 3 small groups to review goals and objectives and develop new mitigation strategies. Source: SP&D.

Mitigation action items address the goals and objectives developed by the HMPC. These action items form the core of the 2024 Allegany County Hazard Mitigation Plan Update. In total, the three working groups reviewed thirty seven (37) action items and created two new action items.

There are forty (40) total action items included in this plan update. These action items are included in Table 17-2, following. For each action item, associated goals and objectives, hazards, locations, timeframe for implementation (i.e., ongoing, short-term (1-3 years), mid-term (3-5 years), and long-term (5+ years)), responsible entity, and primary impacted community lifeline are identified. According to FEMA, "a lifeline enables the continuous operation of critical government and business functions and is essential to human health and safety or economic security." Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. Projects associated with action items are denoted in orange. Additionally, action items which count for Community Rating System (CRS) credit are indicated with "CRS".

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
LOCAL PLANNING AND REGULATIONS								
LPR-1	Consider development restrictions for vacant parcels located in identified flood hazards areas. *Note: This action item is associated with a mitigation project (Project B).*	7 10	7.3 10.1	Flood	Vacant parcels in Allegany County and Municipalities (all)	Short term/ Ongoing	Allegany County Land Development Services	Safety and Security
LPR-2	Some areas in the County experience repetitive hazard issues – therefore, implementing a critical hazard area overlay zone within the zoning ordinance would be helpful for these locations. This critical overlay zone could include portions of property parcels that have multiple hazards. Such as the 1 percent-annual-chance flood zone, severe erodible soils, slopes 25% or greater, hydric soils, and wetlands. *Note: This action item is associated with a mitigation project (Project C).*	1 5 6 10	1.4 5.1; 5.2 6.1 10.1; 10.3	Flood, Severe Weather, Soil Movement	Parcels in locations that are in multiple hazard zones (both County and Municipal)	Short term	Allegany County Planning Services	Safety and Security
LPR-3	Due to steep slope flooding, specifically in the Georges Creek area, consider modifying the steep slope ordinance from 25% to 15%.	5 10	5.2 10.1	Flood, Severe Weather, Soil Movement	Westernport, Barton, Lonaconing, Midland, Frostburg	Short term	Allegany County Land Development Services	Safety and Security
LPR-4	Utilize GIS based solutions for damage assessments and to collect information for mitigation projects, specifically for flood related damage that includes high water mark elevation and picture. *Note: This action item is associated with a mitigation project (Project D).*	1 5	1.3; 1.4 5.1	Flood	Allegany County, City of Cumberland, City of Frostburg	Short term	Allegany County Geographic Information Systems Office	Safety and Security
LPR-5	Review previous damage assessment reports, then geocode to visualize areas of repetitive loss.	1 5 6	1.3; 1.4 5.1	Flood	Allegany County	Long term	Allegany County Geographic	Safety and Security

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	Note: This action item is associated with a mitigation project (Project D).		6.1; 6.3; 6.4; 6.5				Information Systems Office	
LPR-6	Explore the CRS (Community Rating System), which reduces insurance costs within the county. Currently, Allegany County is not enrolled in the CRS. As of August 2023, there are 104 NFIP policies in force in Allegany County with $123,039 being paid in insurance premiums. On average, Allegany County policy holders pay $1,183 per year in flood insurance premiums. By participating in the CRS, policy holders could potentially save between $59 (5%) to $532 (45%) per year on their flood insurance policies.	1 2 3 4 6 10	1.1 2.1 31; 3.3 4.1; 4.3 6.5 10.2; 10.3	Flood	Allegany County, Westernport, Lonaconing, Midland, Cumberland, Barton	Long term	Floodplain Manager	Safety and Security
LPR-7	Work with Maryland Department of Natural Resources to complete Community Wildfire Protections Plans for at-risk communities. Currently, Little Orleans and Bowman's Addition are the only communities with a Wildfire Protection Plan. a) Vulnerable populations are taken into consideration and incorporated into wildfire protection plans. These groups in Allegany County as identified in Chapter 10 Wildfire include: infants, young children, pregnant women, older adults, and those with additional medical or mobility needs.	8	8.1; 8.2; 8.3; 8.4	Wildfire	Allegany County and Municipalities (All)	Long term	Emergency Services	Safety and Security
LPR-8	Conduct a new Hazardous Materials Commodity Flow Study as an update to the last study completed in 2014.	1 2	1.5; 2.3	HazMat Transportation	Allegany County, City of Cumberland	Short term	Emergency Services	Hazardous Materials

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	Note: This action item is associated with a mitigation project (Project G).							
LPR-9	Update Allegany County's 2015 Hazardous Materials Emergency Response Plan.	1 3	1.2; 1.5	HazMat Transportation, Rail Accident	Allegany County	Short-term	Emergency Services/LEPC	Hazardous Materials
LPR-10	Develop a Local Strategic Highway Safety Plan as encouraged by the State to work towards a goal of zero highway fatalities. Local Strategic Highway Safety Plans (LSHSP) can be developed in coordination with the Maryland Highway Safety Office.	1 3 4 9	1.4; 1.5; 3.3; 4.1; 9.3	HazMat Transportation	Allegany County with input from municipalities (all)	Mid Term	Planning and Zoning in cooperation with Transit Department	Transportation
LPR-11	Aggressively pursue any and all funding opportunities to support mitigation actions outlined in this hazard mitigation plan.	1 2 6	1.1; 2.2; 6.1; 6.4	All-hazards	Allegany County	Ongoing	Emergency Services	Safety and Security
LPR-12	Develop an Extreme Heat Emergency Plan that identifies triggers, surveillance, and actions. a) Populations vulnerable to extreme heat, as identified in Chapter 9, include: populations 65 years of age and older and populations 17 years of age or younger (particularly small children and infants).	1 7	1.1; 7.4	Extreme Heat and Drought	Allegany County	Short term	Emergency Services	Health and Medical
LPR-13	Protect critical infrastructure from power outages via the development of a microgrid system in the City of Frostburg. *Note: This action item is associated with a mitigation project (Project H).*	2 4 5 6 9	2.2; 4.3; 5.4; 6.1; 6.2; 6.4; 9.4	Severe Weather, Winter Storm, Tornado, Flood (hazards that potentially impact power utilities)	City of Frostburg	Mid term	City of Frostburg	Energy

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
LPR-14	Development of a County-Municipal workshop to provide an overview of the roles of local government in emergency management. FEMA staff could be invited to present information from the Local Elected and Appointed Officials Guide: Roles and Resources in Emergency Management or other relevant guides. *Note: This action item is associated with a mitigation project (Project I).*	1 2 3	1.2; 1.2; 2.1; 3.1; 3.2; 3.3	All-hazards	Allegany County, Municipalities	Short term	Emergency Services	Communications
LPR-15	Ensure that evacuation plans, plans for flood fighting, or community response plans to include in the floodplain management plan are developed for the following high hazard potential dams owned by the County or municipalities: Koontz Run Reservoir Tanks, Lonaconing Reservoir, Midland-Gilmore Reservoir, Dry Run Detention Dam and Culvert, Upper Potomac Industrial Park Levee	2 5	2.1; 2.2; 5.1; 5.2	Dam Failure	Allegany County, Cumberland, Lonaconing	Long term	Dam Owners	Safety and Security
STRUTURE AND INFRASTRUCTURE PROJECTS								
SIP-1	CRS Acquire/demolish and relocate the Town Halls of Lonaconing and Westernport. Both Town Halls are located within the 100-year floodplain, and both have experienced first floor flooding in 1996. *Note: This action item is associated with a mitigation project (Project E).*	5 6 7	5.1; 5.4 6.1; 6.3; 6.4 7.1	Flood	Town of Lonaconing and Westernport	Long term	Land Development Services	Safety and Security
SIP-2	CRS Acquire/demolish and relocate the following Fire Departments that have been identified by the FEMA HAZUS Model as susceptible to first floor flooding. Fire Departments include: Corriganville VFC,	5 6 7	5.1; 5.4 6.1; 6.3; 6.4 7.1	Flood	Allegany County, Town of Midland, Town of Westernport	Long term	Land Development Services	Safety and Security

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	Midland Fire Company, Potomac Fire Company and Baltimore Pike VFC.							
SIP-3	CRS Review the following schools for flooding susceptibility. The FEMA HAZUS Model has identified these schools as being susceptible to first floor flooding. The Schools include: Calvary Christian Academy and Flintstone Elementary. *Note: This action item is associated with a mitigation project (Project E).*	5 6 7	5.1; 5.4 6.1; 6.3; 6.4 7.1	Flood	Allegany County (Cresaptown and Flintstone)	Long term	Land Development Services	Safety and Security
SIP-4	CRS Consider retrofitting the following WWTPs for flooding. These WWTPs have been identified by the FEMA HAZUS Model as susceptible to flooding damage. These include: Little Orleans Campground, Oldtown and Rawlings.	5 6 7	5.1; 5.4 6.1; 6.3; 6.4 7.1	Flood	Allegany County (Little Orleans, Oldtown, Rawlings)	Long term	Public Works	Water Systems
SIP-5	Prioritize the following water Pump Stations (PS) in need of a generator: Rolling Oaks PS and Homewood PS (Corriganville/Ellerslie). Apply for grant funding to purchase and install a generator that ensures continued power at these water pump stations. Continue identifying new pump stations in need of upgrades for the future. *Note: This action item is associated with a mitigation project (Project F).*	5 6 9	5.4 6.1; 6.2; 6.4 9.4	Flood, Winter Storm, Severe Weather, Tornado	Allegany County (Corriganville, Ellerslie)	Short term	Public Works	Water Systems
SIP-6	CRS Perform a detailed analysis of structures in the floodplain for all municipalities and determine first floor elevation for mitigation project purposes. *Note: This action item is associated with a mitigation project (Project D).*	1 2 4 5	1.3 2.3 4.1 5.1	Flood	Cumberland, Westernport, Barton, Lonaconing, Midland, Frostburg, Luke	Long term	Allegany County Geographic Information Systems Office	Safety and Security

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
SIP-7	CRS Identify older homes and Pre-FIRM residential structures in the floodplain that need mitigation measures in order to bring them into compliance when funding is available. Parcel layer is needed within GIS to adequately identify.	1 2 4 5	1.3; 1.4 2.3 4.1 5.1	Flood	Allegany County and Municipalities (all)	Long term	Allegany County Geographic Information Systems Office	Safety and Security
SIP-8	Assess all shelters and their ability to sustain damage for specific hazard types and identify retrofitting projects based on this assessment. a) Shelters predominantly serve vulnerable populations who are displaced after a hazard event. Shelters are seeing an increase of adults needing their services who are older, have a disability, or come from an unsheltered location.	1 3 5	1.3 3.3 5.2	All-Hazards	Allegany County	Long term	Public Works	Food, Hydration, Shelter
SIP-9	Update the County's flood buyout list with most up to date repetitive loss properties data.	5 6	5.1; 5.3 6.1; 6.3; 6.4	Flood	Allegany County	Long term	Land Development Services	Safety and Security
SIP-10	Prioritize and continue to purchase properties on the flood buyout listing. Currently there are 61 properties on the listing, however inclusion of the repetitive loss properties, the total number of properties would be 82. The County is currently prioritizing the Garden City project.	5 6 7	5.1; 5.3; 5.4 6.1; 6.3; 6.4 7.1	Flood	Allegany County	Long term	Land Development Services	Safety and Security
SIP-11	Identify and prioritize essential and critical facilities or shelters that may need a generator. Based upon the assessment, apply for grant funding to purchase and install an emergency generator that ensures continued power of essential facilities and shelters. One	5 6 9	5.4 6.1; 6.2; 6.4 9.4	All-Hazards	Allegany County, City of Cumberland	Short term	Public Works, Emergency Services	Food, Hydration, Shelter

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	identified critical facility in need of a generator is the Cumberland County's Road Garage.							
SIP-12	For the eight (8) essential facilities (listed below with depth of flooding) that have a high vulnerability to flooding and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed. • Tri Towns Rescue Squad – 2.4' • Potomac Fire Company #2 – 2.0' • Corriganville Volunteer Fire Department – 3.8' • Georges Creek Ambulance Service – 4.1' • Midland Fire Company – 1.5' • Baltimore Pike Volunteer Fire Department – 1.1' • Flintstone Elementary School – 5.9' • Calvary Christian Academy – 7.1' *Note: This action item is associated with a mitigation project (Project E).*	2 5 6	2.3 5.4 6.2; 6.4	Flood, Winter Storm	Allegany County, Midland, Westernport, Lonaconing	Long term	Land Development Services	Safety and Security
SIP-13	Continue moving mobile homes in the floodplain in the Trade Wind and Garden City Mobile Home Parks located in LaVale. The mobile home parks are co-located and vulnerable to the 100-year flood event. Out of 75 mobile homes, 40 are within the 100-year floodplain.	4 5 6	4.3 5.1; 5.3; 5.6 6.1; 6.3	Flood	Allegany County (LaVale)	Long term	Land Development Services	Safety and Security

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	a) Vulnerable populations are directly impacted by this continued buyout. Populations include low income, aged 65 years and older, and those with disabilities. Removing these mobile homes from the floodplain will be an overall benefit to reduce repetitive flooding.							
SIP-14	For high hazard potential county-owned dams (i.e., Upper Potomac Industrial Park Levee) determine the feasibility of the installation of an early warning system in the event of dam failure.	4 5	4.2	Dam Failure	Allegany County	Long term	Allegany County	Safety and Security
NATURAL SYSTEMS PROTECTION								
NSP-14	CRS Continue maintaining the forested buffer and promoting natural growth habitat along identified repetitive flood roadways to reduce flood impacts. These roads are identified in Tables 4-11 & 4-12 in Chapter 4: Flood. a) Prioritize repetitive flooded roadways that are also within highly socially vulnerable census tracts as identified by the SVI. These roads include: Waterside Street (Barton), Railroad Street (Lonaconing), Jackson Mountain Road (Lonaconing), Bowling Green Area, and Milnor Avenue to Moss Avenue.	4 6 9	4.1; 4.3 6.2 9.1; 9.2; 9.3	Flood	Cumberland, Frostburg, Barton, Westernport, Lonaconing	Ongoing	Public Works	Transportation
NSP-15	Prioritize the removal of blighted structures within designated hazard areas such as the special flood hazard area and the Wildland Urban Interface.	5 8	5.2; 8.2; 8.4	Flood, Wildfire	Allegany County and Municipalities (all)	Long term	Land Development Services	Safety and Security

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	a) Specifically, structures that are both within the SFHA or WUI should be prioritized if they are also within socially vulnerable census tracts, as identified by the SVI in Chapter 5 Winter Storm. Tracts that are highly socially vulnerable and within the SFHA include the municipality of: Cumberland, Lonaconing, Barton, Westernport, and Luke.							
NSP-16	Continue to implement low impact development techniques in areas where stormwater is an issue. These techniques could include infiltration trenches, vegetated swales, buffer strips. Presently, all new development projects and maintenance/repair projects utilize low impact development practices.	9	9.1	Flood	Allegany County	Long term	Public Works, Land Development Services	Safety and Security
NSP-17	Identify and prioritize locations along roadways throughout the County and its municipalities where the maintenance or removal of vegetation such as dead trees or branches would be useful in mitigating potential impacts to utility lines, properties, or residents prior to a winter storm, high wind, or thunderstorm event. a) The County and municipal Public Works should continue working with, and possibly expand, partnerships with utilities and power companies to review current standards for debris	9	9.2; 9.3	Severe Weather, Winter Storm, Tornado	Allegany County and Municipalities (all)	Ongoing	County and Municipal Public Works	Transportation

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	management in order to identify areas for improvement.							
NSP-18	Assess county-owned critical facilities for suitability/space for stormwater BMP projects with the goal of lessening impervious surfaces at these locations, and planting projects to reduce the urban heat island effect.	5 7 9	5.1; 7.4; 9.1	Flood, Severe Weather, Extreme Heat	Allegany County	Short term	Land Development Services, GIS Department	Water Systems
EDUCATION AND AWARENESS PROGRAMS								
EAP-1	CRS Consider purchasing repetitive loss properties in the county when funding becomes available. Update the volunteer buy-out program letter of interest and distribution listing. The current properties on the list have been prioritized to make the best use of federal dollars to remove vulnerable homes out of the flood zone. *Note: This action item is associated with a mitigation project (Project A).*	2 4 5 6	2.2 4.3 5.1; 5.3; 5.4 6.3	Flood	Allegany County	Ongoing	Land Development Services	Safety and Security
EAP-2	Promote the construction and use of tornado safe rooms, including action such as: a) Consider requiring construction of safe rooms in new schools, daycares, and nursing homes. b) As well as in homes and shelter areas of fairgrounds, shopping centers, and/or other vulnerable public structures. c) Encourage builders and homeowners to locate tornado safe rooms inside of/directly adjacent to houses to prevent injuries due to flying debris or hail.	2 4 5	2.1; 4.2; 4.3; 5.5	Extreme Heat, Severe Weather, Tornado	Allegany County and Municipalities (all)	Ongoing	Emergency Services	Food, Hydration, Shelter

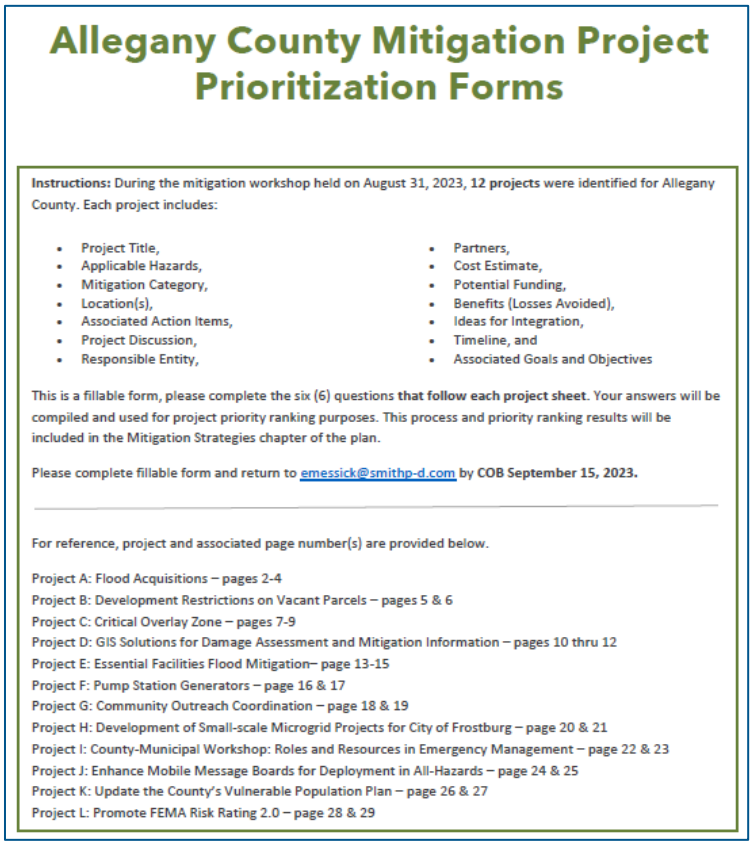
Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	d) Examine the current language of building codes for existing structures in relation to this action to determine what updates are necessary.							
EAP-3	Obtain and strategically deploy signage for community awareness during all-hazard events. This signage may include flood warning signs with or without flashing lights. Consider, to the extent possible, investing in mobile electronic signage that can be deployed before, during, or after a hazard event in high-visibility areas. *Note: This action item is associated with a mitigation project (Project J).*	2 4	2.1; 4.2; 4.8	Flood, Dam Failure, All Hazards	Allegany County and Municipalities (all)	Short term	County Roads	Safety and Security
EAP-4	Work with the Allegany County Health Department and existing health equity groups to identify vulnerable populations via an update to the *Vulnerable Populations Plan* completed by the Health Department in 2014. *Note: This action item is associated with a mitigation project (Project K).*	4	4.2; 4.7	Emerging Infectious Diseases, All-Hazards	Allegany County	Mid term	Health Department	Health and Medical
EAP-5	Assist vulnerable populations from the impacts of extreme temperatures. Utilize results of the Vulnerable Populations Plan to engage with the populations most at-risk to impacts from extreme temperatures, such as power outages and extreme cold. a) Ensure that vulnerable populations are aware of warming centers available in the County by targeting	4	4.2; 4.7	Extreme Heat, Winter Storm	Allegany County and Municipalities (all)	Ongoing	Emergency Services, Health Department, HRDC	Health and Medical

Table 17-2. Mitigation Action Items								
Action Item #	**Action**	**Goals**	**Objectives**	**Hazard**	**Location(s)**	**Timeframe**	**Responsible Entity**	**Community Lifeline**
	vulnerable pops with flyers or mailers. b) Coordinate with County and Municipal departments and partners who already work with vulnerable populations in the realm of health. c) Educate on personal preparedness and safety measures taken during a hazard event.							
EAP-6	Recruit Storm Spotters. Establish a program for Allegany County with a goal to encourage more people to become storm spotters; "Storm Spotters Encouragement Program." This could borrow heavily from, or fold into entirely with, the NWS Skywarn Storm Spotter Program.	1 3 6	1.3; 1.5 3.3 6.5	Tornado, Severe Weather, Flood	Allegany County	Ongoing	Emergency Services	Safety and Security
EAP-7	CRS Promote FEMA Risk Rating 2.0 to the Public a) Understand the community impact of Risk Rating 2.0 and share information with the public to encourage the purchase and/or retention of flood insurance. b) Should the County apply for CRS, this action qualifies for CRS credit, which in turn will lower the cost of flood insurance for policyholders in Allegany County. *Note: This action item is associated with a mitigation project (Project L).*	2 4	2.1; 4.1; 4.2 4.3; 4.5; 4.6	Flood	Allegany County	Ongoing	Planning and Zoning, Floodplain Management	Safety and Security

17.4 Mitigation Projects

During the mitigation workshop, each of the three small groups was asked to identify at least three action items that resonated the most with their group. These action items were further developed into mitigation projects during the workshop. HMPC members completed pre-filled mitigation project sheets for the action items they identified as resonating the most with them. The groups utilized their local knowledge and expertise to complete the project sheets during the workshop.

Upon completion of the Mitigation Workshop, the information gathered from HMPC members was used to update the twelve project sheets. These updated project sheets were reviewed and prioritized by the HMPC. Prioritization of each mitigation project was completed using a fillable PDF form, Figure 17-1. The form was provided to each HMPC member. The form included project titles, completed project worksheets, and six (6) yes/no/unsure questions as follows:



Allegany County Mitigation Project Prioritization Forms

Instructions: During the mitigation workshop held on August 31, 2023, **12 projects** were identified for Allegany County. Each project includes:

- Project Title,
- Applicable Hazards,
- Mitigation Category,
- Location(s),
- Associated Action Items,
- Project Discussion,
- Responsible Entity,
- Partners,
- Cost Estimate,
- Potential Funding,
- Benefits (Losses Avoided),
- Ideas for Integration,
- Timeline, and
- Associated Goals and Objectives

This is a fillable form, please complete the six (6) questions **that follow each project sheet**. Your answers will be compiled and used for project priority ranking purposes. This process and priority ranking results will be included in the Mitigation Strategies chapter of the plan.

Please complete fillable form and return to emessick@smithp-d.com by **COB September 15, 2023.**

For reference, project and associated page number(s) are provided below.

Project A: Flood Acquisitions – pages 2-4
Project B: Development Restrictions on Vacant Parcels – pages 5 & 6
Project C: Critical Overlay Zone – pages 7-9
Project D: GIS Solutions for Damage Assessment and Mitigation Information – pages 10 thru 12
Project E: Essential Facilities Flood Mitigation– page 13-15
Project F: Pump Station Generators – page 16 & 17
Project G: Community Outreach Coordination – page 18 & 19
Project H: Development of Small-scale Microgrid Projects for City of Frostburg – page 20 & 21
Project I: County-Municipal Workshop: Roles and Resources in Emergency Management – page 22 & 23
Project J: Enhance Mobile Message Boards for Deployment in All-Hazards – page 24 & 25
Project K: Update the County's Vulnerable Population Plan – page 26 & 27
Project L: Promote FEMA Risk Rating 2.0 – page 28 & 29

Figure 17-1. Example of the Mitigation Project Prioritization Form provided to the HMPC.

1. Do you think there would be community acceptance/general support for this mitigation action?
2. Do you think implementation of this mitigation action will enhance the health and safety of the community?
3. Do you think the County or municipality will be able to sufficiently staff and/or provide technical support to implement this mitigation action?
4. Do you think the benefits of this mitigation action will exceed the likely costs?
5. Do you think the maintenance requirements for this mitigation action will be affordable and not provide an undue burden on the County or municipality?
6. Is this project consistent with environmental goals?

The prioritization form utilized a modified STAPLEE method to rank projects based on benefits and costs. Potential ranks include high, medium, and low. Prioritization results yielded five (5) "high" priority projects, six (6) "medium" priority projects, and one (1) "low" priority project. It should be noted that projects are only ranked in relation to each other, meaning that a "low" priority project is not indicative of an unimportant project overall.

Twelve (12) mitigation projects were developed during the 2023 plan update, including five (5) projects that were carried over from the previous plan with relevant updates (including projects A through E). Table 17-3 below provides an overview of the twelve mitigation projects developed during this plan update to address hazard risk and vulnerability.

Table 17-3. Mitigation Projects

Project Title	Hazard(s) Addressed	Locations	Priority
Project A: Flood Acquisitions	Flood	Allegany County	Medium
Project B: Development Restrictions on Vacant Parcels	Flood	Vacant parcels in flood prone areas (locations identified in project)	Medium
Project C: Critical Overlay Zone	Flood, Severe Weather, Soil Movement	Parcels in locations that are in multiple hazard zones (both County and Municipal)	Medium
Project D: GIS Solutions for Damage Assessment and Mitigation Information	Flood	Countywide – damage assessments are site or zone specific.	Medium
Project E: Essential Facilities Flood Mitigation	Flood, Winter Storm	Essential Facilities identified in the project	Low
Project F: Pump Station Generators	Flood, Winter Storm, Severe Weather, Tornado	Allegany County; specifically, the pump station's locations identified in the project	High
Project G: Conduct Updated Commodity Flow Study	HazMat Transportation, Rail Accident	Allegany County (specifically major transportation networks entering and exiting the County, e.g., I-68. Route 51, or U.S. Route 220)	High
Project H: Development of Small-scale Microgrid Projects for City of Frostburg	Severe Weather, Winter Storm, Tornado, Flood (hazards that potentially impact power utilities)	City of Frostburg	Medium
Project I: County-Municipal Workshop: Roles and Resources in Emergency Management	All-hazards	Allegany County, All Municipalities	High

Table 17-3. Mitigation Projects			
Project Title	**Hazard(s) Addressed**	**Locations**	**Priority**
Project J: Enhance Mobile Message Boards for Deployment in All-Hazards	Flood, Dam Failure, Severe Weather, All Hazards	Allegany County, All Municipalities	High
Project K: Update the County's Vulnerable Population Plan	Emerging Infectious Diseases, All-hazards	Allegany County	High
Project L: Promote FEMA Risk Rating 2.0	Flood	Allegany County, All Municipalities	Medium

The mitigation project sheets on the following pages include these components:

- Project Title,
- Applicable Hazards,
- Mitigation Category,
- Location(s),
- Associated Action Items,
- Project Discussion,
- Responsible Entity,
- Partners,
- Cost Estimate,
- Potential Funding,
- Benefits (Losses Avoided),
- Ideas for Integration,
- Timeline, and
- Associated Goals and Objectives

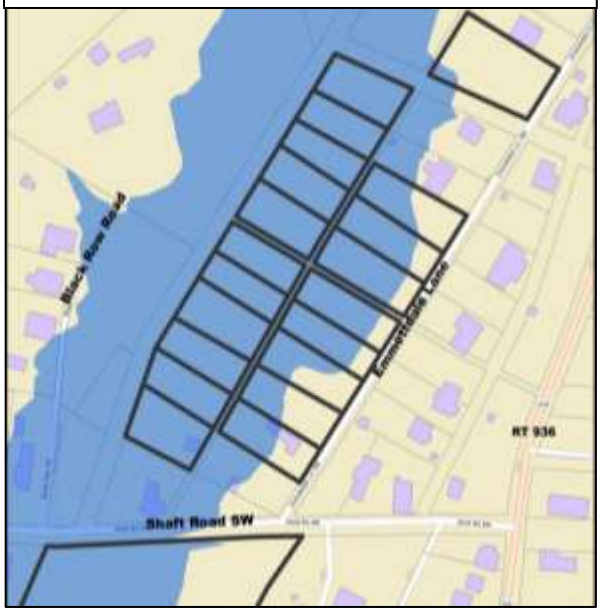
There are a total of twelve (12) mitigation project sheets included on the following pages. Projects ranked as **high priority** are denoted.

MITIGATION PROJECT A	
Project Title:	**Flood Acquisitions**
Hazard(s):	Flood
Mitigation Category:	Education and Awareness
Location(s):	Allegany County
Action Item(s):	EA-1: (CRS) Consider purchasing repetitive loss properties in the county when funding becomes available. Update the volunteer buy-out program letter of interest and distribution listing. The current properties on the list have been prioritized to make the best use of federal dollars to remove vulnerable homes out of the flood zone.
Project Discussion:	This strategy seeks to eliminate or reduce damage to property and the disruption of life caused by repeated flooding. Depending on the severity of flooding at specific locations, damage could be mitigated through the acquisition of flood-prone structures. Acquiring these structures, removing them from the floodplain and returning the area to open space can be a cost effective flood protection measure. It is also a way to convert a problem area into a community asset, such as a park, and obtain environmental benefits including water quality and stream protection.  Through the flood buyout program, Allegany County purchased and demolished 172 structures between 1987 and 2006. Additionally, the County's flood buyout listing stated 14 properties were purchased between 2006 and 2011. A new flood buyout waiting list was generated in February 2011. Between 2013 and 2016, 7 properties were purchased and demolished. To date, this listing contains 61 properties, 3 of which are under review for buyout. During this plan update, the 21 repetitive loss properties were reviewed to determine if any of these properties were part of the flood buyout listing. Those repetitive loss properties not on the flood buyout waiting listing were recommended for inclusion on the flood buyout waiting list. An acquisition budget should be based on the median price of similar properties in the community, plus $10,000 to $20,000 for appraisals, abstracts, title opinions, relocation benefits, and demolition. Costs may be lower following a flood event. For example, the community may have to pay only the difference between the full price of a property and the amount of the flood insurance claim received by the owner.

MITIGATION PROJECT A	
	Additionally, an updated Letter of Interest, in regard to the volunteer buyout program, should be sent to the 21 properties identified as repetitive loss properties. These residents should be the priority for acquisition due to the high probability of a positive benefit/cost ratio analysis, necessary to receive federal funding. Additional letters should be provided to property owners that are located in highly flood-prone areas. These letters should be targeted to residents that have experienced flood damage in the past. **Project:** Consider the acquisition of the most vulnerable properties within the County. This acquisition process would include: contacting the property owner and determining their willingness to sell, obtaining property assessment information, and the completion of necessary grant funding applications. Once property is acquired and removed, the property returns to open space in perpetuity. Finally, acquisitions of repetitive loss properties should consider if locations of multiple repetitive loss properties (repetitive loss areas) exist in the community. These areas should be prioritized for mitigation efforts.
Responsible Entity:	Allegany County Land Development Services
Partners:	Allegany County Department of Planning & Zoning, Allegany County Department of Public Works, Allegany County Department of Emergency Services, Maryland Department of the Environment (MDE), Federal Emergency Management Agency (FEMA)
Cost Estimate:	Median price of similar properties in the community plus $10,000-20,000 for additional costs.
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) • Hazard Mitigation Grant Program (HMGP) • Community Development Block Grant • MDE Comprehensive Flood Management Grant Program • Pre-Disaster Mitigation Grant
Benefits (Losses Avoided):	• Mitigation of repetitive loss properties reduces flood risk. • The identification of areas with multiple repetitive loss properties is cost effective, efficient, and is prioritized for mitigation/funding efforts.
Ideas for Integration:	• Acquired properties can be considered for parks and recreation or open space opportunities.
Timeline:	Ongoing – during the current planning cycle (i.e., next 5 years)
Associated Goals	Goal 2, Objective 2.2 Goal 4, Objective 4.3 Goal 5, Objectives 5.1, 5.3, and 5.4 Goal 6, Objective 6.3

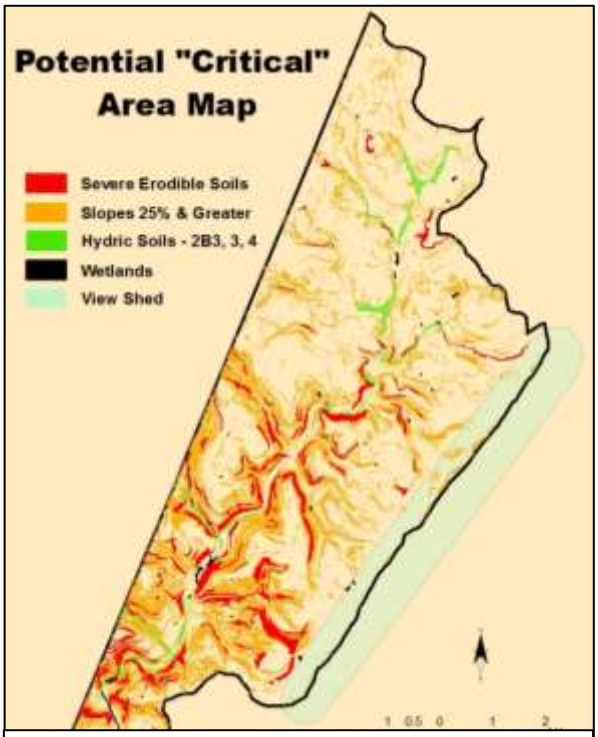
<table>
<tr><th colspan="2">MITIGATION PROJECT B</th></tr>
<tr><td>Project Title:</td><td>Development Restrictions on Vacant Parcels</td></tr>
<tr><td>Hazard(s):</td><td>Flood</td></tr>
<tr><td>Mitigation Category:</td><td>Local Planning and Regulations</td></tr>
<tr><td>Location(s):</td><td>Vacant parcels in flood prone areas (locations identified below)</td></tr>
<tr><td>Action Item(s):</td><td>LPR-1: Consider development restrictions for vacant parcels located in identified hazards areas.</td></tr>
<tr><td>Project Discussion:</td><td>Stringent development regulations should be enforced on vacant parcels in flood prone areas. These areas serve as an open space allowing flood water to flow without interference. Additionally, vacant parcels could serve as natural buffers, which absorb water, reducing in-stream channel velocity and volume during storm events.

Utilizing Allegany County’s Existing Land Use GIS layer, vacant parcels categorized as Low, Medium, or High Density Residential were extracted and overlaid on the 1 percent-annual-chance flood zone. Vacant residential parcels located within this zone were obtained. Concluding this analysis, a total of 110 vacant parcels were located in flood Zone AE, while 78 were in Zone A. Of this total, 31 parcels were located along Georges Creek, 41 were within the floodplain of Wills Creek and 33 vacant parcels were found along Town Creek and the Lower North Branch. Areas affected by previous flooding events such as these should have greater restraints on future development.

Vacant parcels (outlined in black) located within Flood Zone A.
 

Project: Develop and implement stringent regulations for developing vacant parcels located within the 1 percent-annual-chance flood zone. This language should be included in both the Floodplain Management Ordinance and Zoning Ordinance. Another option for these identified properties is to consider them for Program Open Space. The program acquires outdoor recreation and open space areas for public use and administers funds made available to local communities for open and recreational space.</td></tr>
<tr><td>Responsible Entity:</td><td>Allegany County Land Development Services</td></tr>
<tr><td>Partners:</td><td>Allegany County Department of Public Works, Municipalities</td></tr>
</table>

MITIGATION PROJECT B	
Cost Estimate:	Annual Operating Budget (staff time)
Potential Funding:	• DNR Program Open Space
Benefits (Losses Avoided):	• Floodplain ordinances that limit or prohibit development in flood-prone areas helps reduce the number of homes or businesses at risk to flooding.
Ideas for Integration:	• Open space considerations specifically would be considered by the County's open space committee. • Determine consistency with goals in the County's 2022-2027 Local Land Preservation and Recreation Plan and consider new projects for future updates to this plan.
Timeline:	Short-term (1 year)/Ongoing
Associated Goals	Goal 7, Objective 7.3 Goal 10, Objective 10.1

MITIGATION PROJECT C	
Project Title:	**Critical Overlay Zone**
Hazard(s):	Flood, Severe Weather, Soil Movement
Mitigation Category:	Local Planning and Regulations
Location(s):	Parcels in locations that are in multiple hazard zones (both County and Municipal)
Action Item(s):	LPR-2: Some areas in the County experience repetitive hazard issues – therefore, implementing a critical hazard area overlay zone within the zoning ordinance would be helpful for these locations. This critical overlay zone could include portions of property parcels that have multiple hazards. Such as the 1 percent-annual-chance flood zone, severe erodible soils, slopes 25% or greater, hydric soils, and wetlands.
Project Discussion:	For areas that experience repetitive hazard issues, such as the Georges Creek region (which is highly vulnerable to multiple hazards), a 'Critical Overlay Zone' should be developed. In the *Georges Creek Regional Comprehensive Plan*, a Potential "Critical" Area map was developed to provide the location of the following hazards: severe erodible soils, slopes 25% or greater, hydric soils, wetlands, and the view shed. This map can be combined with the 1 percent-annual-chance flood zone for analysis purposes. Areas on the map exhibiting multiple hazards in a concentrated spot should be analyzed for potential "Critical" Area designation. This designation would ensure that no development of any kind would occur. However, large parcels containing sections of developable land could be subdivided. This would protect the Critical Areas, while allowing opportunities for development on suitable land.  **Example of a Critical Hazard Area Overlay Zone** A Critical Area Overlay Zone could be developed for all areas in the County that experience multiple hazard issues and implemented within the Zoning Ordinance. By doing so, the potential loss of property or the risk of injury would be mitigated.

MITIGATION PROJECT C	
	Project: Create a 'Critical Overlay Zone' map which includes the following hazards: the 1 percent-annual-chance flood zone, severe erodible soils, slopes 25% or greater, hydric soils, and wetlands. This map should be generated for all areas in the County known to have repetitive hazard issues. Once created, the Critical Overlay Zone would be implemented within the Zoning Ordinance. This Zone should be enforced when new development is being considered for construction in these high hazard areas. Development should not be permitted in areas that experience issues with multiple identified hazards.
Responsible Entity:	Allegany County Planning Services
Partners:	Allegany County Land Development Services, Allegany County Geographic Information Systems (GIS) Office
Cost Estimate:	Annual Operating Budget (staff-time)
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) • Hazard Mitigation Grant Program (HMGP) • Cooperating Technical Partners • Map Modernization Management Support
Benefits (Losses Avoided):	• Keeping development away from known hazard prone areas is a useful mitigation strategy, especially areas prone to multiple hazards.
Ideas for Integration:	• This project recommendation is also made in Allegany County's Comprehensive Plan.
Timeline:	Short-term (1 year)
Associated Goals	Goal 1, Objective 1.4 Goal 5, Objective 5.1 and 5.2 Goal 6, Objective 6.1 Goal 10, Objective 10.1 and 10.3

MITIGATION PROJECT D	
Project Title:	**GIS Solutions for Damage Assessment and Mitigation Information**
Hazard(s):	Flood
Mitigation Category:	Local Planning and Regulations, Structure and Infrastructure
Location(s):	Countywide – damage assessments are site or zone specific.
Action Item(s):	LPR-4: Utilize GIS-based solutions for damage assessments and to collect information for mitigation projects, specifically for flood related damage that includes high water mark elevation and picture. LPR-5: Review previous damage assessment reports, then geocode to visualize areas of repetitive loss. SIP-6: CRS Perform a detailed analysis of structures in the floodplain for all municipalities and determine first floor elevation for mitigation project purposes.
Project Discussion:	Currently, the County utilizes damage assessment sheets to compile information when an incident occurs. This process only allows information such as severity of damage, dwelling type, address, location descriptions and so on to be collected. More specific information including first floor elevations cannot be obtained and recorded during the assessment process. This information is pertinent in regard to the 1 percent-annual-chance flood elevations, flood insurance, and to assess potential mitigation implementation measures. Therefore, by utilizing GIS-based software to collect all necessary information, the County can prioritize the mitigation measures that are needed for areas highly susceptible to flooding. ESRI Damage Assessment is a configuration of ArcGIS Online and the Collector for ArcGIS application that supports the collection of structural damage to residential and commercial structures; and damage to public facilities during emergency response activities. The Damage Assessment solution can be configured by emergency management agencies to conduct detailed damage assessments in the field. It can also be used to monitor field assessments and determine whether damage costs exceed State or Federal declaration thresholds. If the County were to utilize this GIS-based solution, all damage assessment information can be obtained and uploaded into GIS for mapping purposes. Additionally, a database is created to monitor field assessments, determine whether damage costs exceed State or Federal declaration threshold, and ultimately assist with the prioritizing of mitigation projects for areas severely affected by flooding. **Project:** Utilize GIS-based solutions, such as ESRI Damage Assessment or Survey123, for data collection. This software can be utilized for damage assessments as well as completing FEMA project worksheets and ICS forms. All information is useful in determining mitigation project needs. *2023 Update: The HMPC has identified the need to expand this project to have GIS solutions utilized as the primary resource for lists of repetitive*

MITIGATION PROJECT D	
	loss, damage assessment, photos, damage assessment reports, and other related data such as high water marks from field observations. All information associated with any man-made or natural hazard would be added to managed, and then soured from a GIS layer. This GIS database could be cross-referenced with all other GIS data.
Responsible Entity:	Allegany County Geographic Information Systems Office (Jerrod Cook, County Floodplain Management)
Partners:	Allegany County Department of Emergency Services, Datamark GIS Data Services, Director of Department of Planning and Zoning, Department of Public Works, County Employees (to manage and utilize the database).
Cost Estimate:	Cost is needs and software dependent. For example, Survey123 can be purchased separately or bundled with existing ESRI subscription. Damage Assessments and database management: annual operating budget (staff time).
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) • Hazard Mitigation Grant Program (HMGP) • County in-kind resources • Cooperating Technical Partners
Benefits (Losses Avoided):	GIS solutions as described in this project can help the County monitor geospatial changes over time to hazard areas, land use, population density, infrastructure conditions, and natural resources. Localities can be more prepared in the future and can communicate emergency and hazard mitigation information to the public more effectively.
Ideas for Integration:	As the GIS database is built over time, multiple departments within the County can conduct comprehensive assessments, identify patterns, and make more well-informed decisions. Data integration improves overall efficiency in data management and information sharing.
Timeline:	Action Items LPR-4&5: Short-term (1-3 year), SIP-6: Long-term (5+ years)
Associated Goals	Goal 1, Objective 1.3 and 1.4 Goal 2, Objective 2.3 Goal 4, Objective 4.1 Goal 5, Objective 5.1 Goal 6, Objective 6.1, 6.3, 6.4, 6.5

MITIGATION PROJECT E	
Project Title:	**Essential Facilities Flood Mitigation**
Hazard(s):	Flood, Winter Storm
Mitigation Category:	Structure and Infrastructure
Location(s):	Essential Facilities identified in the project.
Action Item(s):	SIP-2: CRS Acquire/demolish and relocate the following Fire Departments that have been identified by the FEMA HAZUS Model as susceptible to first floor flooding. Fire Departments include: Corriganville VFC, Midland Fire Company, Potomac Fire Company and Baltimore Pike VFC. SIP-3: CRS Review the following schools for flooding susceptibility. These schools have been identified by the FEMA HAZUS Model as being susceptible to first floor flooding. The schools include: Calvary Christian Academy and Flintstone Elementary. SIP-12: For the eight (8) essential facilities listed as having a high vulnerability in the risk assessment and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed.
Project Discussion:	According to the Flood Protection for Critical and Essential Facilities, FEMA 2016 (Iowa Floods of 2016 Recovery Advisory), in numerous instances, critical facilities could not function because essential equipment was placed in basements, sub-basements, or ground floor levels that flooded. In some cases, components of essential systems were elevated well above the floodwaters, while other critical system elements (transformers, transfer switches, fuel tanks, pumps, etc.) were placed at lower levels and therefore were vulnerable to flooding. When those vulnerable critical elements failed, the systems were rendered inoperative, and the functionality of the critical facilities suffered as a result. Furthermore, a critical facility should not be located in a floodplain if at all possible. If a critical facility must be located in a floodplain it should be provided with a higher level of protection (i.e., mitigation) so that it can continue to function and provide services after the flood. Following the review and analysis of information presented herein, flood hazard impacts to Allegany County and its communities is the loss of essential facilities, which would be felt community wide. As such, essential facilities that were found to be at-risk to the 1 percent-annual-chance flood event during the development of the plan are priorities for hazard mitigation. Results from the analysis indicate eight (8) essential facilities are at risk. These facilities include six (6) fire stations and two (2) schools. In order to further assess the flood risk to these essential facilities, the depth of flooding was determined using each structure's lowest adjacent grade, depth of flooding from FEMA flood model, and the digital elevation model. Two (2) facilities, Flintstone Elementary School and Calvary Christian

<table>
<tr><th colspan="2">MITIGATION PROJECT E</th></tr>
<tr><td></td><td>Academy, were determined to a have a flood depth exceeding 5 feet of water. Flood depths for each facility are provided below along with the identified facilities.

• Tri Towns Rescue Squad – 2.4’
• Potomac Fire Company #2 – 2.0’
• Corriganville Volunteer Fire Department – 3.8’
*2023 Update: The Corriganville VFC has been successfully encouraged to build any additional structures that store equipment and supplies at another location to prevent flood related losses.
• Georges Creek Ambulance Service – 4.1’
• Midland Fire Company – 1.5’
• Baltimore Pike Volunteer Fire Department – 1.1’
*2023 Update: This VFC has made substantial improvement to the building in the floodplain. The entire building now meets current floodplain regulations specific to elevation and flood proofing.
• Flintstone Elementary School – 5.9’
• Calvary Christian Academy – 7.1’

*2023 Update: Acquiring and demolishing the identified fire departments has been a topic of conversation. As fire departments have been seeking permits and minor improvements County offices have helped them mitigate potential loss and become compliant with current floodplain regulations.

 
Calvary Christian Academy after the June 2014 flood event.

Each of the listed schools have been evaluated in a meeting by the Department of Public Works and Planning and Zoning to gauge whether or not they would be viable candidates for project action. In conducting these meetings, projects eligible for grant money and the value of the impact were both considered. These projects are a mix of both public and private interest that have lasting value.

Project: Via the completion of a technical report, provide information and recommendations to improve the functionality of identified essential facilities by reducing the vulnerability of essential systems, equipment, and the overall facility to flooding.</td></tr>
<tr><td>Responsible Entity:</td><td>Land Development Services</td></tr>
</table>

MITIGATION PROJECT E	
Partners:	Department of Public Works, Planning Services, Department of Emergency Services
Cost Estimate:	TBD – cost of projects would be dependent upon the site and type of mitigation action required.
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) • Hazard Mitigation Grant Program (HMGP) • FEMA Pre-Disaster Mitigation Grant Program
Benefits (Losses Avoided):	• This project would strengthen essential facilities identified herein by making them less susceptible to flooding. • CRS credit can be earned for completing/progressing SIP-2 and SIP-3 action items.
Ideas for Integration:	The results from the suggested technical report and recommendations, including the BCA, can be used for grant applications. Future hazard mitigation plan updates can build on information included in the technical report to update existing or develop new mitigation projects.
Timeline:	Long-term (5 years)
Associated Goals	Goal 2, Objective 2.3 Goal 5, Objective 5.1, 5.4 Goal 6, Objective 6.1, 6.2, 6.3, 6.4 Goal 7, Objective 7.1

MITIGATION PROJECT F (HIGH PRIORITY)	
Project Title:	**Pump Station Generators**
Hazard(s):	Flood, Winter Storm, Severe Weather, Tornado
Mitigation Category:	Structure and Infrastructure
Location(s):	Allegany County; specifically, the pump station's locations identified in the project below.
Action Item(s):	SIP-5: Prioritize the following water Pump Stations (PS) in need of a generator: Rolling Oaks PS and Homewood PS (Corriganville/Ellerslie). Apply for grant funding to purchase and install a generator that ensures continued power at these water pump stations. Continue identifying new pump stations in need of upgrades for the future.
Project Discussion:	According to the Allegany County Department of Public Works, the following water pump stations need generators to ensure service during power outages. Loss of electricity quickly becomes a major challenge during natural disasters and could raise public health concerns. Without backup power for an extended period, many water and wastewater services cannot be provided. However, as demonstrated during incidents such as flood events and winter storms, not all utilities are prepared to get their systems operational again. A generator that is a stand-alone project can be considered for regular Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) funding if the generator protects a critical facility. Critical facilities may include water and sewer treatment facilities. A generator that is a component of a larger project (e.g., elevation of a pump station) is also eligible for regular HMGP funding and the use of aggregation is permitted. Portable generators are eligible provided that they meet all HMGP requirements as described in 44 CFR Section 206.434. Water pump stations in need of a generator are: 1. Rolling Oaks Pump Station 2. Cresaptown Pump Station 3. Homewood Pump Station (Corriganville/ Ellerslie)  **Generator Example** **Project:** Assess each pump station identified to determine the electrical equipment needs, and determine the voltage, phase configuration, and horsepower/ amperage requirements. Apply for grant funding to purchase and install an emergency generator that meets the

MITIGATION PROJECT F (HIGH PRIORITY)	
	needs of the community. **2023 Update: Bowling Green Sewer PS was completed. Rolling Oaks Water Booster was completed. Cresaptown Sewer PS was completed. Projects are completed as funding is approved. All the other pump stations have the connection for a portable generator to be utilized.*
Responsible Entity:	Allegany County Department of Public Works
Partners:	Allegany County Department of Emergency Services
Cost Estimate:	TBD.
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) • Hazard Mitigation Grant Program (HMGP) • FEMA Pre-Disaster Mitigation Grant Program
Benefits (Losses Avoided):	• Project would help ensure continuity of critical services. • Improves reliability of pumping stations during an emergency
Timeline:	Short term (1-2 years)
Associated Goals	Goal 5, Objective 5.1, 5.4 Goal 6, Objective 6.1, 6.2, 6.4 Goal 9, Objective 9.4

MITIGATION PROJECT G (HIGH PRIORITY)	
Project Title:	**Conduct Updated Commodity Flow Study**
Hazard(s):	HazMat Transportation, Rail Accident
Mitigation Category:	Local Planning and Regulation
Location(s):	Allegany County (specifically major transportation networks entering and exiting the County, e.g., I-68. Route 51, or U.S. Route 220)
Action Item(s):	LPR-8: Conduct a new Hazardous Materials Commodity Flow Study as an update to the last study completed in 2014.
Project Discussion:	As a result of the increasing concern of hazardous material transportation by way of truck, a number of local jurisdictions have chosen to undertake Hazardous Materials Commodity Flow Studies to provide their local emergency services and LEPC with a better understanding of the type of hazardous materials and associated volumes traveling by truck through their communities. A hazardous materials commodity flow study is an analysis of the hazardous goods that are moving through a particular area. **Project:** Conduct an update to the 2014 Hazardous Material Commodity Flow Study conducted for Allegany County, which was completed for points along roadways with the highest Annual Average Daily Traffic (AADT) in Allegany County: I-68 and MD 51. This study would provide an updated view of the amount and types of hazmat traveling via truck throughout the County on a daily basis on these routes. Such a study would be helpful to the Department of Emergency Services in preparing for future incidents. Following the completion of the Commodity Flow Study, targeted planning efforts may be undertaken by the County's Emergency Services Department to train and exercise in preparation of events that may occur based on the types of hazardous materials most commonly identified in the Commodity Flow Study.
Responsible Entity:	Allegany County Department of Emergency Services
Partners:	Local Emergency Planning Committee
Cost Estimate:	$10,000 to $15,000; total cost will increase as the number of monitored sites increases.
Potential Funding:	• Hazardous Materials Emergency Preparedness (HMEP) Grant • Community Safety (CS) Grant • Other grants as part of the Hazardous Materials Grants Program
Benefits (Losses Avoided):	Results from the CFS can inform future training exercises. For example, the CFS may identify "hazardous materials of greatest concern", which are materials that are considered dangerous and frequently transported throughout the County. Exercises that utilize these results can lead to more effective training for emergency responders. The commodity flow study may also help identify a need for additional resources to increase the County's level of preparedness.
Ideas for Integration:	Results of the Commodity Flow Study could be integrated into: Hazardous Materials Response Plan, future hazmat raining exercises, and future

MITIGATION PROJECT G (HIGH PRIORITY)	
	updates to the Hazard Mitigation Plan.
Timeline:	Short-term (1 year or less)
Associated Goals	Goal 1, Objective 1.5 Goal 6, Objective 6.1, 6.4 Goal 9

MITIGATION PROJECT H	
Project Title:	**Development of Small-scale Microgrid Projects for City of Frostburg**
Hazard(s):	Severe Weather, Winter Storm, Tornado, Flood (hazards that potentially impact power utilities)
Mitigation Category:	Local Planning and Regulations, Structure and Infrastructure projects
Location(s):	City of Frostburg
Action Item(s):	LPR-13: Protect critical infrastructure from power outages via the development of a microgrid system in the City of Frostburg.
Project Discussion:	Microgrids improve electric reliability, decrease energy costs and act as a climate change solution. Microgrids keep power flowing during an outage by disconnecting from the grid (i.e., "islanding"). The microgrid system's controller seamlessly switches from grid power to the microgrid's local power sources when it senses an outage. Solar, generators, battery energy storage or the microgrid's other distributed energy sources then serve its customers until the grid's power is restored. In addition to providing reliability, a microgrid provides its customers with energy resilience by avoiding power outages in the first place, or quickly recovering if they do occur. In the case of an outage, the microgrid can be programmed to restore power to an entire facility, or just the most critical components. Once grid power is restored, the facility can resume normal operations more quickly because it did not have to shut down completely. **Project:** The City of Frostburg is interested in developing solar microgrids with battery backup at critical infrastructure points within the City, including at the Police Department, Street Department (snow and equipment access), Water Treatment Plant, and Community Center (used as an emergency shelter or warming/cooling center). As of 2022, Frostburg State University has received $750,000 in grant funding to build a clean energy microgrid and emergency shelter. The City should complete a feasibility study as a crucial pre-construction planning effort.
Responsible Entity:	City of Frostburg
Partners:	Maryland Energy Administration (MEA), Optimize Renewables (private partner), Frostburg State University, and potential municipal partners such as the City of Cumberland.
Cost Estimate:	$7 million for the City of Frostburg.
Potential Funding:	• Maryland Energy Administration Resilient Maryland Development RMCD Program • Microgrid Resiliency Grant • Private finances
Benefits (Losses Avoided):	• Power to critical infrastructure stays on during an outage • Ability to integrate renewable resources into the grid (i.e., solar) • Increases overall resilience of a community
Ideas for Integration:	New critical infrastructure in the City of Frostburg can be added into the microgrid in the future, after initial sites are set up. Additionally, other municipalities may be interested in replicating this project following (or

MITIGATION PROJECT H	
	even alongside) the lead of the City of Frostburg.
Timeline:	Mid-term (3-5 years)
Associated Goals	Goal 2, Objective 2.2 Goal 4, Objective 4.3 Goal 5, Objective 5.4 Goal 6, Objective 6.1, 6.2, 6.4 Goal 9, Objective 9.4

MITIGATION PROJECT I (HIGH PRIORITY)	
Project Title:	**County-Municipal Workshop: Roles and Resources in Emergency Management**
Hazard(s):	All-hazards
Mitigation Category:	Local Planning and Regulations
Location(s):	Allegany County, Municipalities
Action Item(s):	LPR-14: Development of a County-Municipal workshop to provide an overview of the roles of local government in emergency management. FEMA staff could be invited to present information from the Local Elected and Appointed Officials Guide: Roles and Resources in Emergency Management or other relevant guides.
Project Discussion:	Municipalities have identified a need for increased understanding of the roles and responsibilities of all levels of local government during and after a hazard or disaster event occurs. The workshop should serve to identify the roles of the County and municipal staff in emergency management, including the expectations of responsibilities during and after a hazard event as identified in this plan. Topics of the workshop should include, but are not limited to: • Who steps up when disaster strikes? • Leading before, during, and after disasters • Disaster assistance and mutual aid • Current plans and procedures in place
Responsible Entity:	Department of Emergency Services
Partners:	All Municipalities, local MDEM and FEMA staff representation, County Department Heads, Police and Fire Departments
Cost Estimate:	This workshop would be a staff training exercise; therefore, staff time would need to be determined individually for each department or representative in attendance.
Potential Funding:	N/A.
Benefits (Losses Avoided):	• Increased understanding of responsibilities of different local government entities during and after a hazard event. • Strengthens existing cooperation between levels of government.
Ideas for Integration:	This workshop can be built upon or modified to suit different needs and then repeated in the future, if desired.
Timeline:	Short-term (1-3 years)
Associated Goals	Goal 1, Objectives 1.1, 1.2 Goal 2, Objectives 2.1 Goal 3, Objectives 3.1, 3.2, 3.3

MITIGATION PROJECT J (HIGH PRIORITY)	
Project Title:	**Enhance Mobile Message Boards for Deployment in All-Hazards**
Hazard(s):	Flood, Dam Failure, Severe Weather, All Hazards
Mitigation Category:	Education and Awareness Projects
Location(s):	Allegany County and Municipalities (all)
Action Item(s):	EA-3: Obtain and strategically deploy signage for community awareness during all-hazard events. This signage may include flood warning signs with or without flashing lights. Consider, to the extent possible, investing in mobile electronic signage that can be deployed before, during, or after a hazard event in high-visibility areas.
Project Discussion:	Mobile variable message boards, or portable traffic message boards, are useful for communicating hazard information to residents and visitors of Allegany County. The signs are designed to be mobile and can be deployed within specific communities in anticipation of a hazard event, or after a hazard event. Many systems are solar operated, custom pre-programmable, and are designed to be transported easily.  Electronic messaging serves multiple purposes, primarily of which: it is eye-catching, it can serve multiple purposes (remotely programmable), and it is transportable (on wheels). While existing message boards can be utilized to their fullest capacity by enabling messaging for all hazards, considerations could be made to acquire more electronic message boards if required. **Project:** Fully utilize current dynamic messaging signs capabilities with MDOT SHA and municipal partners by ensuring existing signage is used to the greatest extent possible to notify the public of hazard events (e.g., conveying information related to heat and drought, winter weather advisories, and wildfire risk). Further expand upon this capability by investing in new mobile digital signage for use throughout the County.
Responsible Entity:	County Roads: Allegany County Roads Division, State Roads: Maryland Department of Transportation SHA
Partners:	Emergency Services, Municipalities, Fire Departments, Police Departments
Cost Estimate:	Utilizing existing electronic message boards for all-hazards would cost time and effort. The cost of new matrix message boards (as pictured above) varies on size and functionality, but generally average around $15,000 per unit, not including upgrades.
Potential Funding:	Hazard Mitigation Assistance Program (HMGP), Building Resilient Infrastructure and Communities (BRIC).

MITIGATION PROJECT J (HIGH PRIORITY)	
Benefits (Losses Avoided):	• Increased community awareness of hazard conditions (both before and after) • Alerts travelers of hazardous conditions, who may not see emergency notifications on their phones while driving. • Utilization of existing electronic signs (portable or stationary) makes good use of resources and is therefore cost effective
Ideas for Integration:	• Existing signage can be deployed for hazard mitigation purposes, which is cost effective. • Investment in new mobile messaging system provides a wide array of uses – more than just emergency notification.
Timeline:	Short-term (1-3 years)
Associated Goals	Goal 2, Objective 2.1 Goal 4, Objective 4.2 and 4.8

MITIGATION PROJECT K (HIGH PRIORITY)	
Project Title:	**Update the County's Vulnerable Population Plan**
Hazard(s):	Emerging Infectious Diseases, All-hazards
Mitigation Category:	Education and Awareness Programs, Local Planning and Regulations
Location(s):	Allegany County
Action Item(s):	EA-4: Work with the Allegany County Health Department and existing health equity groups to identify vulnerable populations via an update to the *Vulnerable Populations Plan* completed by the Health Department in 2014. EAP-5: Assist vulnerable populations from the impacts of extreme temperatures. Utilize results of the Vulnerable Populations Plan to engage with the populations most at-risk to impacts from extreme temperatures, such as power outages and extreme cold. a) Ensure that vulnerable populations are aware of warming centers available in the County by targeting vulnerable pops with flyers or mailers. b) Coordinate with County and Municipal departments and partners who already work with vulnerable populations in the realm of health. c) Educate on personal preparedness and safety measures taken during a hazard event.
Project Discussion:	Identifying at-risk vulnerable populations prior to a hazard event is critical in reducing risk to these populations. Generally, vulnerable populations are often considered to be the old and the young, due to the increased health or mobility issues. However, other factors such one's level of income and ability to access to healthcare can also affect a population's vulnerability to hazards.  In 2014, the Allegany County Health Department engaged with dozens of local nonprofits and organizations in an effort to identify the location of vulnerable populations throughout the County and determine their unique needs. The effort led to the development and creation of a Vulnerable Populations Plan, with a focus specific focus on health vulnerabilities. **Project:** As of 2023, the current plan is approaching 10-years of age and should be updated to make use of new data sets that have been released since, such as 2020 U.S. Census data. Additionally, new guidance provided by FEMA specifically relates to expanding access to response, recovery, and resilience programs with respect to race, ethnicity, religion, income, geography, gender identity,

MITIGATION PROJECT K (HIGH PRIORITY)	
	sexual orientation, and/or disability. A vulnerable populations-health equity plan is an ideal planning document to integrate equity and hazard mitigation principles. The CDC identifies strategies for identifying at-risk groups at an individual and population level. At an individual level, suggested phases of plan development include: • Phase 1: Defining At-Risk Groups • Phase 2: Locating At-Risk Groups • Phase 3: Reaching out to At-Risk Groups When identifying vulnerable population at a county-level, it is recommended that the County make use of existing data sets that use well studied indicators of social vulnerability, such as the CDC/ATSDR Social Vulnerability Index. This method utilizes existing data, such as census data to identify locations of vulnerable populations at a county or census tract level.
Responsible Entity:	Allegany County Health Department
Partners:	Department of Emergency Services, local nonprofits and businesses, contactor.
Cost Estimate:	$50,000 or more to update the plan.
Potential Funding:	• Building Resilient Infrastructure and Communities (BRIC) Program. • Public Health Emergency Preparedness Program
Benefits (Losses Avoided):	• Identification of the location and needs of vulnerable populations within Allegany County. • Identification of these groups prior to a hazard incident leads to better served communities and can save lives. • This type of planning often leads to new insight into strengths and weaknesses of the current healthcare system, allowing appropriate changes to be made,
Ideas for Integration:	The database that results from this planning process can be integrated with GIS-based platforms or can be developed with GIS in mind. GIS will allow for mapping and visualization of these populations (note: for official use only). Local planning results can be integrated into future updates of this Hazard Mitigation Plan.
Timeline:	Mid-term (3-5 years)
Associated Goals	Goal 4, Objective 4.2 and 4.7

MITIGATION PROJECT L	
Project Title:	**Promote FEMA Risk Rating 2.0**
Hazard(s):	Flood
Mitigation Category:	Education and Awareness
Location(s):	Allegany County and Municipalities (all)
Action Item(s):	EA-7: CRS Promote FEMA Risk Rating 2.0 to the Public • Understand the community impact of Risk Rating 2.0 and share information with the public to encourage the purchase and/or retention of flood insurance. • Should the County apply for CRS, this action qualifies for CRS credit, which in turn will lower the cost of flood insurance for policyholders in Allegany County.
Project Discussion:	Risk Rating 2.0-Equity in Action delivers rates that more accurately reflect flood risk and ensure that the National Flood Insurance Program (NFIP) will last for generations to come. A major part of FEMA's NFIP transformation is Risk Rating 2.0, which fundamentally changes the way FEMA prices insurance and determines an individual property's flood risk. Risk Rating 2.0 focuses on equity in action, with individuals no longer paying more than their share in flood insurance premiums based on the value of their homes. An estimated two-thirds of policyholders with older pre-FIRM homes will see a premium decrease. With Risk Rating 2.0, FEMA now has the capability and tools to address rating disparities by incorporating more flood risk variables. These include flood frequency, multiple flood types—river overflow, storm surge, coastal erosion, and heavy rainfall and distance to a water source along with property characteristics such as elevation and the cost to rebuild. As of April 1, 2023, FEMA has fully implemented the NFIP's Risk Rating 2.0. NFIP policyholders can contact their insurance company or insurance agent to learn more about what Risk Rating 2.0-Equity in Action means to them. The rating methodology was implemented in phases from Oct. 1, 2021, through April 1, 2023. **Project:** The County and its municipalities should begin an ongoing outreach effort to promote Risk Rating 2.0 by including engaging with residents and policy holders on social media and updating the County's website to include a section with Risk Rating 2.0 resources. Resources to promote Risk Rating 2.0 are available from FEMA, including a two-page fact sheet. Additionally, an interactive map has been developed by the Association of State Floodplain Managers and Thew Pew Charitable Trusts that breaks down projected premium changes by state and territory. More data is available at a zip code-level for existing single-family homes and all existing NFIP policies.
Responsible Entity:	Department of Planning and Zoning, Floodplain Management

MITIGATION PROJECT L	
Partners:	Municipalities (all), Department of Emergency Services, NFIP policyholders
Cost Estimate:	There is minimal cost associated with this project beyond regular staff time. Promoting information on social media is free outside of a paid targeted ad campaign. In the case of a paid targeted ad/information campaign, cost is highly variable and dependent upon factors such as the time length of the ad campaign (from start to finish) and projected reach.
Potential Funding:	N/A.
Benefits (Losses Avoided):	• In Maryland 61% of current policy holders will see a decrease in their monthly flood insurance premiums. • Flood insurance premiums will be "fairer" – they now factor in more variables to determine flood risk. • An improved flood risk rating system with lower premiums may attract more policyholders.
Ideas for Integration:	• This outreach activity can be integrated into existing efforts related to flooding or hazard mitigation.
Timeline:	Ongoing (1-5 years)
Associated Goals	Goal 2, Objective 2.1 Goal 4, Objective 4.1, 4.2, 4.3, 4.5, and 4.6

Chapter 18: Plan Maintenance & Implementation

18.1 Plan Review and Adoption

The Disaster Mitigation Act of 2000 requires that local Hazard Mitigation Plans and any updates be formally adopted by the County Commissioners following review by the Maryland Department of Emergency Management (MDEM) and Federal Emergency Management Agency (FEMA). Upon receipt of the FEMA Approved Pending Adoption (APA) letter, the County and municipalities undertook the formal plan adoption process. The County adoption and municipal resolutions are included in the front of the Allegany County Department of Emergency Services official copy of the plan and has been posted on their website.

18.2 Plan Update and Continued Public Involvement

The Disaster Mitigation Act of 2000 requires local Hazard Mitigation Plans to be monitored, evaluated, and updated during a five-year cycle. The Allegany County Planning and Zoning Commission, along with the Local Emergency Planning Committee (LEPC) and Hazard Mitigation Planning Committee (HMPC), will continue to meet on an annual basis during the five-year cycle to monitor and evaluate mitigation projects and to keep the plan current. The LEPC meets quarterly and is open to the public. Meeting announcements are posted on the County website at the beginning of each year. Meetings are also advertised in the local newspaper. Annual status reports will be submitted to the County Commission to update that group on the progress of various mitigation activities. Copies of these reports will be made available to the general public.

The annual status report will detail mitigation activities undertaken over the course of the year and will highlight completed activities. The report will also address the following points:

- Evaluate the goals and objectives to ensure they address current and expected conditions.
- Determine if the nature or magnitude of risk has changed.
- Evaluate whether current resources are adequate for implementing the plan.
- Document any technical, legal or coordination issues.
- Document agency and partner participation along with public involvement.

Copies of the annual status report will be made available to Planning Committee members, local governments, participating agencies and partners and citizens via the Allegany County website: http://www.gov.allconet.org/. Should the HMPC decide, there is the option to maintain the project website www.alleganymdhazards.org and utilize it during the five year planning period for updates and continued public outreach purposes.

The Hazard Mitigation Plan is to be updated and readopted at the end of each five-year cycle. In the event of a significant disaster of any substantial changes in land use or regulations that impact mitigation efforts, more frequent updates may be required. The Allegany County Planning and Zoning Commission and the Emergency Management Director will be responsible for overseeing the update to the Hazard Mitigation Plan. The process used to update the plan should be similar to the procedure used to prepare the original plan. This would also include municipal and citizen involvement.

18.3 Local Plan Integration

Integrating hazard mitigation planning and resiliency into local planning frameworks will lead to development patterns and redevelopment that decreases hazard risk and vulnerability. Local planning documents would benefit from integrating/continuing to integrate components from this hazard mitigation plan within future updates of respective plans.

Allegany County and its municipalities will begin the plan integration process by reviewing their local planning mechanisms and first determining if hazard mitigation planning exists within each. Reviewing Chapter 14: Community Capabilities provides an excellent starting point to review local planning capabilities and identify gaps.

For municipalities working with planning mechanisms that currently include hazard mitigation actions, the goal will be to update or expand what currently exists. For those planning mechanisms where hazard mitigation actions do not currently exist, the goal is to determine where hazard mitigation fits within the document and then integrate that information during the local plan update process.

Integrating hazard mitigation into local comprehensive planning is one important step a local jurisdiction can take towards plan integration and hazard vulnerability reduction. Including hazard mitigation into comprehensive planning demonstrates that municipalities are taking steps to discourage future development in natural hazard areas.

For example, both the County and all seven of its municipalities are due for an update to their comprehensive plans within the next five years. The update process provides a great opportunity to review these documents for hazard mitigation principles and identify areas for integration. Reviewing Chapter 14 is a good place to review the current Comprehensive Plans and identify gaps in hazard mitigation integration.

Municipalities that develop their own comprehensive plans (as identified in Chapter 14 Section 14.4) can integrate elements from this hazard mitigation plan into their respective comprehensive plan updates. Hazard mitigation information from this plan that is relevant to each municipality can be added into the body of an existing element, as a new element, or as

an appendix. Chapters 4 through 13 and Chapter 16 of this plan include natural and man-made hazard profiles and vulnerability and risk analysis that would be useful for comprehensive planning and future land use planning.

The mitigation strategies located in *Chapter 17: Mitigation Strategies* of this plan clearly denote the intended location, and responsible agency for each project. Projects where a municipality is listed as "responsible agency" can be integrated into the goals and objectives of updated comprehensive plans. Additionally, *Chapter 14: Community Capabilities* includes summarized municipal-level information, data, capabilities, and ongoing mitigation projects that can be utilized for integration purposes.

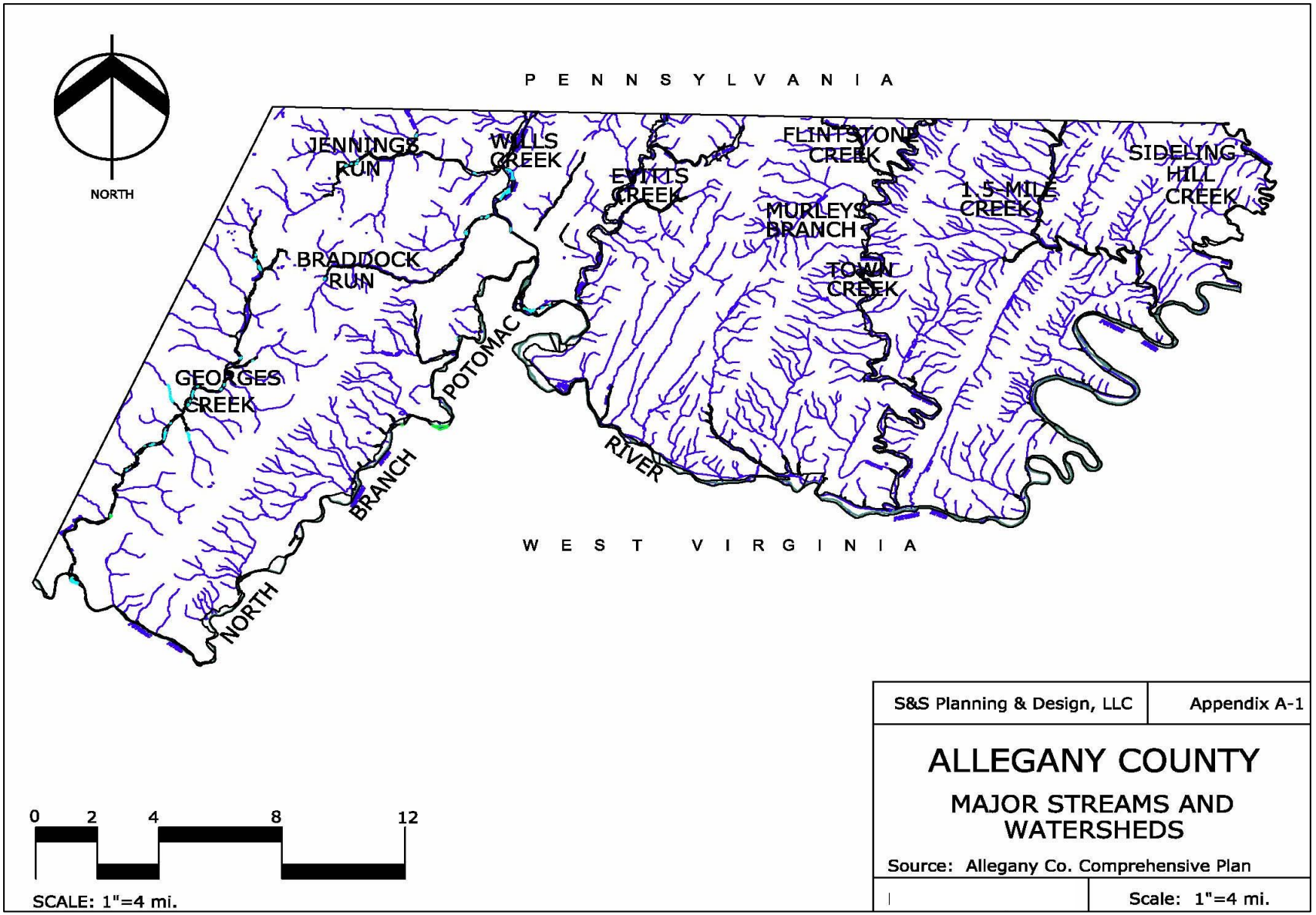
For a complete guide to plan integration, FEMA has created a step-by-step guidebook to aid local communities. The guide is called "Plan Integration: Linking Local Planning Efforts" and was published in July 2015. The guide is available at fema.gov.

18.4 Implementation

The Disaster Mitigation Act of 2000 also requires that the County implement the Plan through existing programs. This can be accomplished through inclusion of mitigation measures in the Comprehensive Plan, the Land Use and Building Codes, the Floodplain Ordinance and through Federal grant programs which are identified in the mitigation strategies chapter. As these documents are updated, reference to the mitigation measures included in the Hazard Mitigation Plan can be amended into various plans and regulations.

Appendix A: Supplemental Plan Figures

List of Figures


NORTH
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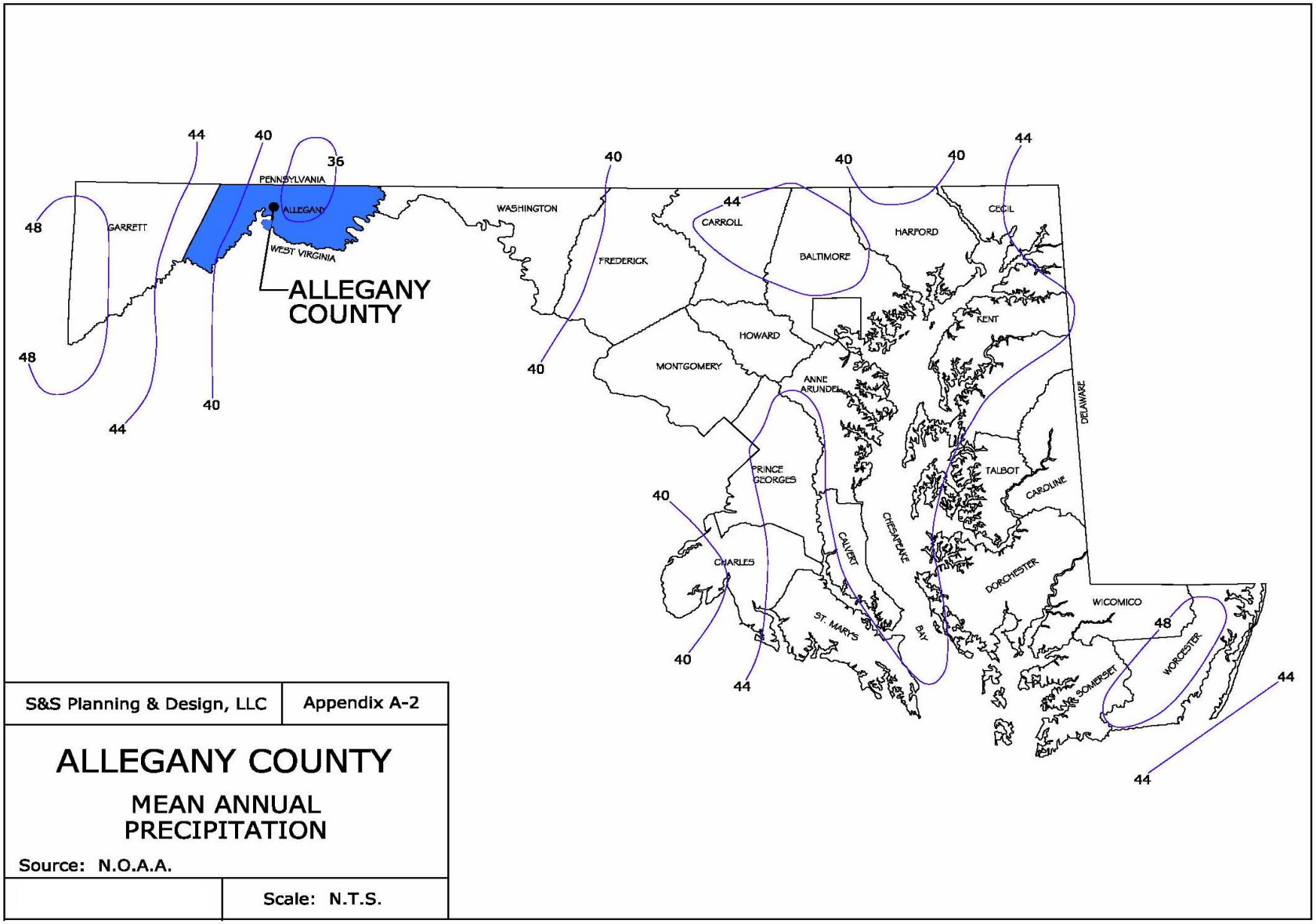
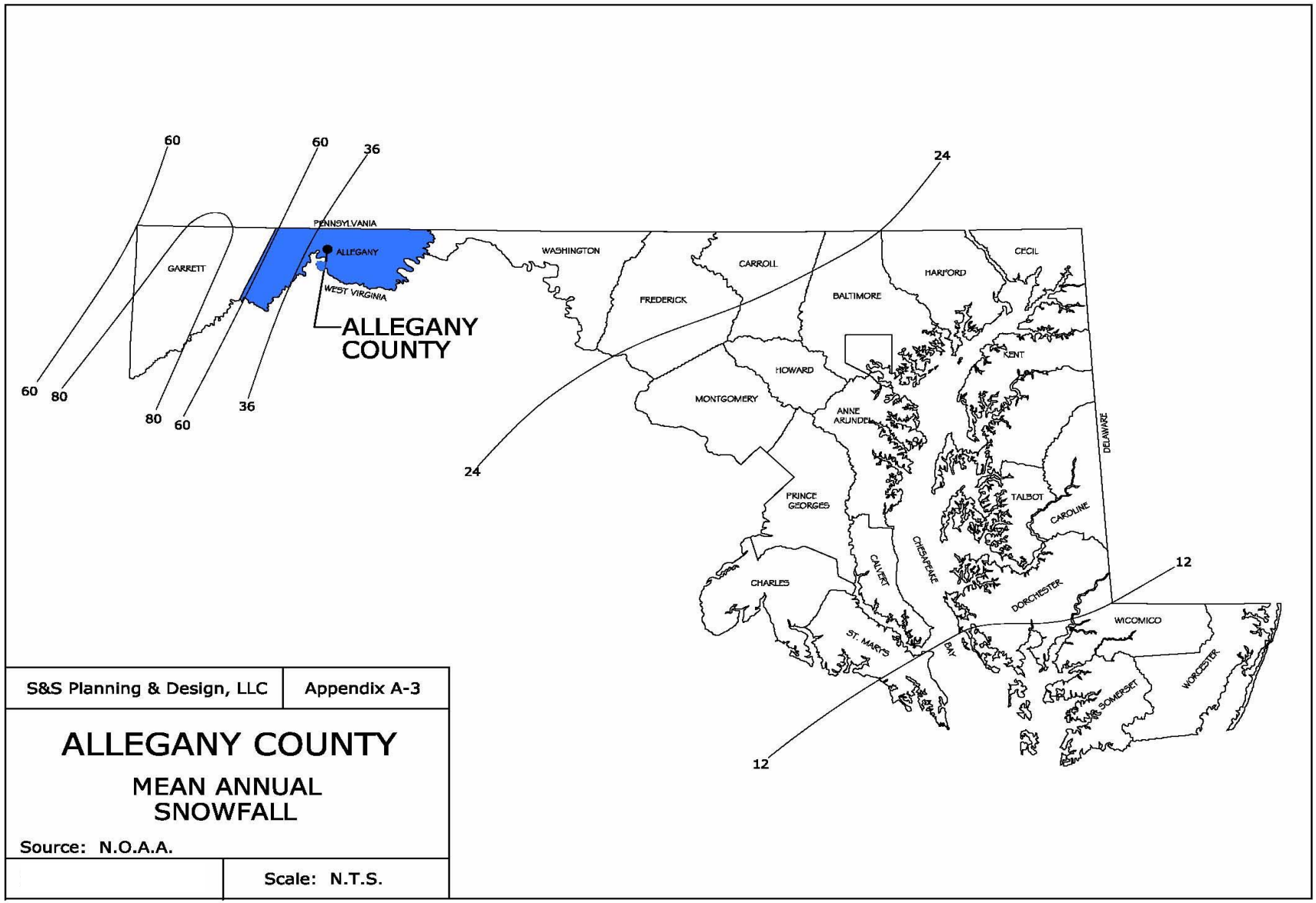
JENNINGS RUN
WILLS CREEK
EVITTS CREEK
FLINTSTONE CREEK
SIDELING HILL CREEK
1.5 MILE CREEK
MURLEYS BRANCH
TOWN CREEK
BRADDOCK RUN
GEORGES CREEK
POTOMAC RIVER
NORTH BRANCH
WEST VIRGINIA
0 2 4 8 12
SCALE: 1"=4 mi.
S&S Planning & Design, LLC
Appendix A-1
ALLEGANY COUNTY
MAJOR STREAMS AND WATERSHEDS
Source: Allegany Co. Comprehensive Plan
Scale: 1"=4 mi.


PENNSYLVANIA
ALLEGANY
WEST VIRGINIA
ALLEGANY COUNTY
GARRETT
WASHINGTON
FREDERICK
CARROLL
BALTIMORE
HARFORD
CECIL
KENT
HOWARD
MONTGOMERY
ANNE ARUNDEL
PRINCE GEORGES
CHARLES
CALVERT
ST. MARYS
CHESAPEAKE BAY
TALBOT
CAROLINE
DORCHESTER
WICOMICO
SOMERSET
WORCESTER
DELAWARE
36
40
44
48
S&S Planning & Design, LLC
Appendix A-2
ALLEGANY COUNTY
MEAN ANNUAL PRECIPITATION
Source: N.O.A.A.
Scale: N.T.S.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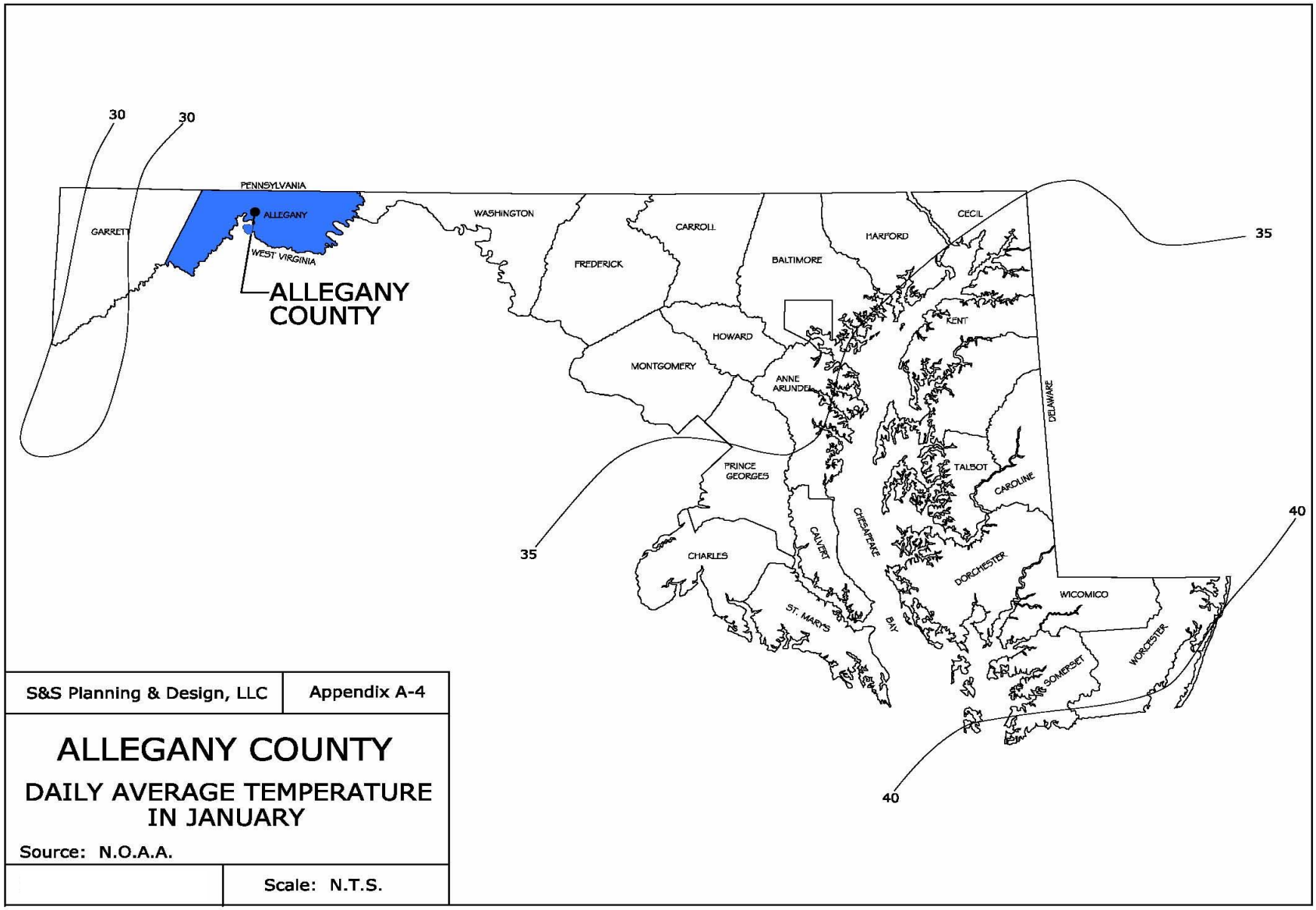
S&S Planning & Design, LLC
Appendix A-3
ALLEGANY COUNTY
MEAN ANNUAL
SNOWFALL
Source: N.O.A.A.
Scale: N.T.S.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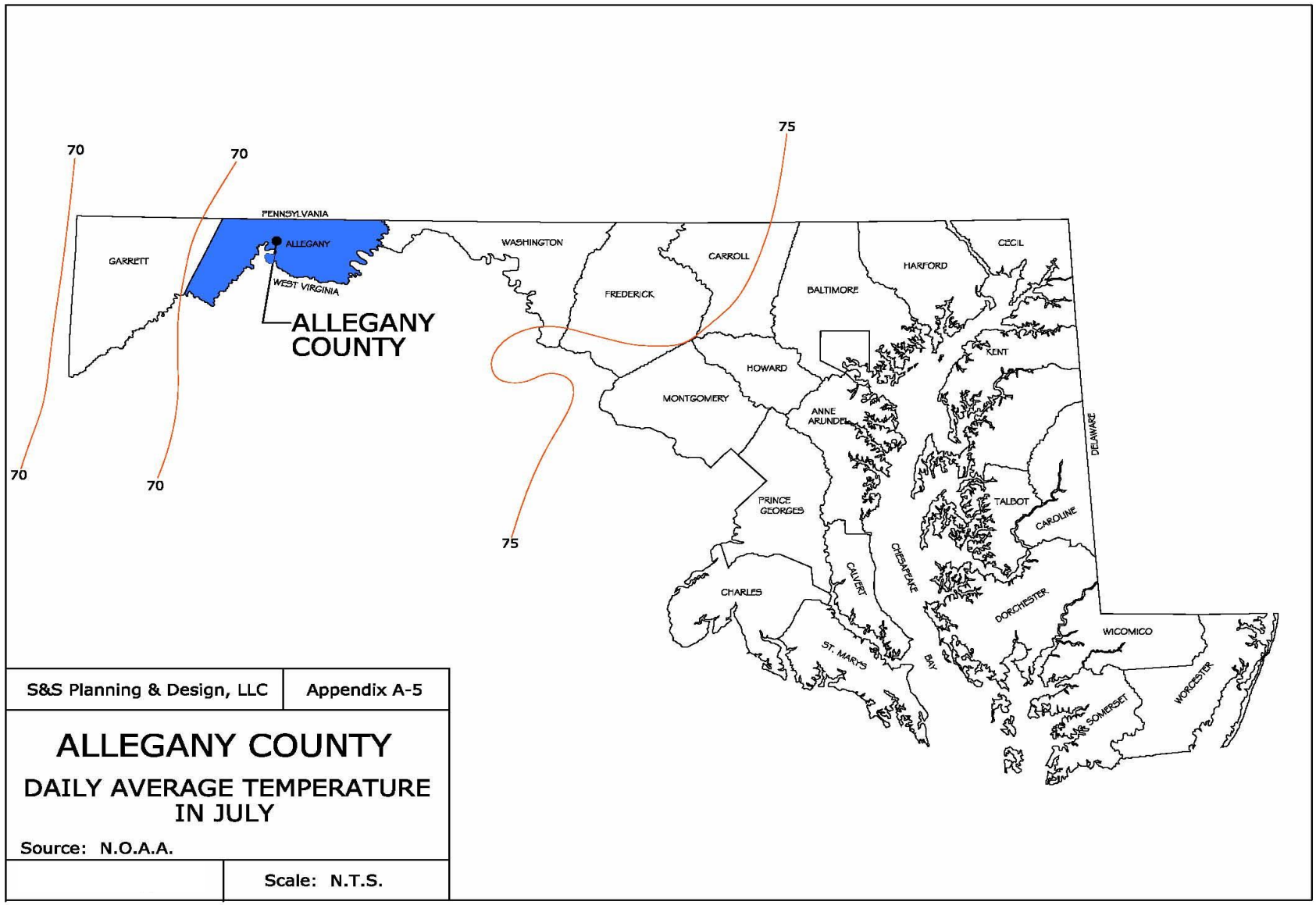
DORCHESTER
WICOMICO
ST. MARYS
BAY
SOMERSET
WORCESTER
40
S&S Planning & Design, LLC
Appendix A-4
ALLEGANY COUNTY
DAILY AVERAGE TEMPERATURE IN JANUARY
Source: N.O.A.A.
Scale: N.T.S.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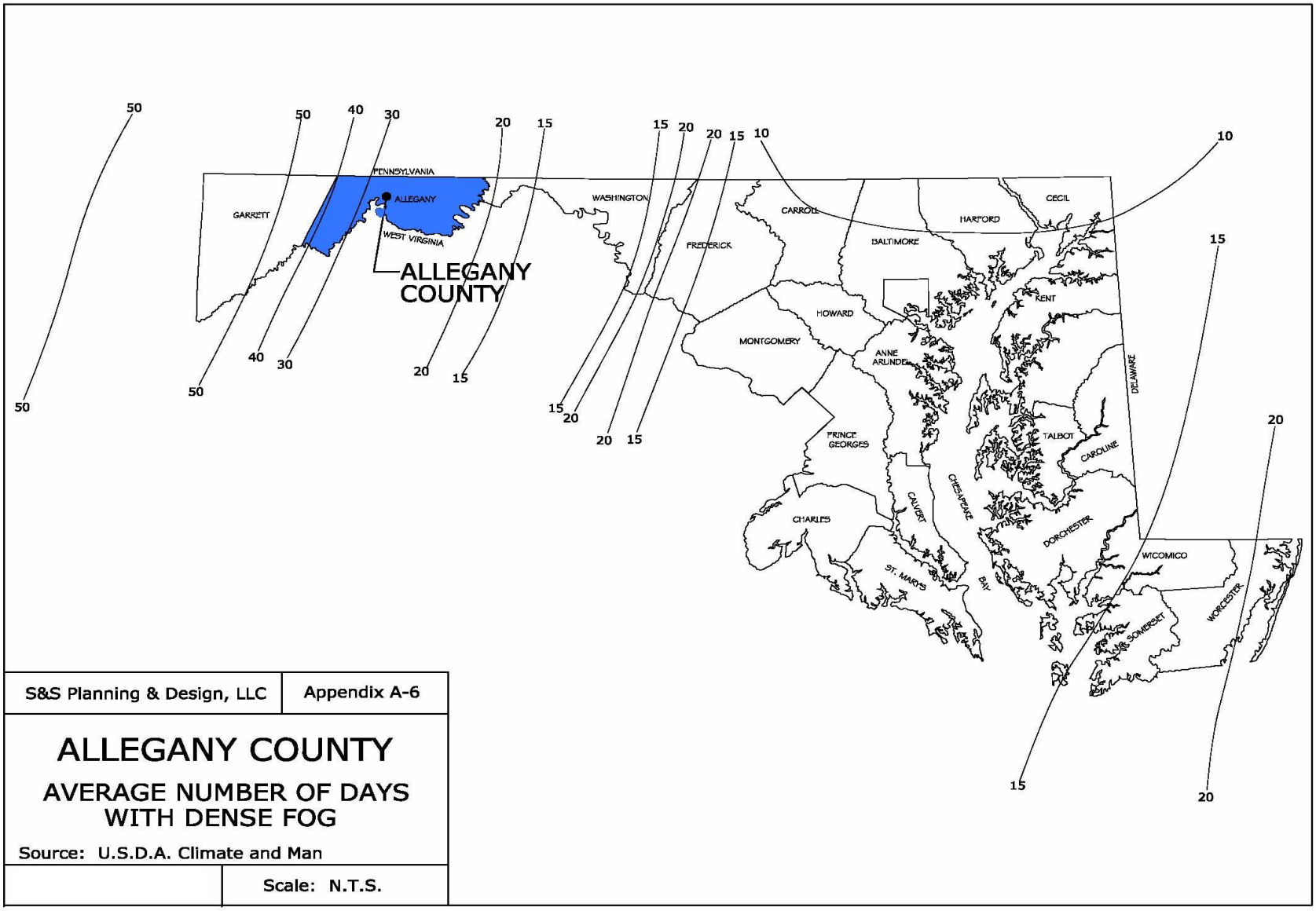
WORCESTER
SOMERSET
S&S Planning & Design, LLC
Appendix A-5
ALLEGANY COUNTY
DAILY AVERAGE TEMPERATURE IN JULY
Source: N.O.A.A.
Scale: N.T.S.



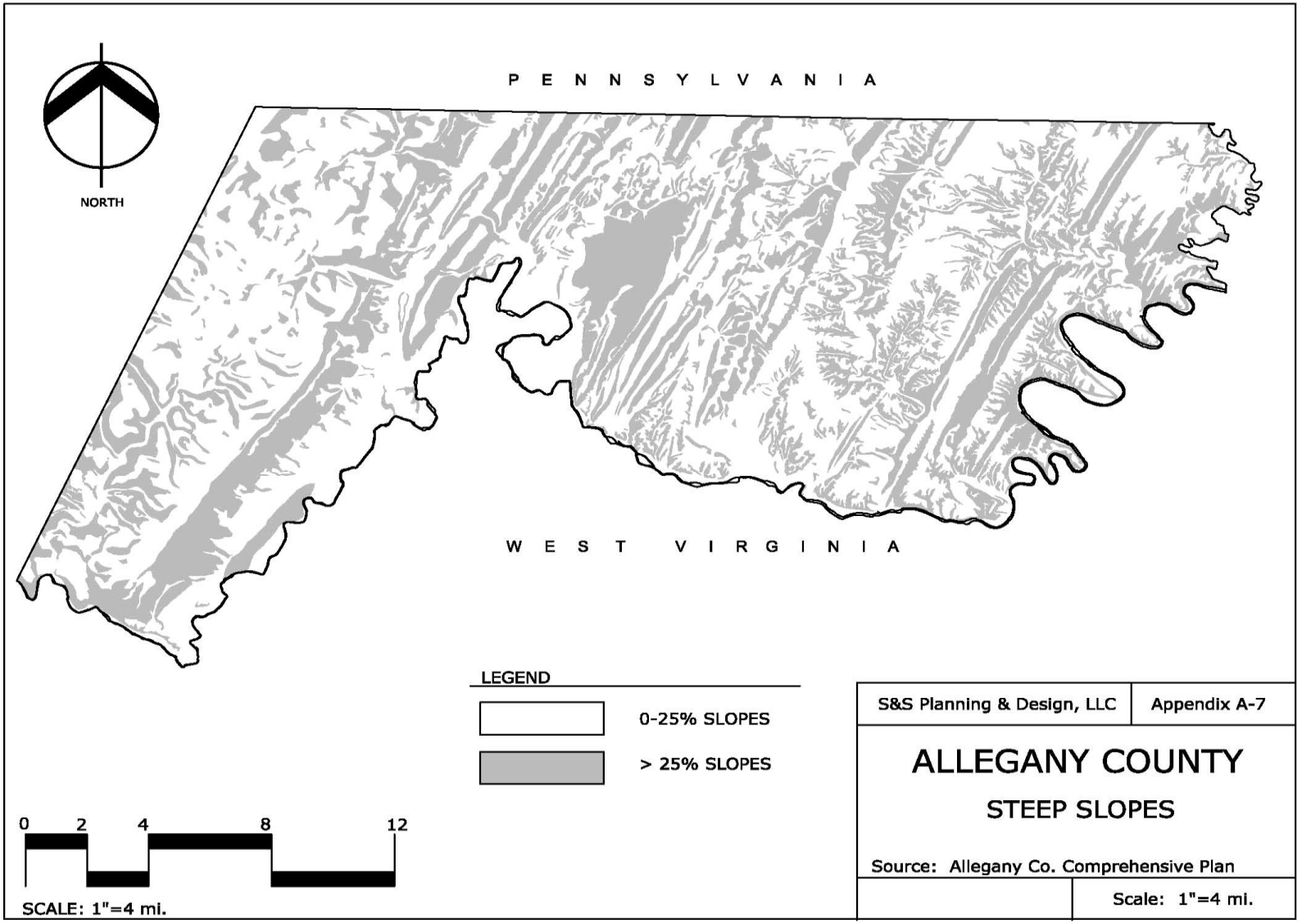
S&S Planning & Design, LLC	Appendix A-6

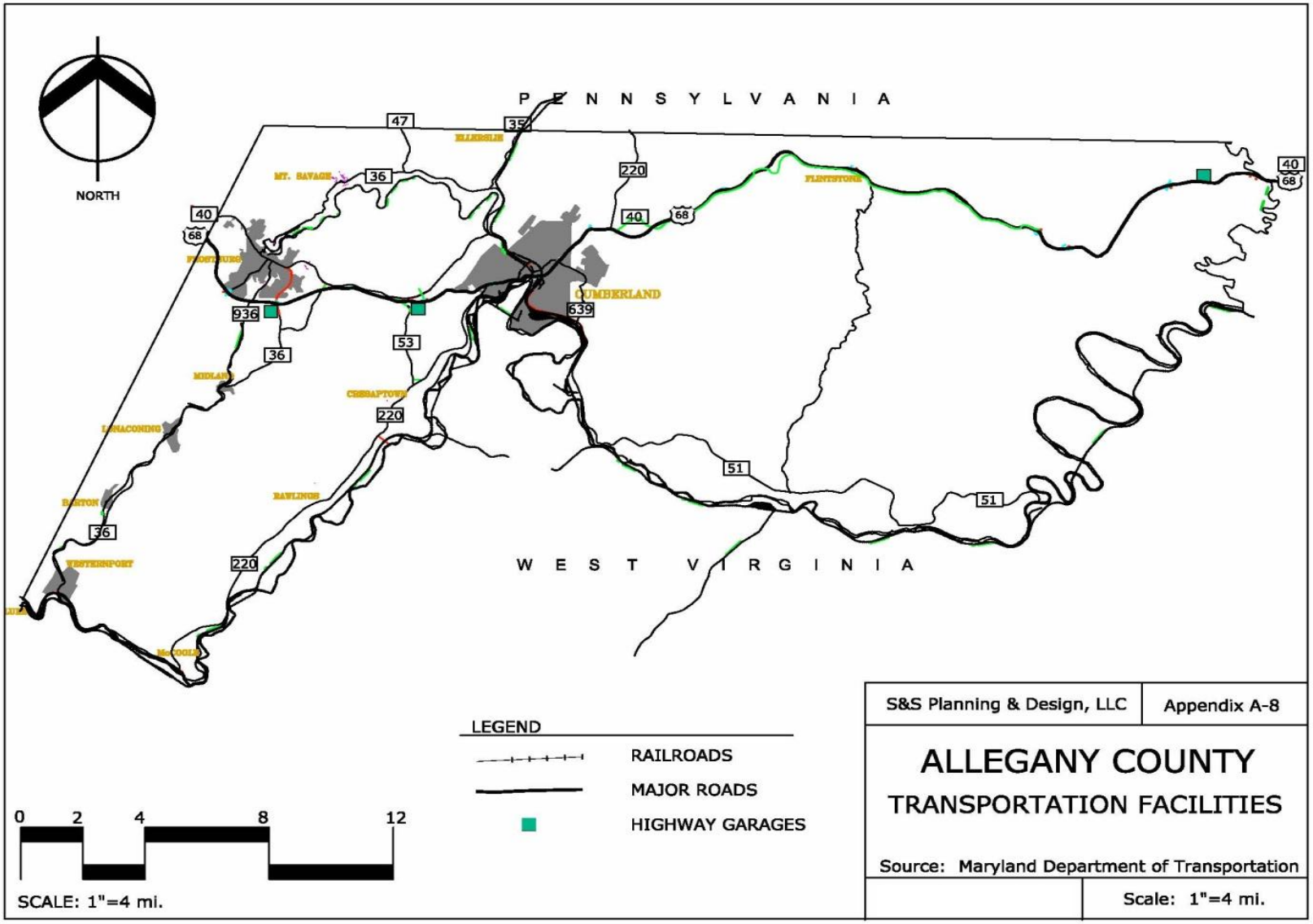
ALLEGANY COUNTY

AVERAGE NUMBER OF DAYS WITH DENSE FOG

Source: U.S.D.A. Climate and Man

Scale: N.T.S.


NORTH
P E N N S Y L V A N I A
W E S T V I R G I N I A
LEGEND
0-25% SLOPES
> 25% SLOPES
0 2 4 8 12
SCALE: 1"=4 mi.
S&S Planning & Design, LLC
Appendix A-7
ALLEGANY COUNTY
STEEP SLOPES
Source: Allegany Co. Comprehensive Plan
Scale: 1"=4 mi.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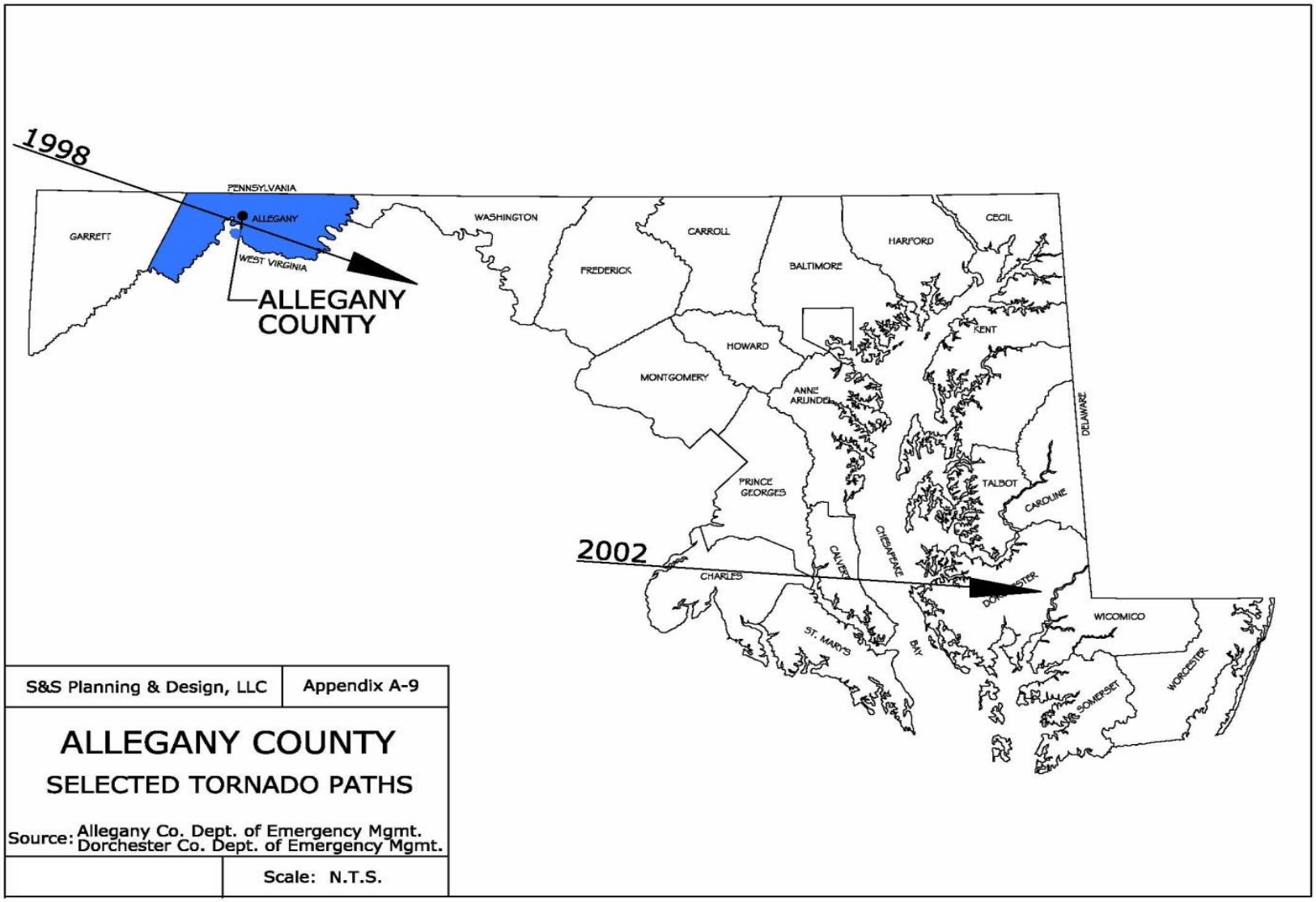
PENNSYLVANIA
WEST VIRGINIA
CUMBERLAND
MT. SAVAGE
ELLERSLIE
FLINTSTONE
MIDLAND
CHESAPTOWN
LONACONING
BARTON
WESTERNPORT
RAWLINGS
47
35
36
40
68
220
936
53
639
51
LEGEND
RAILROADS
MAJOR ROADS
HIGHWAY GARAGES
0 2 4 8 12
SCALE: 1"=4 mi.
S&S Planning & Design, LLC
Appendix A-8
ALLEGANY COUNTY
TRANSPORTATION FACILITIES
Source: Maryland Department of Transportation
Scale: 1"=4 mi.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CAROLINE
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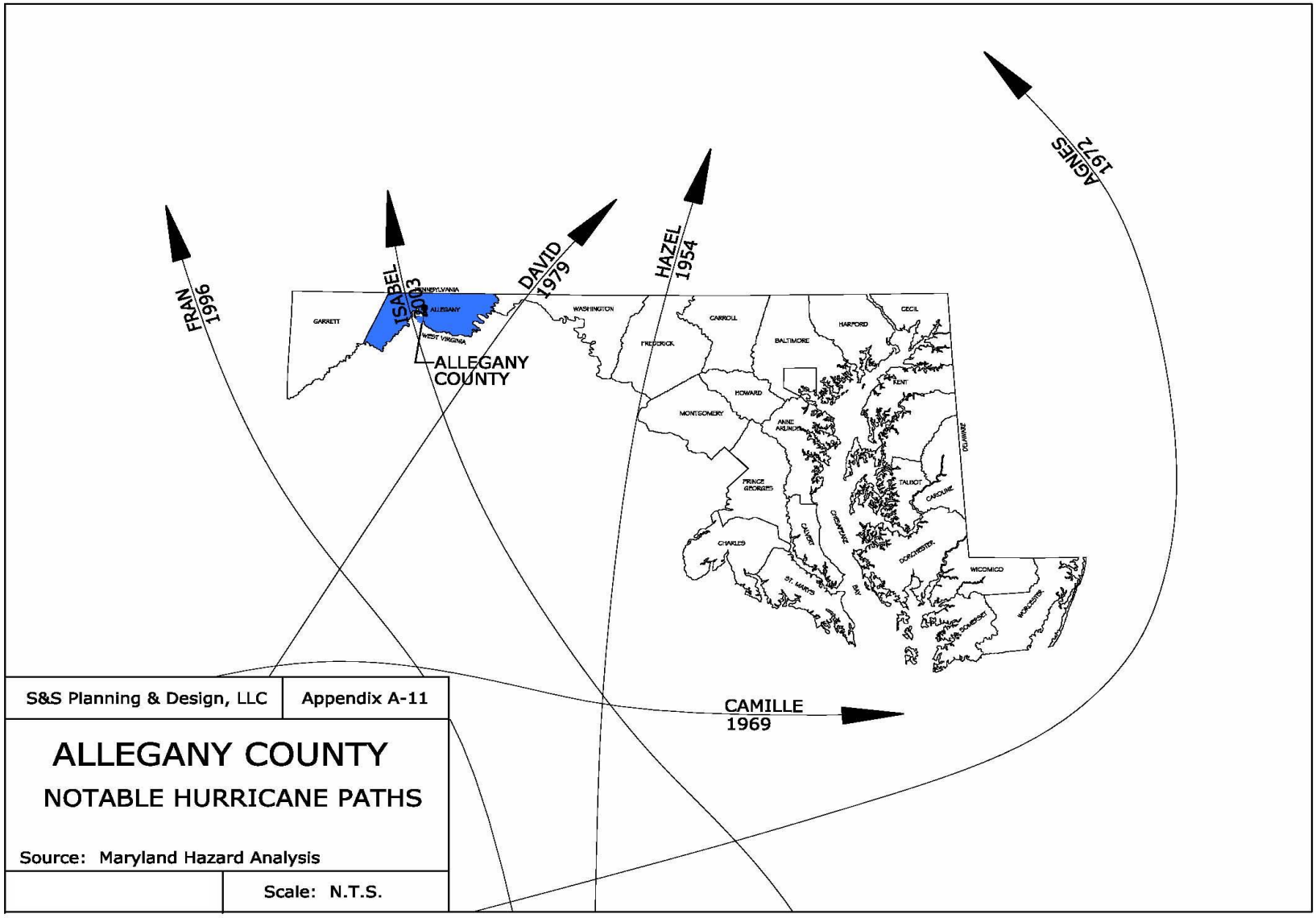
CALVERT
CHESAPEAKE
ST. MARYS
BAY
WICOMICO
SOMERSET
WORCESTER
S&S Planning & Design, LLC
Appendix A-9
ALLEGANY COUNTY
SELECTED TORNADO PATHS
Source: Allegany Co. Dept. of Emergency Mgmt.
Dorchester Co. Dept. of Emergency Mgmt.
Scale: N.T.S.

Hurricane Record

1954 to October 2023

Year	Storm Name	Category
1954	Hazel	4
1959	Gracie	4
1979	David	5
1979	Frederic	4
1994	Beryl	2
1996	Fran	3
2003	Isabel	2
2004	Frances	3
2004	Ivan	3
2012	Sandy	1


FRAN
1996
ISABEL
2003
DAVID
1979
HAZEL
1954
AGNES
1972
CAMILLE
1969
ALLEGANY
COUNTY
GARRETT
ALLEGANY
WASHINGTON
FREDERICK
CARROLL
BALTIMORE
HARFORD
CECIL
KENT
HOWARD
MONTGOMERY
PRINCE GEORGES
CHARLES
CALVERT
ST. MARYS
TALBOT
CAROLINE
DORCHESTER
WICOMICO
WORCESTER
S&S Planning & Design, LLC
Appendix A-11
ALLEGANY COUNTY
NOTABLE HURRICANE PATHS
Source: Maryland Hazard Analysis
Scale: N.T.S.

Allegany County Building Code Requirements

New Construction

Wind Speed	90 MPH
Live Load	40 PSF
Snow Load	40 PSF
Depth of Frost Line	36"
Mobile Home Tie Down	Yes

Floodplain Requirements

First Floor:	1 ft above Base Flood Elevation (BFE)
Utilities:	
Electric Panel Box:	3 ft above BFE
Other Utilities :	1 ft above BFE
Setback:	100 ft from edge of stream bank

ISO Building Code Effectiveness Report: Yes (December 2003) Score - 7

Note: All jurisdictions in Allegany County have adopted the following:

The Maryland Building Performance Standards (MBPS), ref. COMAR §§ 09.12.51 and County CHR Bill 11-07
Allegany County Building Code(2007) - §255 AC Code
The 2006 International Building Code.
The 2006 International Residential Code
The National Electric Code. NFPA Standard # 70
The Allegany County Plumbing Code - §415 AC Code
Floodplain Management Regulations - §325 AC Code
The Maryland Accessibility Code ref. COMAR 09.12.53

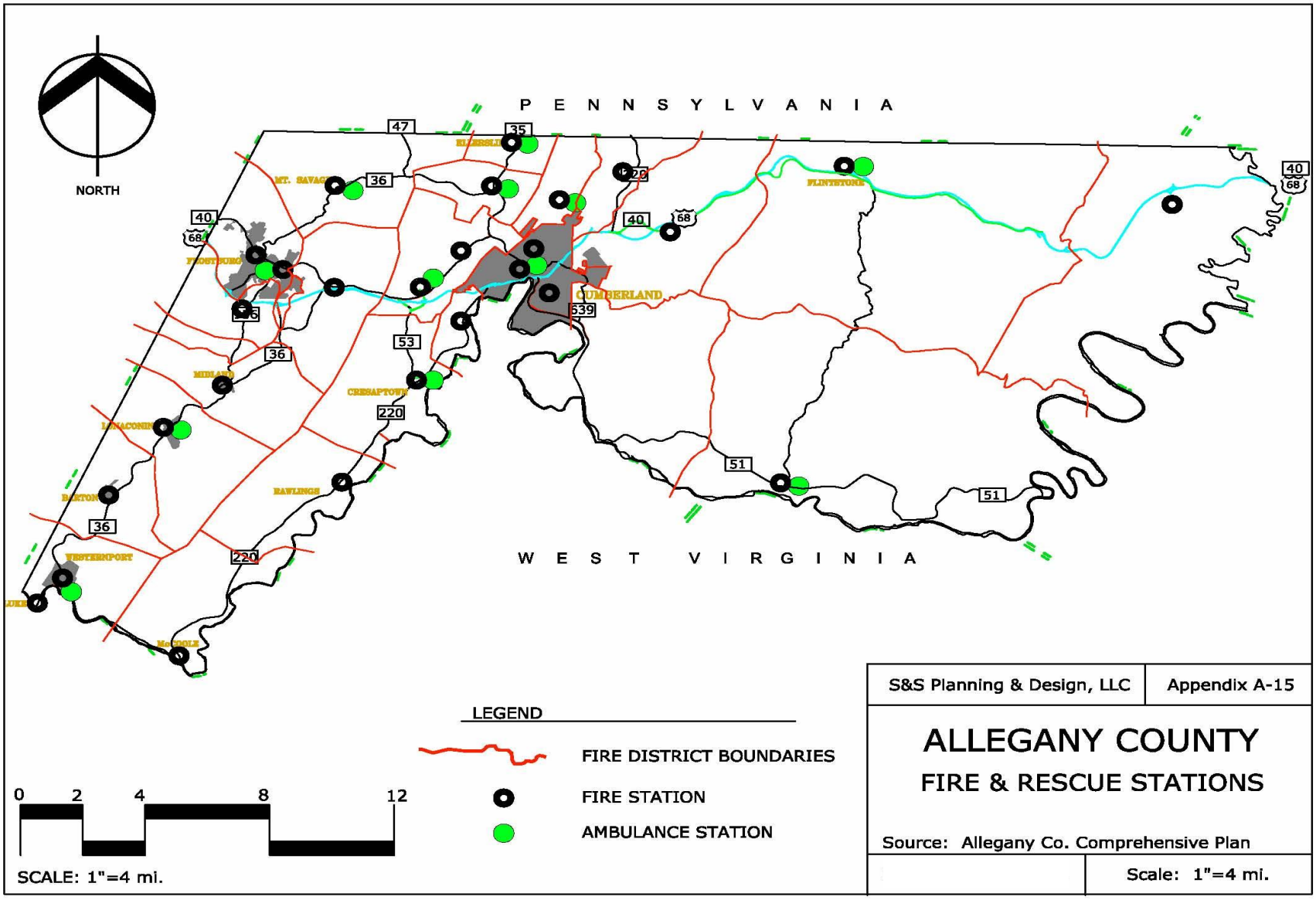
Source: Allegany County Department of Land Development Services

Allegany County Flood Mitigation

Residential Properties Purchased by Region and Municipality

Area	West Region	Frostburg	Midland	Lonaconing	Barton	Westernport	Luke	Cumberland	Central Region	East Region	Total
Locust Grove									28		28
Ellerslie									3		3
Corriganville									3		3
Barrellville	1										1
Grahamtown	1										1
Midland			5								5
Gilmore	10										10
Lonaconing				23							23
Moscow	10										10
Pekin	12										12
Barton					10						10
Mill Run	1										1
Reynolds	2										2
Franklin	1										1
Westernport						32					32
Dawson									1		1
Cresaptown									2		2
Potomac Park									2		2
Bowman's Add.									59		59
Evitt's Creek									18		18
Oldtown										3	3
Total	38		5	23	10	32			116	3	227

Source: Allegany County Department of Land Development Services.


NORTH
P E N N S Y L V A N I A
W E S T V I R G I N I A
CUMBERLAND
MT. SAVAGE
FROSTBURG
MIDLAND
LONACONING
BARTON
WESTERNPORT
CRESAPTOWN
RAVENSDALE
FLINTSTONE
47
35
36
40
68
53
220
51
639
LEGEND
FIRE DISTRICT BOUNDARIES
FIRE STATION
AMBULANCE STATION
0 2 4 8 12
SCALE: 1"=4 mi.
S&S Planning & Design, LLC
Appendix A-15
ALLEGANY COUNTY
FIRE & RESCUE STATIONS
Source: Allegany Co. Comprehensive Plan
Scale: 1"=4 mi.

FEMA Replacement Values

Building Replacement Value/Square Foot	
Occupancy Class	**Total Value per Square Foot ($)**
Single Family Dwelling	77
Mobile Home	52
Multi-Family Dwelling	98
Dormitory	98
Nursing home	89
Retail Trade	67
Wholesale Trade	53
Repair Services	92
Prof/Technical Services	87
Banks	151
Hospitals	145
Medical Office/Clinic	112
Entertainment	131
Theatres	98
Industrial	69
Construction	69
Agriculture	26
Church/Non-Profit	113
General Government	88
Emergency Response	130
Schools	91
College	115
Contents Value	
Occupancy Class	**Contents as Percent of Building Value**
Residential (all types)	50%
Commercial	100%
Hospital/Clinic/Medical Office	150%
Industrial	150%
Construction	100%
Agriculture	100%
Church/Non-Profit	100%
General Government	100%
Emergency Response	150%
Schools	100%
Colleges	150%

Source: FEMA State and Local Mitigation Planning Guide

Appendix B: HMPC Meeting Notes

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Kick-off Meeting
May 18, 2023, 9:00 – 10:00 AM

All members of Allegany County's Hazard Mitigation Planning Committee (HMPC) were invited to the Plan Update Kick-off Meeting. A full list of the HMPC will be made available as an appendix. All HMPC members will receive a copy of these notes. The following members were in attendance:

Note: HMPC member listing is sorted alphabetically by organization/department.

Name	Organization/Department	Position/Title
Carrie Hughes	Allegany County Department of Emergency Services	Emergency Management Chief
Roger Bennett	Allegany County Department of Emergency Services	Deputy Director
Roy S. Cool	Allegany County Department of Planning & Zoning	Transportation Planner
Ken Johnson	Allegany County Human Resources Development Commission	Section 8/WAP Housing Inspector
Ken Rafferty	Allegany County Human Resources Development Commission	Facilities Manager
Robert Ketterman	Frostburg State University	Facilities Planner
Neka Chrin	Mineral County WV Office of Emergency Services	Cambodia Mangrove Tenure Project
Rachael Duncan	Mineral County WV Office of Emergency Services	Mission Support Coordinator/Emergency Planner
Kati Kenney	Office of the County Administrator	Public Information Officer
Kevin Broadwater	Somerset County PA Emergency Management	Local Emergency Management Coordinator
Eric Messick	SP&D	Planner
Matt Smith	SP&D	Principal

Agenda

- Introductions
- Hazard Mitigation Overview
  - FEMA Requirements
  - Plan Development Process
- Project Timeline
- HMPC & Public Participation
  - HMPC and Collaboration
  - Project Website & Social Media
  - Collaboration with Project Partners
  - Surveys
- Hazard Identification Risk Assessment (HIRA)

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Kick-off Meeting
May 18, 2023, 9:00 – 10:00 AM

- 2018-2023 Mitigation Action progress Report
- Time to Complete HMPC Hazard Risk Survey
- Next Steps

Hazard Mitigation Overview

- The 2018 Allegany Comprehensive Hazard Mitigation Plan (HMP) is in the plan update process. The 2018 HMP is available for review at the project's website: **www.alleganymdhazards.org/.**
- FEMA Requirements:
  - FEMA requires hazard mitigation plans to be updated every five (5) years.
  - Jurisdictions are required to develop and maintain a FEMA approved and locally adopted Hazard Mitigation Plan.
  - Stakeholder, public, and regional collaboration and engagement is vital throughout all stages of the plan development process to be approved by MDEM & FEMA.
  - **New** State and Local Mitigation Planning Policy Guide (effective April 19, 2023)
  - For municipalities to be covered under the Allegany County HMP, they must participate throughout the planning process and formally adopt the plan.
  - Note: it is recommended that municipalities complete the Municipal Survey (online) and provide recommendations for mitigation projects.
- Mitigation is Cost Effective
    - More federal funding is available than ever to fund local hazard mitigation projects. Federal grants offer a return of $6 for every $1 spent (*National Institute of Building Sciences, 2020*).

Hazard Mitigation is any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of hazards.

The purpose of the **Hazard Mitigation Plan** is to prevent or reduce loss of life and injury as well as limit damage costs from various hazards through the development of mitigation methods which lessen or eliminate future damage.

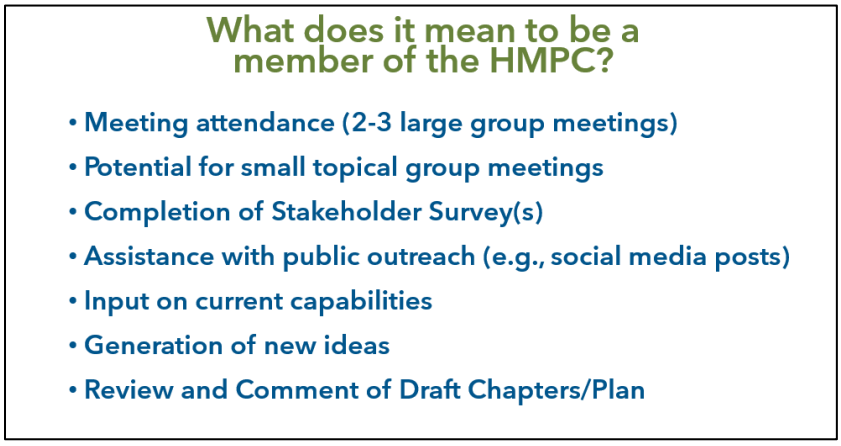
Project Timeline

- The kick-off meeting for this Plan Update was held on May 18, 2023.
- The HMPC will meet throughout the planning process in addition to small group meetings that will be scheduled as needed, including:
  - Floodplain Management/Checking In on the NFIP Worksheets
  - Public Health
  - Social Equity

- Draft chapters will be sent to HMPC members and placed on the project's website for public review as they are completed. A full draft plan for stakeholder review will be made available prior to MDEM and FEMA review.
- The 2018 HMP expires on November 4, 2023.

HMPC & Public Participation

- Stakeholders from a broad cross-section of the community were identified and invited to participate.
    - Stakeholders may have public outreach initiatives that pair well with hazard mitigation, resilience, and preparedness. SP&D requests that stakeholders provide details of these public outreach initiatives for collaboration and documentation (e.g., agenda, brief description of the meeting and how the Hazard Mitigation Plan Update process was discussed).



    - SP&D is requesting photos, data, and ideas from stakeholders as they relate to hazard mitigation and/or natural hazard events in Allegany County and its municipalities.
- A project website has been created to provide updates, post links, and share new information relating to the HMP Update. This website will be updated throughout the plan development process.
    - **Link:** www.alleganymdhazards.org/
    - HMPC members were asked to review the project website. Comments should be sent to Eric Messick, emessick@smithp-d.com.
- The **Public Survey** has been launched with the project website and is currently available for members of the public to complete. The link to this survey will remain active on the website for the length of the project.
    - **Link:** www.surveymonkey.com/r/TXMQMNL

- SP&D provides ready-made outreach imagery for social media and requests that HMPC members to post/share the public survey on their department/agency/organization's approved social media.

Hazard Identification & Risk Assessment (HIRA)

- Hazards identified within the HMP:
  - **Natural Hazards**: Flood (Riverine & Flash), Winter Storm (& Extreme Cold), Severe Weather (Thunderstorm, Lightning, Hail, and Fog), Tornado, Excessive Heat & Drought, Wildfire, Soil Movement (Land Subsidence)
  - **Man-made Hazards:** HazMat Transportation, Rail Accidents
  - **New Hazards added:** Emerging Infectious Diseases and Dam Failure.
- To assess the hazard risk for the natural hazards identified in this Plan Update, a composite scoring method will be utilized. The composite score method is based on a blend of quantitative and qualitative factors extracted from the National Centers for Environmental Information (NCEI) database, and other available data sources. These included:

  A **risk** is the chance, high or low, that any hazard will occur and the severity or impact from that hazard.

  - Historic impacts, in terms of human lives and property
  - Geographic extent (size and magnitude of hazard area)
  - Historical occurrence
  - Probability of Future Occurrence
  - Community Risk Perspective
- The aforementioned risk factors are weighted and used in the following formula to determine the composite risk ratings for each hazard:
  - Equation: Composite Score = Injuries + Deaths + Property Damage + Crop Damage + (Geographic Extent*1.5) + Events Annualized + Future Probability + (Community Perspective*1.5)
- HMPC members who attended the Kick-off Meeting completed the HMPC Hazard Risk Survey to provide the above "community risk perspective."
- **HMPC members that were unable to attend the Kick-off Meeting are asked to complete the survey online:**
  - **Link to HMPC Hazard Risk Survey: www.surveymonkey.com/r/ZN2RX9B**
- Results of the HIRA will be provided to HMPC members and posted on the project website.

Survey Results Utilization

- HMPC Hazard Risk Survey:
  - Results used for Hazard Identification and Risk Assessment.

  - Looking for new mitigation project ideas.
  - Current, planned, or proposed regional collaboration ideas and projects.
- Public Survey:
  - Open throughout the planning process, with final results integrated into the plan towards the end of the planning process.
  - Public survey results are reviewed throughout the planning process, for:
    - Areas of agreement and disagreement regarding hazard perspectives.
    - Identification of new or preferred styles of mitigation projects.
    - Insight into overall perception of hazards.

Development of Mitigation Action Items

- SP&D reviewed the steps for the development of actions items and projects for the plan update.
  - Step 1: HMPC members provide new ideas for inclusion in the Plan Update. Results are integrated into the Plan Update.
  - Step 2: Continue to collect new mitigation ideas throughout the plan development process via stakeholder discussion and public comments received via the project website and surveys. In addition, the Mitigation Workshop provides an opportunity for HMPC members to work together to further develop ideas into projects.
  - Step 3: Mitigation Action Items are developed based on HMPC input, public input, and results of risk and vulnerability analysis. Then a Mitigation Action Item Prioritization process is conducted to determine "high priority" projects.

NEXT STEPS

- HMPC Meeting #1 Notes
  - Distributed to HMPC members and uploaded to project website.
- Launch of project website, public survey, and press release.
- **HMPC Hazard Risk Survey – please complete it by COB June 2, 2023.**
  - **Link: www.surveymonkey.com/r/ZN2RX9B**
- Municipal Survey: Representatives of municipalities, please complete the municipal survey.
  - **Municipal Survey: www.surveymonkey.com/r/TF8GZGH**
- New Hazard Identification Risk Assessment (HIRA)
  - Will be provided to HMPC members and placed on project website for review.
- Targeted Small Group Meetings: June/July
- HMPC Meeting #2
  - **July 2023**

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Mid-point Meeting
July 27, 2023, 9:00 – 10:00 AM

All members of Allegany County's Hazard Mitigation Planning Committee (HMPC) were invited to the Plan Update Mid-point Meeting. A full list of the HMPC will be made available as an appendix. All HMPC members will receive a copy of these notes. The following members were in attendance:

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Roger Bennett	Allegany County Department of Emergency Services	Deputy Director
Steve Shipley	Allegany County Department of Emergency Services	Chief of Communications
Roy S. Cool	Allegany County Department of Planning & Zoning	Transportation Planner
Raquel Ketterman	City of Cumberland	Environmental Specialist
M.J. Parsons	Frostburg State University	Safety Officer
Robert Ketterman	Frostburg State University	Facilities Planner
Alison Robinson	Maryland Department of Health – Office of Preparedness and Response	HPP Region I & II Coordinator
Joe Rogers	Maryland Department of Planning	Regional Planner
Rachael Duncan	Mineral County WV Office of Emergency Services	Mission Support Coordinator/Emergency Planner
Kati Kenney	Office of the County Administrator	Public Information Officer
Eric Messick	SP&D	Planner
Virginia Smith	SP&D	Principal

Agenda

- **Hazard Mitigation Overview**
  - FEMA requirements
  - Stakeholder responsibilities
  - Efforts undertaken
- **Plan Update Progress Report**
  - Draft hazard chapters
  - Outreach Activities (Public, social media, municipal)
  - Preliminary public survey results
  - Municipal survey
- **Capability Assessment Questions**
- **Next Steps**

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Mid-point Meeting
July 27, 2023, 9:00 – 10:00 AM

Hazard Mitigation Overview

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  - **New** State and Local Mitigation Planning Policy Guide (effective April 19, 2023)
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The purpose of the **Hazard Mitigation Plan** is to prevent or reduce loss of life and injury as well as limit damage costs from various hazards through the development of mitigation methods which lessen or eliminate future damage.

What does it mean to be a member of the HMPC?

- Meeting attendance
- Potential for small topical group meetings
- Completion of Stakeholder Survey(s)
- Assistance with public outreach (e.g., social media posts)
- Input on current capabilities
- Review and Comment of Draft Chapters/Plan
- Generation of mitigation project ideas

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Mid-point Meeting
July 27, 2023, 9:00 – 10:00 AM

Efforts Undertaken

- DES obtained planning grant from FEMA
- 2023 Mitigation Action Progress Report – completed
- Project website & surveys – launched May 4th
- NFIP Questionnaire (Floodplain Management Capabilities) – completed
- Public outreach & public survey responses – preliminary results available
- Municipal Introduction Letter & Capabilities Questionnaire – sent on June 7th
- Draft hazard chapters - reviewed by HMPC and added to website

Plan Update Progress Report

Draft Hazard Chapters

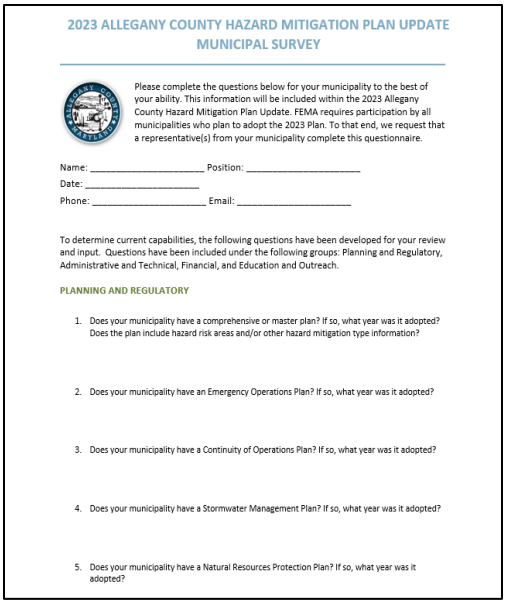
- Chapter 3: Hazard Identification and Risk Assessment is complete and has been reviewed by stakeholders.
- The following hazard chapters have received a draft update:
    - Chapter 5: Winter Storm
    - Chapter 6: Severe Weather
    - Chapter 7: HazMat Transportation
    - Chapter 8: Tornado
    - Chapter 9: Drought & Extreme Heat
    - Chapter 10: Wildfire
    - Chapter 11: Rail Accidents
- These chapters have received a thematic and visual update, as well as updates to data, tables, text, vulnerability assessments (where applicable), and mapping (where applicable).
- Following the 2023 HMA Program Policy Guidance, new sections have been added to each hazard chapter:
    - Impacts to People, Systems, and Resources
    - Future Conditions (e.g., how climate change may impact the frequency and intensity of hazards).
- Draft chapters have been sent to HMPC members for review and comment.
- Drafts are placed on the project website for public review. The public is provided a feedback form to provide comments.
- **Next drafts:** Chapter 4: Flood, Chapter 13: Emerging Infectious Diseases, and Chapter 14: Community Capabilities.

Allegany County Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee
Mid-point Meeting
July 27, 2023, 9:00 – 10:00 AM

Outreach – Public and Social Media

- The project website (www.alleganymdhazards.org) was launched at the beginning of summer and helps drive traffic to the public survey.
- The **public survey** currently has 149 unique responses. It is open throughout the duration of the plan update.
    - Municipal response breakdown: Cumberland (65), Unincorporated Areas (43), Frostburg (17), Westernport (6), Lonaconing (5), Barton (3), Midland (3), and Luke (1).
    - Preliminary results indicate the public is **most concerned** with HazMat Transportation, Emerging Infectious Diseases, and Rail Accidents.
- Results of the public survey provide insight into overall hazard perception, identify areas of agreement and inconsistency, and help identify new or preferred types of mitigation projects.

Outreach – Municipal/Small Groups



2023 ALLEGANY COUNTY HAZARD MITIGATION PLAN UPDATE
MUNICIPAL SURVEY

Please complete the questions below for your municipality to the best of your ability. This information will be included within the 2023 Allegany County Hazard Mitigation Plan Update. FEMA requires participation by all municipalities who plan to adopt the 2023 Plan. To that end, we request that a representative(s) from your municipality complete this questionnaire.

Name: _____ Position: _____
Date: _____
Phone: _____ Email: _____

To determine current capabilities, the following questions have been developed for your review and input. Questions have been included under the following groups: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach.

PLANNING AND REGULATORY

1. Does your municipality have a comprehensive or master plan? If so, what year was it adopted? Does the plan include hazard risk areas and/or other hazard mitigation type information?
2. Does your municipality have an Emergency Operations Plan? If so, what year was it adopted?
3. Does your municipality have a Continuity of Operations Plan? If so, what year was it adopted?
4. Does your municipality have a Stormwater Management Plan? If so, what year was it adopted?
5. Does your municipality have a Natural Resources Protection Plan? If so, what year was it adopted?

- Municipalities were mailed a **municipal survey** to determine the status of action items in the previous 5-year planning period and to suggest new mitigation actions.
- This survey also assesses **municipal capabilities**: planning and regulatory, administrative and technical, financial, education and outreach.
    - 5 out of 7 municipalities have responded to the paper or online survey (as of July 31, 2023).
- Results of the municipal survey provide local mitigation project ideas and current municipal capabilities. Capability information gathered is integrated into Chapter 16: Municipal Synopsis.

Preliminary Public Survey Results

- Select preliminary public survey results were shared during the meeting. Major takeaways include:
    - Most residents who took the survey live in Cumberland (45%) or Unincorporated Areas (30%)
    - Most respondents are in the 45-64 age group (43%)
    - Most respondents work in Allegany County (76%)

- The majority of property owners do not have flood insurance (64%) because flood insurance is too expensive.
- Severe Weather, Winter Storms, and Flood were the most common hazards to cause property damage, according to respondents.
- 74% of respondents have purchased homeowners/renter's insurance to protect their homes from hazards.
- 80% of respondents support policies that restrict or prohibit development in designated hazards zones.
- Those surveyed felt that the most socially vulnerable groups to hazards in the County include those aged 65 and older, people below the poverty level, and civilians with a disability.

Capability Assessment

- During the meeting, HMPC members were asked to review capabilities specific to Allegany County in order to identify gaps. A capability assessment worksheet was developed for Allegany County and pre-populated prior to the meeting. Attendees were asked to complete gaps in the worksheet to the best of their knowledge.
- **The worksheet has been included at the end of these notes for review.**
- Highlighted areas indicate gaps in knowledge. If you have more information about these capabilities, or any capability, please email: **emessick@smithp-d.com**.
- Additionally, the following questions were asked to help update the Community Capabilities chapter:
    1. Flood Hazard: What is the status of forest buffer (tree planting) projects on flood buyout properties? Have any planting projects been completed in the last five years? Are any slated within the next five years?
        - Answer: There is knowledge of mobile home removal and tree plants along Winchester Road. Follow-up required with Public Work for complete details.
    2. Flood Hazard: Is there interest in beginning the process of joining the Community Rating System (CRS) within the next five years to increase resilience and lower flood insurance premiums?
        - Answer: Yes, there is interest. This has been discussed before during flood insurance meetings as a joint effort between the City of Cumberland and Allegany County.
    3. HazMat Incidents: Has the Local Emergency Planning Committee (LEPC) made any updates to the 2015 Hazardous Materials Emergency Response Plan?
        - Answer: No, the plan has not been updated recently.

4. Winter Storm Hazard: How many snowplow trucks have been purchased since 2018? Are there plans to purchase more in the next five years?
    - Answer: There were likely purchases, but follow-up needed with County Roads to confirm when and the amount.

NEXT STEPS

- Meeting #2 Notes – will be provided to all stakeholders and uploaded to the project website.
- Coordinate information follow-ups to complete capabilities chapter.
- Draft Chapter 14: Community Capabilities will be distributed to HMPC members for review.
- Draft Chapter 4: Flood & Chapter 13: Emerging Infectious Diseases distributed to HMPC.
- Complete working draft of the plan.
- **Meeting #3: Mitigation Workshop (In-person) –** August 31, 2023, from 9:00 AM to 12:00 PM at the EOC.

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Mitigation Workshop
August 31, 2023, 9:00 AM – 12:00 PM

All members of Allegany County's Hazard Mitigation Planning Committee (HMPC) were invited to the Mitigation Workshop. A full list of HMPC members will be made available as an appendix. All HMPC members will receive a copy of these notes. The following members attended the workshop:

Note: HMPC member listing is sorted alphabetically by organization/department.

Name	Organization/Department	Position/Title
Carrie Hughes	Allegany County Department of Emergency Services	Emergency Management Chief
Jerrod Cook	Allegany County Department of Planning and Zoning	Planner/GIS
Daniel DeWitt	Allegany County Department of Public Works	County Engineer
Ken Johnson	Allegany County Human Resources Development Commission	Section 8/WAP Housing Inspector
Ken Rafferty	Allegany County Human Resources Development Commission	Facilities Manager
Elizabeth Harper	Allegany County Transit	Transit Division Superintendent
Elizabeth Stahlman	City of Frostburg	City Administrator
MJ Parsons	Frostburg State University	Safety Officer
Alison Robinson	Maryland Department of Health – Office of Preparedness and Response	HPP Region I & II Coordinator
Cindy Weisenmiller	SPECS, Inc. for Town of Luke	Office Manager
Craig Alexander	Town of Midland	Administrator
Eric Messick	SP&D	Planner
Michele King	SP&D	GIS/Planner

AGENDA

- Introductions
- Plan Update Progress Report
  - Draft hazard chapters
  - Public outreach activities
  - Public survey results
- Mitigation Action Item Workshop
  - Group Breakout Session 1 – Goals & Objectives Review
  - Group Breakout Session 2 – Mitigation Action Items Review, Assignment of High Priority Action Items, Report Out
  - Group Breakout Session 3 – Completion of Mitigation Project Sheets
- Next Steps

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PLAN UPDATE PROGRESS REPORT

Draft Hazard Chapters

- Chapter 3: Hazard Identification and Risk Assessment was completed and provided to stakeholders. This chapter is available on the project website (www.alleganymdhazards.org).
- All hazards identified in the plan have received a draft update, including: flood, winter storm, severe weather, hazmat transportation, tornado drought & extreme heat, wildfire, rail accidents, soil movement, and emerging infectious disease.
    - These chapters have received a thematic and visual update, as well as updates to data, tables, text, vulnerability assessments (where applicable), and mapping (where applicable).
    - The drafts have been sent to stakeholders for review and comment. The drafts were also placed on the project website for public review. Members of the public were able to provide feedback on draft chapters via a comment form.
- The plan update follows guidance provided via FEMA's 2023 Hazard Mitigation Assistance Program and Policy Guide.

Public Outreach Activities

- The project website and public survey were both launched at the beginning of May 2023.
- The **public survey** was open throughout the planning process and officially closed on August 30, 2023. The survey received 174 unique responses.
    - Results indicate the public is **most concerned** with HazMat Transportation, Emerging Infectious Diseases, and Rail Accidents.
    - Least concerned: Dam Failure, Soil Movement, Tornado.
    - The public indicates the strongest support for the following 3 mitigation project types:
        1. Replacing inadequate or vulnerable bridges
        2. Improving damage resistance of utilities (electricity, communications, water/sewer, etc.)
        3. Retrofitting and strengthening essential facilities such as police, fire, emergency medical services, hospitals, schools, etc.
    - The **municipal survey** was also open throughout the duration of the plan update. The survey serves two important purposes:
        - Provides municipal level insight into hazards identified in the plan, and
        - Assesses municipal capabilities: planning & regulatory, administrative & technical, financial, and education & outreach.

- The municipal survey was provided to all 7 of the County's municipalities in both digital and paper format. Results of these surveys are utilized to inform Chapter 16: Municipal Synopsis.

MITIGATION WORKSHOP

By the end of the mitigation workshop, participants accomplished the following:

- ✓ Reviewed and updated the **goals and objectives** included in the plan.
- ✓ Reviewed mitigation **action items** for integration into the 2023 HMP Update. This included the addition, removal, or modification of action items.
- ✓ Developed project sheets for high priority action items.

Participants worked in small groups for the duration of the workshop. The three groups were based on mitigation categories, and included:

1. Local Planning and Regulations (LPR)
2. Structure and Infrastructure Projects & Natural Systems Protection (SIP)
3. Education and Awareness Programs (EA)

Steps undertaken by each group for Breakout Session 1:

1. Assigned a **scribe** for the group.
2. Review of the Goals & Objectives identified in the 2018 Allegany County Hazard Mitigation Plan.
   - Goals (and associated objectives) were assigned to groups to best fit the mitigation category associated with the group.
   - For each goal and objective, groups indicated whether to "keep," "remove," or "modify."
   - One handout per group (scribe's) was collected at the end of the workshop.

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Collective Results of Session 1:

Mitigation goals and objectives were reviewed by Hazard Mitigation Planning Committee (HMPC) members. Members were given the opportunity to review and discuss existing goals and objectives at the Mitigation Workshop. No new goals were added, one objective was removed (i.e., 6.3), six objectives were added, and seven objectives were modified.

2023 Mitigation Goals & Objectives: The goals serve as the basis for implementing mitigation action items, which aid in mitigating the hazards that have impacted or potentially will impact Allegany County and its municipalities. Newly added goals and objectives are in green, and the modified portions of goals and objectives are shown in orange. Removed goals and objectives are shown with a ~~strikethrough~~.

Goal #1: Maintain and enhance Allegany County's Department of Emergency Service's capacity to continuously make Allegany County less vulnerable to hazards, specifically for those hazards rated as medium-high and high.

1.1 Institutionalize hazard mitigation
1.2 Improve organizational efficiency.
1.3 Maximize utilization of best technology.
1.4 Ensure a well-funded GIS Office to enable Allegany County DES to maximize utilization of GIS software and applications.
1.5 Maximize use of hazard vulnerability data, such as Hazus Risk Map products.
1.6 Keep current with changing science related to climate change threats.

Goal #2: Build and support municipal capacity and commitment to become continuously less vulnerable to hazards.

2.1 Increase awareness and knowledge of hazard mitigation principles and practice among local and municipal public officials.
2.2 Aid municipal officials and municipalities obtain funding for mitigation planning and project activities.
2.3 Prepare technical reports for critical facilities as necessary.

Goal #3: Improve coordination and communication with other relevant organizations.

3.1 Establish and maintain lasting partnerships.
3.2 Streamline policies to eliminate conflicts and duplication of effort.
3.3 Incorporate hazard mitigation into activities of other organizations.

Goal #4: Increase public understanding, support, and demand for hazard mitigation.

4.1 Identify hazard specific issues and needs.
4.2 Heighten public awareness of natural hazards.
4.3 Publicize and encourage the adoption of appropriate hazard mitigation actions.

4.4 Within 2 years, increase the number of businesses that have developed a business risk reduction plan.

4.5 Within 3 years, increase by 10% the proportion of businesses and residences that have flood insurance.

4.6 Increase the total number of NFIP policyholders outside the 1 percent-annual-chance FEMA flood zone.

4.7 Prioritize vulnerable populations when conducting public hazard mitigation outreach.

4.8 Increase public awareness and preparedness specific to emerging infectious diseases, always utilizing data and information from verified and trustworthy public health sources.

Goal #5: Protect existing and future properties (residential, commercial, public, and critical facilities).

5.1 Utilize the most effective approaches to protect buildings from flooding, including acquisition and elevation.

5.2 Enact and enforce regulatory measures to ensure that new development will not increase hazard threats from flooding, steep slope failure and the threat of wildfire at the urban/forest interface.

5.3 With exception to buildings damaged/blighted from previous flooding, within 5 years reduce by 20% the number of houses in the floodplain that are subject to repetitive losses from flooding.

5.4 Within 5 years, increase by 25% the number of critical facilities that have carried out mitigation measures to ensure their functionality in a 100-year flood event, winter storm or high wind event.

5.5 Review Building Codes to ensure that manufactured housing, including mobile homes, are constructed and installed in a manner to minimize wind damage.

5.6 Encourage existing high risk residential structures to utilize retrofitting techniques to mitigate repetitive flooding.

Goal #6: Ensure that public funds are used in the most efficient manner.

6.1 Prioritize new mitigation projects, starting with sites facing the greatest threat to life, health, and property.

6.2 Use public funding to protect public services and critical facilities.

~~6.3 Use public funding on private property where benefits exceed costs.~~

6.4 Maximize the use of outside funding sources.

6.5 Encourage property-owners self-protection measures.

Goal #7: Promote sustainable development to improve the quality of life.

7.1 Establish open space parks and recreational areas in flood hazard areas.

7.2 Provide for the conservation and preservation of natural resources.

7.3 Limit additional housing (especially elderly and high density) in areas of high hazard risk.

7.4 Prioritize forest conservation and tree planting to mitigate extreme temperatures and to provide stormwater benefits. Consider potential for carbon offset program.

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Goal #8: Prevent destruction of forests and structures in the Urban Wildland Interface.

8.1 Development communications protocol and management between municipal and County emergency management and law enforcement personnel.

8.2 Identify specific high hazard areas in the Urban Wildland Interface and notify residents of measures to protect their property from wildfire damage.

8.3 Develop evacuation procedures to enable residents near forested areas to evacuate safely.

8.4 Continue to work with the Maryland Department of Natural Resources to develop Community Wildfire Protection Plans, which promote safe urban-wildland interface.

Goal #9: Protect public infrastructure.

9.1 Upgrade or replace public roads and stormwater management features to include mitigation into the project design and construction.

9.2 Improve routes utilized in flood hazard events to mitigate life-threatening road conditions and road closures.

9.3 Mitigate problem road sections within the County and municipalities.

9.4 Encourage and ensure to the greatest extent possible continuous power supply to critical and public facilities.

Goal #10: Integrate plans and policies across disciplines and agencies within the County through the consideration of potential hazards and future development.

10.1 Integrate hazard mitigation into areas such as land use, transportation, climate change, natural and cultural resource protection, water resources, and economic development.

10.2 Solicit participation and offer opportunities for various departments to work together on a regular basis.

10.3 Clearly define roles of, and improve intergovernmental coordination between planners, emergency managers, engineers, and other staff, and municipal and regional partners in improving disaster resiliency.

10.4 Integrate the new 2023 Hazard Mitigation Plan into existing plans, policies, codes, and programs that guide development.

<u>Steps undertaken by each group for Breakout Session 2:</u>

1. Groups were assigned mitigation action items to review for inclusion in the plan update:
    a) Local Planning and Regulations (**12** action items)
    b) Structure and Infrastructure Projects & Natural Systems Protection (**19** action items)
    c) Education and Awareness Programs (**7** action items)
2. Groups reviewed assigned action items and determined if they should be kept (indicate Yes or No).
3. Blank sheets were provided so attendees could add their own action items.

4. Prior to the report-out, groups were asked to consider their top three action items that "resonated the most" with them.
5. Choose one (1) speaker to represent your group, and report the following:
    a) How many mitigation actions did your group review?
    b) Did your group add any new mitigation actions?
    c) What three mitigation actions resonated the most with your group?

Collective Results of Breakout Session 2:

Forty one (41) total action items were reviewed during this breakout session. Of these, one action item was removed and three were added. The action item that was removed:

SIP-15: Mitigate stormwater issues listed in the County's Drainage Complaint Database. (Reason: database no longer exists)

Each group identified the following three (3) action items as resonating the most with them:

- **Local Planning and Regulations**
    1. Conduct a new Hazardous Materials Commodity Flow Study as an update to the last study completed in 2014.
    2. The County should coordinate a workshop with all municipalities to provide an overview of the roles of local government in emergency management. FEMA staff should be invited to present information from the Local Elected and Appointed Officials Guide: Roles and Resources in Emergency Management (September 2022). Topics include, but are not limited to:
        - Who steps up when disaster strikes?
        - Leading before, during, and after disasters
        - Disaster Assistance and Mutual Aid
    3. Utilize GIS based solutions for damage assessments and to collect information for mitigation projects, specifically for flood related damage that includes high water mark elevation and picture.

- **Structure and Infrastructure Projects & Natural Systems Protection**
    1. CRS Acquire/demolish and relocate the Town Halls of Lonaconing and Westernport. Both Town Halls are located within the 100-year floodplain, and both have experienced first floor flooding in 1996.

2. CRS Review the following schools for flooding susceptibility. The FEMA HAZUS Model has identified these schools as being susceptible to first floor flooding. The Schools include: Calvary Christian Academy and Flintstone Elementary.
3. For the eight (8) essential facilities (listed below with depth of flooding) that have a high vulnerability to flooding and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed.
    - Tri Towns Rescue Squad – 2.4'
    - Potomac Fire Company #2 – 2.0'
    - Corriganville Volunteer Fire Department – 3.8'
    - Georges Creek Ambulance Service – 4.1'
    - Midland Fire Company – 1.5'
    - Baltimore Pike Volunteer Fire Department – 1.1'
    - Flintstone Elementary School – 5.9'
    - Calvary Christian Academy – 7.1'

- **Education and Awareness Programs**
    1. Obtain and strategically deploy signage for community awareness during all-hazard events. This signage may include flood warning signs with or without flashing lights. Consider, to the extent possible, investing in mobile electronic signage that can be deployed before, during, or after a hazard event in high-visibility areas.
    2. Work with the Allegany County Health Department and existing health equity groups to identify vulnerable populations via an update to the *Vulnerable Populations Plan* completed by the Health Department in 2014.
    3. CRS Promote FEMA Risk Rating 2.0 to the Public
        a. Understand the community impact of Risk Rating 2.0 and share information with the public to encourage the purchase and/or retention of flood insurance.
        b. Should the County apply for CRS, this action qualifies for CRS credit, which in turn will lower the cost of flood insurance for policyholders in Allegany County.

<u>Steps undertaken by each group for Breakout Session 3:</u>

As the last step in the workshop, the (9 total) action items selected as resonating the most with the groups were further developed into mitigation projects sheets. Groups were asked to complete project sheets to the greatest extent possible and were also given the opportunity to develop additional mitigation projects for action items they felt should be considered a high priority.

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Project sheets include the following information:

- Project Title
- Associated Action Item(s)
- Hazards Mitigated by this Project
- Discussion
- Primary Responsible Entity
- Project Partners
- Cost Estimate
- Potential Funding Source(s)
- Timeline for Implementation

Collective Results of Breakout Session 3:

In total, ten (10) action items selected by HMPC members as resonating the most with them will be further developed into project sheets for the Plan Update. All members of the HMPC will have the opportunity to review, comment on, and prioritize these items via an online ***Prioritization Survey** that will be sent following these meeting notes.

Next Steps

- ***Project Prioritization Online Survey** – SP&D will be sending the Project Prioritization Online Survey shortly following these meeting notes.
- Municipal Action Items Prioritization – a survey containing only the municipal-specific action items will be sent to all municipalities for action item prioritization.
- Cohesive Draft Plan Review & Comment
- If you are a representative of a **municipality** and you have not yet completed the **Municipal Survey**, please complete the survey here: http://www.surveymonkey.com/r/TF8GZGH
- Please share the project website as well: http://www.alleganymdhazards.org.

For those of you who were able to participate, Thank You! For those of you who read through all of the notes, Great Job You!

Appendix C: NFIP Capabilities

Allegany County, Maryland NFIP Community Questionnaire

Floodplain Identification & Mapping

1. Who is your FPA or floodplain manager? Please provide office/agency name, position title, and contact information.	Mr. James Squires, Director of Planning and Zoning, Land Development Services, & FPA Allegany County, Maryland 701 Kelly Road Cumberland, Maryland 21502 301-876-9549 jsquires@alleganygov.org
2. Where do you keep your FIRM and FIS report?	Hard copies of the FIRM, FIS, & LOMCs are available in the Allegany County Office of Planning & Zoning. Digital versions are available for review at www.mdfloodmaps.net
3. Has your community adopted the most recent FIRM? When was the adoption? Where is that information stored? Has your community updated the floodplain ordinance language to include the current FIRM and FIS?	Allegany County, Maryland has adopted the most recent FEMA FIRM, effective date of April 3, 2020. The Allegany County Floodplain Management Ordinance language is in compliance with the current FIRM and FIS and is available online at the County's website; hard copies are available for review in the County's Department of Planning and Zoning.
4. Does your jurisdiction support requests for map updates?	Yes. Allegany County reviews and may provide support for LOMC applications.
5. Is there a specific agency/department responsible for compiling these updates and tracking LOMCs?	Yes, Allegany County tracks and compiles updates for LOMC's.
6. Do you collect updated technical or scientific data and modeling? How do you share this with FEMA?	Yes. Allegany County collects and reviews technical and/or scientific modeling data when applicable. Copies are provided to FEMA during the LOMC process.
7. Does your jurisdiction provide assistance with local floodplain determinations? If yes, specify how.	Yes. Allegany County may assist homeowners and potential applicants in determining if their property is located within or near the SFHA by providing mapping resources and information, both lateral and vertical determination information.
8. Do the people/agencies responsible for using these tools in your community have the access they need? Which tools does your community rely on?	Yes. Allegany County utilizes multiple tools for NFIP information dissemination and education, including the County website, floodplain management personnel, and other tools such as www.mdfloodmaps.com and www.floodsmart.gov.
Floodplain management requires that you understand the mapping and data side when working with the public.	

Floodplain Management

1. Does your jurisdiction issue permits for all proposed development in the SFHA? What office/position is responsible?	Yes. The Allegany County Department of Planning and Zoning and the FPA are responsible for permit issuance within the SFHA.
2. Does your jurisdiction require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres? If so, what department or office is responsible?	Yes. Any new development/subdivision lots within the SFHA is prohibited, unless it is demonstrated that new structures cannot be located out of the floodplain and shall be designed in accordance with the Allegany County Floodplain Ordinance. The County is responsible.
3. How does your community identify substantially improved structures? When do they intervene?	The Allegany County FPA requires documentation to be submitted regarding substantially improved structures, including market value, damage assessments, engineer certifications, etc. for compliance with floodplain management requirements.
4. Does your community have a coordinated process to determine substantial damage and to permit repair and improvement? Does the jurisdiction conduct substantial damage assessments in the SFHA? Does your community have a plan for who will conduct substantial damage assessments and a procedure for assessment?	Yes. The Allegany County Floodplain Management Ordinance specifies that the FPA shall administer the requirements related to work on existing structures that are located within the SFHA and have been substantially damaged, and to notify owners of substantially damaged structures to obtain permits and prohibit non-compliant repair of damaged buildings. The FPA and/or authorized/designated County Representative conducts damage assessments.
5. Does your jurisdiction require Elevation Certificates for new or substantially improved structures? If yes, how is it documented and which office/agency/department is responsible?	Yes. Applicants for construction within the SFHA must submit an Elevation Certificate prepared by a licensed engineer or surveyor. Allegany County reviews the applications and certificates.
6. How does the jurisdiction enforce the floodplain ordinance sections? How does the jurisdiction address SI/SD violations?	The Allegany County FPA makes periodic inspections of properties, structures, and utilities for compliance with the ordinance and can issue violations, stop work orders, and penalties. The Allegany County FPA and the code enforcement officer is responsible for enforcing violations.
7. Has your jurisdiction had a Community Assistance Visit? If so, were any corrective actions required?	Yes, Allegany County had a Community Assistance Visit on March 31, 2021. Minor corrective actions were recommended regarding permit compliance and documentation, such as developing a checklist and as-built elevation certificates.
8. Does your jurisdiction have or is considering higher ordinance standards than the NFIP? Please describe the higher standards and where they are documented.	All new or substantially improved structures shall have the lowest floor elevated to or above the flood protection elevation. The Allegany County Flood Protection Elevation is the base flood elevation plus one foot of freeboard. No additional regulations are planned at this time.
9. Are any local officials/departments in your community interested in additional training? What topics relate most to your community?	Yes, Allegany County personnel are always interested in additional training in reviewing and administering the requirements of the NFIP.
Floodplain management reduces flood risk and protects floodplain health.	

Flood Insurance

1. How does the jurisdiction educate community members about the availability and value of flood insurance?	Allegany County personnel and/or the FPA educate the community and property owners regarding the value of flood insurance through press releases, public service announcements, and/or direct contact with property owners within the SFHA.
2. Does the jurisdiction inform community property owners about changes to the FIRM that would impact their insurance rates?	Yes, Allegany County and/or the FPA notifies property owners within the SFHA regarding changes to the FIRM through press releases, public service announcements, social media posts, and where applicable, direct correspondence.
3. How does the jurisdiction provide general assistance to community members regarding insurance issues?	The FPA and Allegany County personnel are available to advise, assist and answer any questions of community members regarding the NFIP program and/or floodplain regulations.
4. Does the jurisdiction keep track of the number of residential and non-residential structures in the SFHA? How many structures are in the SFHA in your community?	Yes. A database of the number of residential and non-residential structures is maintained by the County. According to the FEMA CIS NFIP Insurance Report, there are 115 NFIP policies within the County.
5. Does the jurisdiction have any levees or levee systems in its jurisdiction?	Yes. Allegany County has one (1) levee system within its jurisdiction according to the USACE national levee database.
6. Is the levee or levee system certified and accredited?	Yes. The levee system is called the Barton-Georges Creek System, and it is accredited.
7. Is the levee or levee system a Provisionally Accredited Levee (PAL)?	N/A
8. Is the levee or levee system part of the USACE Rehabilitation and Inspection Program?	No. the Baron-Georges Creek System is not enrolled in the USACE Rehabilitation Program.
9. Does your community have any Major Dams or High Hazard Dams, and if so, have you applied for FEMA's High Hazard Potential Dam grant?	Yes. Allegany County has six (6) high hazard dams within its jurisdiction according to the USACE National Inventory of Dams. The County has not applied for FEMA's High Hazard Potential Dam grant.
Flood risk communication to the public is vital for a community to be truly resilient.	

NEXT STEPS

- What are your short- and long-term action items?
    - Add additional floodplain management and permitting information to the County website, i.e., permit application, links to state and federal floodplain mapping and insurance programs.

Appendix D: Public Outreach Documentation

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
4/18/2023	Core Team Meeting	Core Planning Team	N/A	A core team meeting was held to discuss project specifics prior to the kick-off meeting in May. In attendance was Roger Bennett and Carrie Hughes from the County DES. Items for discussion: expanding the HMPC, current and new HMPC members, the project website, plan design and colors, the surveys being developed for the project, regional planning, and the kick-off meeting date (May 18th, in person).
4/27/2023	Kick Off Meeting Save the Date	HMPC Members	2018 Plan (link), meeting invitation, agenda	The kick-off meeting intro email and save the date was provided to members of the ALCO HMPC. The members were provided with a link to the previous plan, a brief intro to HMP, and the meeting agenda. A follow up outlook email invitation will be sent to HMPC members.
4/27/2023	Expanded HMPC	Mineral County MD	N/A	Following the kick-off meeting invite, the POC for Mineral County WV was updated to include Rachel Duncan (Office of Emergency Services) as well as a fellowship student from Cambodia that is working in their office.
5/4/2023	Project Website Launch	Public	Website	The HMP Update project website design phase was completed, and the website was launched to the public. Alleganymdhazards.org.
5/18/2023	Kick Off Meeting	HMPC Members	Meeting presentation, hazard risk survey, project website link, public survey link.	The Kick-off meeting was held in person at the Allegany County Office Complex. Attendees were then provided with an overview of hazard mitigation, including FEMA requirements and the plan development process. Next, a project timeline was reviewed followed by an outline of HMPC and Public participation expectations. Attendees were then asked to complete a hazard

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
				risk survey as part of Chapter 3: Hazard Identification and Risk Assessment. Finally, the steps for development or new mitigation action items and projects were provided.
5/22/2023	Meeting #1 Note Distribution	HMPC Members	Meeting Notes, project website link, HMPC survey link, municipal survey link	Meeting notes were distributed to HMPC members via email following the in-person kick-off meeting. Meeting notes were also uploaded to the project website for public review.
5/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
5/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany Communications News Facebook page.
5/31/2023	Press Release	Public	Website Link, Public Survey Link, Contact information	Allegany County advertised the plan update process in the May 31, 2023, edition of the Times News. The headline reads "County seeks public input on hazard mitigation plan".
6/6/2023	Draft Chapter 3 HIRA	HMPC Members	Draft Chapter 3	The draft HIRA chapter was sent to the HMPC for review. They were given one week to provide review comments before the draft is uploaded to the project website.
6/7/2023	Meeting # 2 Save The Date	HMPC Members	Meeting Info	A save the date email was sent to HMPC members for the Mid-Point Meeting, July 27 at 9:00 AM.
6/7/2023	Municipal Letter and Survey	All Municipalities	Municipal Packet including cover letter and paper	Packets were mailed to the County's seven municipalities, indicating their required participation in the plan update. Also included was a municipal survey for completion and return.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
			survey plus link to digital survey and project website.	
6/8/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany Department of Social Services Facebook page.
6/8/2023	Survey Material	HMPC, Public	Social Media Image	The HMPC was provided with a social media image and text, which promotes the public survey.
6/8/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
6/12/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Visit Cumberland Maryland Facebook page.
6/12/2023	Municipal Survey Received	Luke	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/14/2023	Municipal Survey Received	Frostburg	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/14/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the HRDC Senior Centers Facebook page.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
6/14/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County Health Department Facebook page.
6/14/2023	Website Update	Public	Chapter 3 Hira	Draft of Chapter 3 HIRA has been added to the "Plan Updates" tab of the website following HMPC review and comment.
6/14/2023	Municipal Survey Received	Frostburg	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/19/2023	Municipal Survey Received	Barton	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.
6/20/2023	Draft Chapters 5 and 6	HMPC Members	PDFs - Chapter 5 Winter Storm & Chapter 6 Severe Weather	Drafts of Chapter 5 and 6 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by June 28, 2023. Drafts will be uploaded to the project website following review.
6/20/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany County Government - Maryland Facebook page.
6/20/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
6/26/2023	Draft Chapters 7 and 8	HMPC Members	PDFs - Chapter 7 HazMat Transportation & Chapter 8 Tornado	Drafts of Chapter 7 and 8 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
				are due by July 5, 2023. Drafts will be uploaded to the project website following review.
6/29/2023	Draft Chapters 5 and 6	Public	PDFs - Chapter 5 Winter Storm & Chapter 6 Severe Weather	These chapters were uploaded to the project website for public review and comment.
7/12/2023	Draft Chapters 9 and 10	HMPC Members	PDFs - Chapter 9 Wildfire & Chapter 10 Drought	Drafts of Chapter 9 and 10 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by July 19, 2023. Drafts will be uploaded to the project website following review.
7/13/2023	Midpoint Meeting Invite	HMPC Members	Webex Invitation and Meeting Info	HMPC members were invited to the midpoint meeting on July 27, 2023, at 9:00 AM. Members were sent a WebEx invitation and asked to RSVP.
7/13/2023	Draft Chapters 9 and 10	Public	PDFs - Chapter 9 Wildfire & Chapter 10 Drought	These chapters were uploaded to the project website for public review and comment.
7/14/2023	Municipal Survey Received	Cumberland	Completed Survey	The municipality completed the municipal questionnaire and submitted their responses for the plan update.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
7/19/2023	Draft Chapters 11 and 12	HMPC Members	PDFs - Chapter 11 Rail Accident & Chapter 12 Soil Movement	Drafts of Chapter 11 and 12 were submitted to HMPC members for their review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by July 26, 2023. Drafts will be uploaded to the project website following review.
7/24/2023	Midpoint Meeting Reminder	HMPC Members	Meeting #2 Information and WebEx info	HMPC members were reminded of the upcoming midpoint meeting scheduled for July 27 at 9:00 AM. Invitees were asked to RSVP if they had not yet done so.
7/27/2023	Mid-Point Meeting	HMPC Members	PowerPoint presentation, capability assessment worksheet	HMPC members virtually attended the midpoint meeting via WebEx. HMP overview, plan update progress report, and preliminary public survey results were presented. Attendees were asked capability assessment questions to help identify gaps and complete Chapter 14: Community Capabilities. Participants ranked their level of capability in each of the four FEMA capability categories. Meeting notes were sent to all HMPC members and added to the project website.
7/27/2023	Draft Chapters 11 and 12	Public	PDFs - Chapter 11 Rail Accident & Chapter 12 Soil Movement	These chapters were uploaded to the project website for public review and comment.
8/9/2023	Meeting #2 Note Distribution	HMPC Members	Meeting Notes	Notes from this meeting were sent to all HMPC members and uploaded to the project website.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
8/18/2023	Draft Chapter 4	HMPC Members	PDF - Chapter 4 Flood	Draft of Chapter 4 Flood was submitted to HMPC members for review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by August 25, 2023. Drafts will be uploaded to the project website following review.
8/23/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the City of Frostburg Facebook page.
8/23/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.
8/25/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the Allegany County Government - Maryland Facebook page.
8/28/2023	Draft Chapter 4	Public	PDFs - Chapter 4 Flood	This chapter was uploaded to the project website for public review and comment.
8/30/2023	Public Survey Link Distribution	Public	Public Survey Link	The public survey link was shared to the County DES Facebook page.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
8/31/2023	Mitigation Workshop	HMPC	PowerPoint presentation, goals and objectives handout, action item hand out, project development	During the Mitigation Workshop, stakeholders were presented with a Plan Update report, and then worked in three small groups to complete proposed action items. The group also reviewed goals and objectives and made modifications to reflect 2023 conditions. The three groups reported to the larger group their findings, as well as their most important action items, which were further developed into mitigation projects by the groups. In total, 39 action items were reviewed, and 12 new mitigation projects were developed during this workshop. Results of the workshop were integrated into Chapter 17: Mitigation Strategies, and meeting notes and updated project sheets were provided to those who attended the meeting as well as the HMPC and the project website for the public.
8/31/2023	Public Survey Closes	Public	N/A	The public survey was closed to new responses.
8/31/2023	Municipal Survey - Email	Westernport and Lonaconing	Survey Link	The municipal survey was provided to a new POC with the Town of Westernport, to be completed. The survey link will also be provided to the Town of Lonaconing for completion.
9/2/2023	Mitigation Project Prioritization Survey	HMPC	Survey Monkey Link	The mitigation project prioritization survey link was provided to HMPC members. Respondents were asked to complete the prioritization process for 12 mitigation project sheets as identified within Chapter 17: Mitigation Strategies.

Table 1-3. Allegany County Hazard Mitigation Planning, Training, and Outreach Initiatives				
Date	**Meeting, Training, or Outreach Activity**	**Target Audience**	**Materials Provided**	**Comments/Input**
9/15/2023	Prioritization Survey	HMPC	Survey Results	HMPC members were requested to complete the Mitigation Project Prioritization Survey by this date. Results found 5 high priority, 6 medium priority, and 1 low priority mitigation projects. Results were integrated into Chapter 17.
9/22/2023	Draft Chapter 17 Mitigation Strategies	HMPC	PDF - Chapter 17	Draft Chapter 17 Mitigation Strategies was submitted to HMPC members for review and comment. New mitigation action items relevant to these hazards were solicited from HMPC members. Comments are due by September 29, 2023. Drafts will be uploaded to the project website following review.
9/29/2023	Draft Chapter 17 Mitigation Strategies	Public	PDF - Chapter 17	This chapter was uploaded to the project website for public review and comment.
-	Draft Plan Review	Public and HMPC	Draft Plan and Appendices	The Draft Plan Update was submitted to the HMPC for additional review and comments, and the Draft Plan was added to the project website to allow the public additional opportunity to review and comment.
-	MDEM Submittal	MDEM	Draft Plan and Appendices	The Draft 2023 Allegany County Hazard Mitigation Plan Update was submitted to MDEM for review.

Appendix E: Allegany County Fixed HazMat Sites

Fixed Site HazMat Locations

There are 49 locations where Hazardous Materials are stored throughout the County. Additionally, those denoted with an asterisk (*) are located within the 1 percent-annual-chance floodplain.

Facility	Location	Fire District	Region
AES Warrior Run	11600 Mexico Farms Road Cumberland, Md.	District 16	Central
Airgas USA LLC	102-110 Wineow, Cumberland, Md.	Cumberland	Cumberland
Berry Plastics Cumberland	11301 Superfos Drive, Cumberland, Md.	Cumberland	Cumberland
Black Oak Substation & SVC	18100 Black Oak Road SW, Rawlings, Md.	Rawlings	Central
Central Coca-Cola Bottling Co., Inc.	312 Greene Street Cumberland, Md.	Cumberland	Cumberland
Cintas 0B22	11800 Upper Potomac Industrial. Park St. Cumberland, Md.	Bowling Green	Central
Cabin Run Site	18710 Cabin Run Rd. SW, Frostburg, Md.	Frostburg	Frostburg
Cintas 386	11800 Upper Potomac Industrial Park, Cumberland, Md.	Cumberland	Cumberland
*Columbia Gas Transmission	Kreigbaum Road Corriganville, Md.	Corriganville	Central
CSX Transportation	16 E. Offutt Street Cumberland, Md.	Cumberland	Cumberland
Cumberland Service Center (FirstEnergy, Corp.)	700 4th Street Cumberland, Md.	Cumberland	Cumberland
City of Cumberland WWTP	400 E. Offutt Street, Cumberland, Md.	Cumberland	Cumberland
CMB DEPOT	900 Gay Street, Cumberland, Md.	Cumberland	Cumberland
CINGULAR (formerly AT&T) - Frostburg	11400 Frost Industrial Park, Frostburg, Md.	Frostburg	Frostburg
CINGULAR (formerly AT&T) - Haystack	Bishop Walsh Road, Cumberland, Md.	Cumberland	Cumberland
CINGULAR (formerly AT&T) – Irons Mt.	12703 Moores Hollow Road, Cumberland, Md.	Cumberland	Cumberland
CINGULAR (formerly AT&T) - Westernport	Rook Base Road (Off Rock Street), Westernport, Md.	Potomac	Western

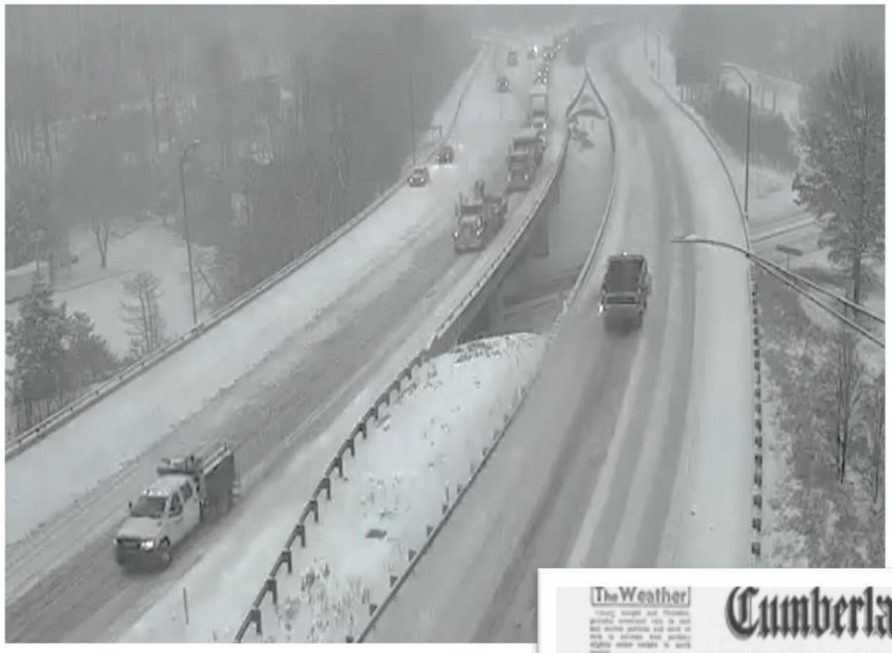
Facility	Location	Fire District	Region
FCI Cumberland	14601 Burbridge Road Cumberland, Md.	District 16	Central
FIBRED Co.	10900 Day Road Cumberland, Md.	District 16	Central
*IA Construction	12315 Rock Cut Road Cumberland. Md.	Corriganville	Central
Level (3) Communications	700 Kelly Road Cumberland, Md.	Cumberland	Central
LOWE'S OF ALLEGANY, MD. # 0468	1211 National Hwy., Lavale, Md	LaVale	Central
Verso Corp Paper Mill	300 Pratt Street Luke, Md.	Luke	Western
Maryland Water Service – Pinto WWTP Lagoon	14712 Bourbon Street SW Off RT 220 b/w Pinto Road and RT 956	Cresaptown	Central
Maryland Water Service	RT 220, between 956 and Jared Drive, Cumberland, Md.	Cresaptown	Central
MDARNG Cumberland Armory	1100 Brown Avenue Cumberland, Md.	Cumberland	Central
*MFRI Western Maryland	13928 Hazmat Drive Cresaptown, Md.	Cresaptown	Central
Mountainview Landfill	13300 New Georges Creek Road Frostburg, Md.	Midland	Western
Mountainview Sanitary Landfill	13300 New Georges Creek Road, SW, Frostburg, Md.	Frostburg	Frostburg
Pitt Ohio Express	10901 Day Road Cumberland, Md.	District 16	Central
Potomac Farms Dairy	300 West Industrial Boulevard Cumberland, Md.	Cumberland	Cumberland
RoadSafe Cumberland	960 Kelly Road, Cumberland, Md.	Baltimore Pike	Central
Southern States Coop., Inc., Cumberland Coop LP	12310 Rock Cut Rd, Cumberland, Md.	Cumberland	Cumberland
Southern States Coop. Inc.	811 North Mechanic Street Cumberland, Md.	Cumberland	Cumberland
Southern States Coop. Inc.	12 West Robert Street Cumberland, Md.	Cumberland	Cumberland
Tri-State Propane	13526 McMullen Highway Cumberland, Md.	Bowling Green	Central
Upper Potomac River Commission	528 Maryland Avenue Westernport, Md.	Westernport	Western

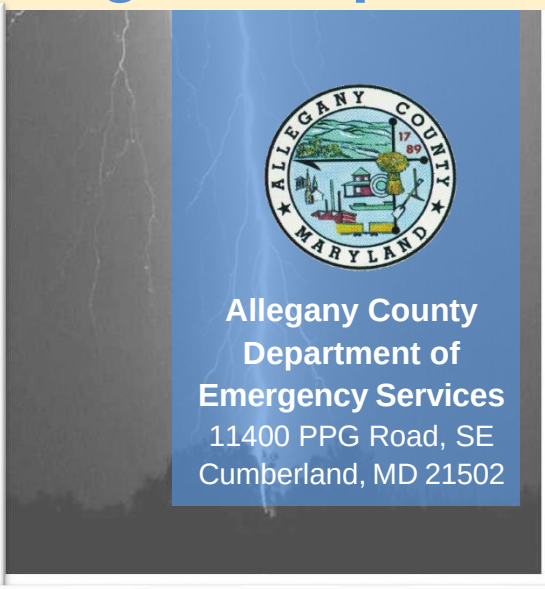
Facility	Location	Fire District	Region
US Postal Service	211 Bowen Street Cumberland, Md.	Cumberland	Cumberland
UPS Ground Freight – Cumberland	120 King Street Cumberland, Md.	Cumberland	Central
US Cellular - Dans Mountain	16890 Old Dans Rock Road SW, Midland, Md.	Midland	Western
US Cellular - Allegheny Grove	13700 Trestle Bridge Road NW, LaVale, Md.	LaVale	Central
Verizon Cresaptown	14909 Winchester Road Cumberland, Md.	LaVale	Central
Verizon Cumberland DMS	24 S. Centre Street Cumberland, Md.	Cumberland	Cumberland
Verizon Flintstone	National Pike, Flintstone, Md.	Flintstone	Eastern
Verizon Frostburg WC	77 E. Main Street Frostburg, Md.	Frostburg	Frostburg
Verizon Lonaconing	4 W. Main Street Lonaconing. Md.	Lonaconing	Lonaconing
Verizon Mt. Savage	14809 Mt. Savage Road Mt. Savage, Md.	Mt. Savage	Western
Wilson Welding Supply	15401 McMullen Highway Cumberland, Md.	Cresaptown	Central

Source: Allegany County Emergency Management.

Appendix F: 2023 Mitigation Action Progress Report

Allegany County
Hazard Mitigation Plan -
2023 Mitigation Action Progress Report





Allegany County Department of Emergency Services
11400 PPG Road, SE
Cumberland, MD 21502

The Weather

Cumberland Evening Times.

VOL. LXIX—NO. 78 ★★ City Edition 4 Pages CUMBERLAND, MARYLAND, WEDNESDAY, MARCH 18, 1936 PRICE TWO CENTS

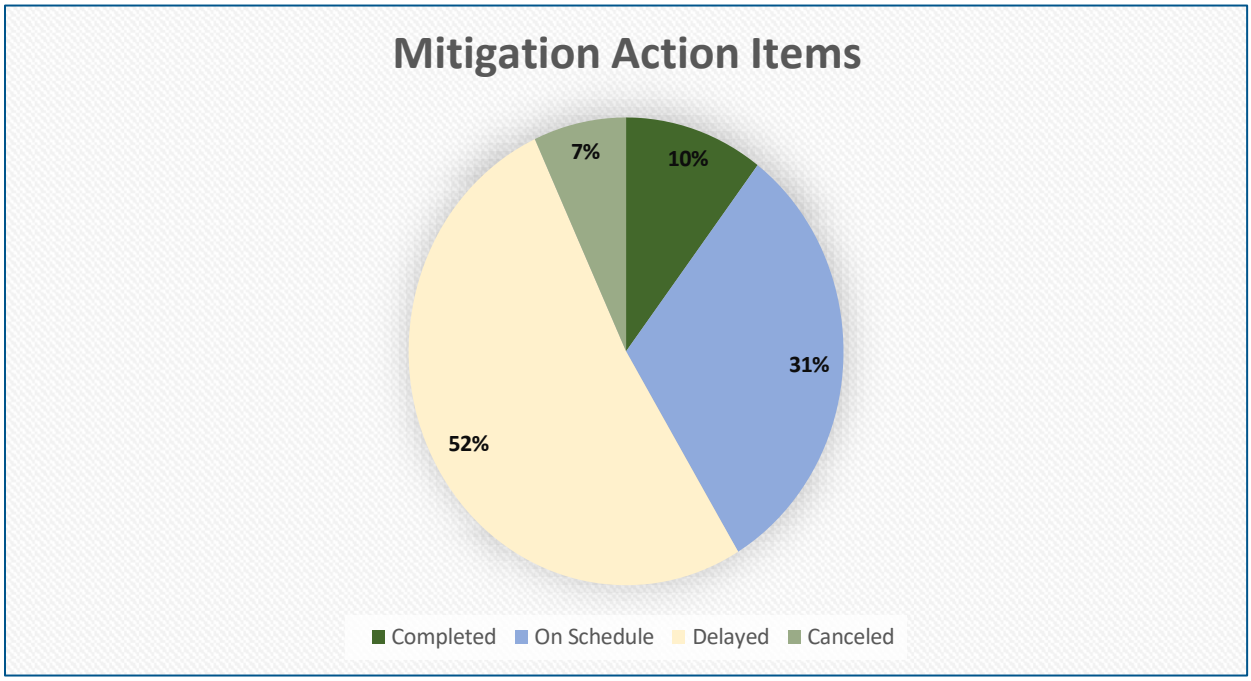
CUMBERLAND'S WORST FLOOD

MITIGATION ACTION PROGRESS REPORT

Mitigation Action Items Status

In an effort to determine the status of the mitigation action items/projects developed for the *2018-2023 Allegany County Hazard Mitigation Plan*, Smith Planning & Design (SP&D) was hired to assist the Department of Emergency Services to obtain information and develop this report. As part of FEMA requirements for plan maintenance and implementation, information gathered from various departments, agencies, and organizations assisted the County with the evaluation of mitigation action items and projects for this report. The distribution of this report includes all planning partners.

As the initial step in the process, the Department of Emergency Services provided Point of Contacts (POC) from various county departments, agencies, and organizations identified as the responsible entity(s) for each mitigation action item. The chart below is a composite of the status of mitigation actions to date, while the table on the following page provides additional details. Finally, the data gathering method and completed data forms have been included in this document.



The purpose of hazard mitigation action items and associated strategies is to reduce or eliminate long-term risk to people and property from hazards and their effects. During the 2018-2023 Hazard Mitigation Plan Update process, action items and projects were developed. A total of twenty-nine (29) mitigation action items were evaluated as part of the mitigation action progress report; twelve (12) of these action items were ranked as "high priority" in the 2018 Hazard Mitigation Plan. Within the 2018 Hazard Mitigation Plan, potential

mitigation projects that address the twelve (12) highest rated mitigation actions were developed. Projects included: Project A: Floodplain Ordinance Revision; Project B: Flood Acquisitions; Project C: Development Restrictions on Vacant Parcels; Project D: Critical Overlay Zone; Project E: GIS Based Solutions for Damage Assessment; Project F: Essential Facility Food Mitigation; Project G: Pump Station Generators; and Project H: Mobile Message Signs. Responsible entities provided important feedback regarding the progress occurring between 2018 and 2022 on these action items/projects .

Based on this feedback, the following was determined: three (3) action items are "completed", nine (9) action items are "on schedule" to be completed, and fifteen (15) action items are "delayed" for various reasons, including such reasons as lack of funding, Covid, or changes in staff. Two (2) mitigation action items were considered irrelevant and therefore canceled.

Table F-1. Mitigation Action Items Status

Mitigation Action Item #/ Project	Background	Status
#1 – Project A	Review and where necessary revise and update local floodplain ordinances. Possible changes include specific vegetative buffers and freeboard requirements.	**Completed**
#2 – Project C	Consider development restrictions for vacant parcels located in identified hazards areas.	Delayed
#3 – Project D	For areas in the County that have experienced repetitive hazard issues, implement a critical hazard area overlay zone within the zoning ordinance. This critical overlay zone could include portions of property parcels that have multiple hazards. Such as 100-year floodplain, severe erodible soils, slopes 25% or greater, Hydric soils and wetlands.	Delayed
#4	Due to steep slope flooding, specifically in the Georges Creek area, consider modifying the steep slope ordinance from 25% to 15%.	Delayed
#5 – Project E	Utilize GIS based solutions for damage assessments and to collect information for mitigation projects, specifically for flood related damage that includes high water mark elevation and picture.	Delayed
#6 – Project E	Geocode previous damage assessment reports to visualize areas of repetitive loss.	Delayed
#7	Prepare a CRS (Community Rating System) application to reduce insurance costs within the county. Currently, Allegany County is not enrolled in the CRS. As of November 2017, there are 320 NFIP policy holders in the county with $456,220 being paid in insurance premiums. On average, Allegany County policy holders pay $1,426 per year in flood insurance. By participating in the CRS, policy holders could potentially save between $71 (5%) to $642 (45%) per year.	Delayed
#8	Update Floodplain Management Ordinance once the preliminary DFIRMs become effective.	**Completed**

Table F-1. Mitigation Action Items Status		
Mitigation Action Item #/ Project	**Background**	**Status**
#9	Work with Maryland Department of Natural Resources to complete Community Wildfire Protections Plans for at-risk communities. Currently, Little Orleans is the only community with a Wildfire Protection Plan.	Delayed
#10	Acquire/demolish and relocate the Town Halls of Lonaconing and Westernport. Both Town Halls are located within the 100-year floodplain, and both have experienced first floor flooding in 1996.	Delayed
#11 – Project F	Acquire/demolish and relocate the following Fire Departments that have been identified by the FEMA HAZUS Model as susceptible to first floor flooding. Fire Departments include: Corriganville VFC, Midland Fire Company, Potomac Fire Company, and Baltimore Pike VFC.	On Schedule
#12 – Project F	Review the following Schools for flooding susceptibility. These schools have been identified by the FEMA HAZUS Model as being susceptible to first floor flooding. The Schools include Calvary Christian Academy and Flintstone Elementary.	Delayed
#13	Consider retrofitting the following WWTP for flooding. These WWTP have been identified by the FEMA HAZUS Model as susceptible to flooding damage. These WWTP include Barton, Flintstone, Little Orleans Campground, Oldtown and Rawlings.	On Schedule
#14 – Project G	Prioritize the following water Pump Stations (PS) in need of a generator: Bowling Green PS, Rolling Oaks PS, Cresaptown PS, and Homewood PS (Corriganville/Ellerslie). Apply for grant funding to purchase and install a generator that ensures continued power at these water pump stations.	On Schedule
#15 – Project E	Perform a detailed analysis of structures in the floodplain for all municipalities and determine first floor elevation for mitigation project purposes.	Delayed
#16	Identify older homes and Pre-FIRM residential structures in the floodplain that need mitigation measures in order to bring them into compliance when funding is available. Parcel layer is needed within GIS to adequately identify.	Delayed
#17	Assess all shelters and their ability to sustain damage for specific hazard types and identify retrofitting projects based on this assessment.	Delayed
#18	Include the current 21 repetitive loss properties on the County's flood buyout listing.	On Schedule
#19	Prioritize and continue to purchase properties on the flood buyout listing. Currently there are 61 properties on the listing, however inclusion of the repetitive loss properties, the total number of properties would be 82.	Delayed

Table F-1. Mitigation Action Items Status		
Mitigation Action Item #/ Project	**Background**	**Status**
#20	Identify and prioritize essential and critical facilities or shelters that map need a generator. Based upon the assessment, apply for grant funding to purchase, and install an emergency generator that ensures continued power of essential facilities and shelters. One identified critical facility in need of a generator is the Cumberland County's Road Garage.	Delayed
#21 – Project F	For the eight (8) essential facilities listed as having a high vulnerability in the risk assessment and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed.	On Schedule
#22	Obtain funding to acquire the Trade Wind and Garden City Mobile Home Parks located in LaVale. The mobile home parks are co-located and vulnerable to the 100-year flood event. Out of 75 mobile homes, 40 are within the 100-year floodplain.	Schedule
#23	Distribute information concerning HazMat Transportation to highly commercialized areas that are located within the transportation route, specifically to the facilities located along Interstate 68.	Canceled
#24 – Project B	Consider purchasing repetitive loss properties in the county when funding becomes available. Update the volunteer buy-out program letter of interest anddistribution listing.	Delayed
#25 – Project H	Obtain funding to purchase mobile message signs that can be utilized during hazard events for hazard warning and notification.	**Completed**
#26	Implement low impact development techniques in areas where stormwater is an issue. These techniques could include, infiltration trenches, vegetated swales, buffer strips.	On Schedule
#27	Implement necessary mitigation measures to alleviate flooding issues listed in the following table; Tables 16.2 and 16.3.	On Schedule
#28	Mitigate stormwater issues listed in the County's Drainage Complaint Database (database no longer maintained but still contains listing of issues).	On Schedule
#29	Retrofit railroad trestles located throughout the Georges Creek Region to mitigation flooding.	Canceled
Note: Additional status update details are included on pages 6 - 34.		

Data Gathering Process

In order to obtain a status on each mitigation action, SP&D developed a "Mitigation Action Status Update' fillable PDF form for distribution to each responsible entity(s). Hazard mitigation action items included on the form were specific to each entity(s).

Each action item/project included the following information:

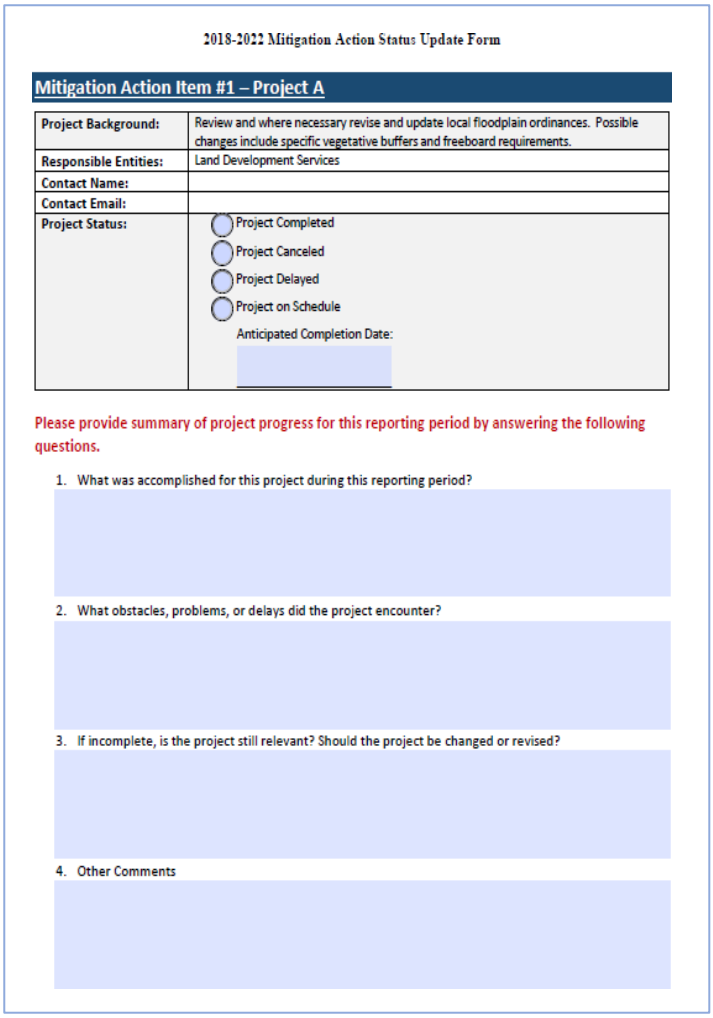
- Action Item #/Project
- Project Background
- Responsible Entity

Responsible entities were tasked with providing the following information for each action item, to the best of their ability:

- Contact Name/Information
- Current Project Status (e.g., Completed, Canceled, Delayed, or On Schedule)

Additionally, they were asked the following four questions for each action item:

1. What was accomplished for this project during this reporting period?
2. What obstacles, problems, or delays did the project encounter?
3. If incomplete, is the project still relevant? Should the project be changed or revised?
4. Other Comments?



2018-2022 Mitigation Action Status Update Form

Mitigation Action Item #1 – Project A

Project Background:	Review and where necessary revise and update local floodplain ordinances. Possible changes include specific vegetative buffers and freeboard requirements.
Responsible Entities:	Land Development Services
Contact Name:	
Contact Email:	
Project Status:	◯ Project Completed ◯ Project Canceled ◯ Project Delayed ◯ Project on Schedule Anticipated Completion Date:

Please provide summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?
2. What obstacles, problems, or delays did the project encounter?
3. If incomplete, is the project still relevant? Should the project be changed or revised?
4. Other Comments

The mitigation action items identified as "completed" are listed below. Two (2) of the high priority mitigation action items were designated as "completed"; these mitigation action items are identified in **red**.

- Action Item #1 – Project A: Floodplain Ordinance Revision
- Action Item #8
- Action Item #25 - Project H: Mobile Message Signs

Findings that the fourteen (14) mitigation action items designated as "delayed" in addition to the eight (8) action items that were identified as being "on schedule" are to be carried forward into the future Plan Update. Various action items were reviewed, and revisions made for inclusion in the Allegany County Hazard Mitigation Plan Update. The following pages provide full status details for each of the twenty-nine (29) mitigation action items/projects.

MITIGATION ACTION STATUS FORMS

Mitigation Action Item #1 – Project A

Project Background:	Review and where necessary revise and update local floodplain ordinances. Possible changes include specific vegetative buffers and freeboard requirements.
Responsible Entity:	Department of Planning and Zoning
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	(●) Project Completed ( ) Project Canceled ( ) Project Delayed ( ) Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The Floodplain ordinance has been updated according to the effective flood maps dated April 3, 2020. During this time the County took the opportunity to implement the latest regulations to help better safeguard the community against flooding and repetitive loss with oversite from MDE floodplain offices.

2. What obstacles, problems, or delays did the project encounter?

No obstacles or delays were encountered.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

N/A

4. Other Comments

This project has been completed.

Mitigation Action Item #2– Project C

Project Background:	Consider development restrictions for vacant parcels located in identified hazards areas.
Responsible Entity:	Department of Planning and Zoning
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

EPA - Restricted Zone due to HazMat issues on specific parcel(s).

2. What obstacles, problems, or delays did the project encounter?

N/A

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project is still relevant and should consider the flood hazard.

4. Other Comments

No additional comments.

Mitigation Action Item #3 – Project D

Project Background:	For areas in the County that have experienced repetitive hazard issues, implement a critical hazard area overlay zone within the zoning ordinance. This critical overlay zone could include portions of property parcels that have multiple hazards. Such as 100-year floodplain, severe erodible soils, slopes 25% or greater, Hydric soils and wetlands.
Responsible Entity:	Department of Planning and Zoning; GIS Department
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: 2023-2024

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

While this was referenced in the Comprehensive Plan, the overlay zone has not been developed.

2. What obstacles, problems, or delays did the project encounter?

Requires additional consideration and criteria.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project is still relevant, consider for carry-over in the next HMP Update.

4. Other Comments

No additional comments.

Mitigation Action Item #4

Project Background:	Due to steep slope flooding, specifically in the Georges Creek area, consider modifying the steep slope ordinance from 25% to 15%.
Responsible Entity:	Department of Planning and Zoning
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: 2023-2024

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

A steep slope ordinance has not been placed into effect as a result of multiple factors. Part of our objective is to keep development out of the floodplain. With a restricted slope ordinance this would severely reduce the eligible buildable locations in this region.

2. What obstacles, problems, or delays did the project encounter?

The obstacle has been implementing this into the County Zoning Code outside of the period in which the code is eligible to be modified or updated.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Additional consideration in both the HMP Update process and the Comprehensive Plan Update.

4. Other Comments

No additional comments.

Mitigation Action Item #5 – Project E

Project Background:	Utilize GIS based solutions for damage assessments and to collect information for mitigation projects, specifically for flood related damage that includes high water mark elevation and picture.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; GIS Department
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: 2023

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

New servers were purchased for data storage and the County recently purchased software.

2. What obstacles, problems, or delays did the project encounter?

A software tool has not been selected. Considering Survey123, which is used by MDEM. With staff turnover over the past several years, new damage assessment team members should be identified and trained.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project and should be carried over in the plan update.

4. Other Comments

Consider damage assessment training and software training such as Survey123.

Mitigation Action Item #6 – Project E

Project Background:	Geocode previous damage assessment reports to visualize areas of repetitive loss.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; GIS Department
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Due to staff turnover over the past several years, files will need to be reviewed for possible sources of information.

2. What obstacles, problems, or delays did the project encounter?

Working files not organized.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Project is still relevant. Rewrite:

Review previous damage assessment reports, then geocode to visualize areas of repetitive loss.

4. Other Comments

No additional comments.

Mitigation Action Item #7

Project Background:	Prepare a CRS (Community Rating System) application to reduce insurance costs within the county. Currently, Allegany County is not enrolled in the CRS. As of November 2017, there are 320 NFIP policy holders in the county with $456,220 being paid in insurance premiums. On average, Allegany County policy holders pay $1,426 per year in flood insurance. By participating in the CRS, policy holders could potentially save between $71 (5%) to $642 (45%) per year.
Responsible Entity:	Department of Planning and Zoning
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Due to staff turnover over the past several years, the CRS application was not completed.

2. What obstacles, problems, or delays did the project encounter?

Staff turnover.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Rewrite:

Explore the CRS (Community Rating System), which reduces insurance costs within the county.

4. Other Comments

Mitigation Action Item #8

Project Background:	Update Floodplain Management Ordinance once the preliminary DFIRMs become effective.
Responsible Entity:	Department of Planning and Zoning
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	(●) Project Completed ( ) Project Canceled ( ) Project Delayed ( ) Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The Floodplain Ordinance has been updated according to the effective flood maps dated April 3, 2020. During this time the County took the opportunity to implement the latest regulations to help better safeguard the community against flooding and repetitive loss with oversite from MDE floodplain offices.

2. What obstacles, problems, or delays did the project encounter?

No issues or delays were encountered.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

N/A

4. Other Comments

This project has been completed.

Mitigation Action Item #9

Project Background:	Work with Maryland Department of Natural Resources to complete Community Wildfire Protections Plans for at-risk communities. Currently, Little Orleans is the only community with a Wildfire Protection Plan.
Responsible Entity:	DES – Emergency Management Division; Maryland DNR; Fire Departments
Contact Name:	Roger Bennett
Contact Email:	rbennett@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Protection Plans are completed for Orleans and Bowman's Addition.

2. What obstacles, problems, or delays did the project encounter?

COVID-19 delays and delays with support from DNR to complete.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Looking to continue the project by adding a wildfire protection plan for Midland, Barton, and Flintstone.

4. Other Comments

No additional comments.

Mitigation Action Item #10

Project Background:	Acquire/demolish and relocate the Town Halls of Lonaconing and Westernport. Both Town Halls are located within the 100-year floodplain, and both have experienced first floor flooding in 1996.
Responsible Entity:	Department of Planning and Zoning; Towns of Lonaconing and Westernport
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

As reported from the respective towns, neither town has expressed interest in relocating their town hall due to current internal and external circumstances.

2. What obstacles, problems, or delays did the project encounter?

Current issues exist that hamper efforts to move each of the town halls. Currently, logistics and community support are among the forefront drivers to accomplish this project. Next, a competitive real estate market has quickly locked out their ability for prospective relocation opportunities.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project may remain as an action item seeking long term results. This is a little beyond the County since these are independent governing bodies. This would be something that would almost have to be driven from within as their respective towns seek mitigation and community support that is not of current interest from within.

4. Other Comments

No additional comments.

Mitigation Action Item #11 – Project F

Project Background:	Acquire/demolish and relocate the following Fire Departments that have been identified by the FEMA HAZUS Model as susceptible to first floor flooding. Fire Departments include: Corriganville VFC, Midland Fire Company, Potomac Fire Company, and Baltimore Pike VFC.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; Fire Department
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The Baltimore Pike VFC has made a substantial improvement to their building in the floodplain. As a result, the entire building has been brought up to the current Floodplain regulations specific to elevation and flood proofing impacted lower levels. The Corriganville VFC has successfully been encouraged to build any additional structures that store equipment and supplies at another location to prevent possible flood loss.

2. What obstacles, problems, or delays did the project encounter?

Acquiring and demolishing the identified fire departments has been a topic of conversation. As fire departments have been seeking permitting and minor improvements our offices have helped them mitigate potential loss and become compliant with current floodplain regulations.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project is still underway as a dialogue has been established with the additional fire departments and the County who will be working along side of them during this project. This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #12 – Project F

Project Background:	Review the following Schools for flooding susceptibility. These schools have been identified by the FEMA HAZUS Model as being susceptible to first floor flooding. The Schools include Calvary Christian Academy and Flintstone Elementary.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; BOE
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Each of these schools have been evaluated in a meeting by the Department of Public Works and Planning and Zoning to gauge whether or not they would be viable candidates for project action. In conducting these projects eligible for grant money and the value of the impact were both considered. These projects are a mix of both public and private interest that have lasting value.

2. What obstacles, problems, or delays did the project encounter?

At this time each of these projects are viable options for focusing grant money and mitigation. These projects are simply delayed while other projects take prescience since floodplain vulnerability is greater in those areas and mitigation makes more sense focused elsewhere at this time.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #13

Project Background:	Consider retrofitting the following WWTP for flooding. These WWTP have been identified by the FEMA HAZUS Model as susceptible to flooding damage. These WWTP include Barton, Flintstone, Little Orleans Campground, Oldtown and Rawlings.
Responsible Entity:	Department of Planning and Zoning; Department of Public Works; MDE
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The WWTP located in Barton has had a complete update in XXXX. Furthermore, this plant was removed from the floodplain as a result of the implementation of the 4-3-2020 FIRMS. The WWTP in Flintstone has recently secured funding, site plans and is being brought up to current standards. This new plant will be located outside of the existing floodplain.

2. What obstacles, problems, or delays did the project encounter?

N/A

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #14 – Project G

Project Background:	Prioritize the following water Pump Stations (PS) in need of a generator: Bowling Green PS, Rolling Oaks PS, Cresaptown PS, and Homewood PS (Corriganville/Ellerslie). Apply for grant funding to purchase and install a generator that ensures continued power at these water pump stations.
Responsible Entity:	Department of Public Works; Department of Emergency Services
Contact Name:	Adam Patterson
Contact Email:	adam.patterson@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: Dependent on funding

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Bowling Green Sewer PS was completed. Rolling Oaks Water Booster was completed. Cresaptown Sewer PS was completed.

2. What obstacles, problems, or delays did the project encounter?

No delays. Projects are completed as funding is approved. All the other pump stations have the connection for a portable generator to be utilized.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Project is relevant. We would you like to have permanent back-up power at Homewood and the Cresaptown Water Booster Station.

4. Other Comments

No additional comments.

Mitigation Action Item #15 – Project E

Project Background:	Perform a detailed analysis of structures in the floodplain for all municipalities and determine first floor elevation for mitigation project purposes.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; GIS Department
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

This is a project that has had serious consideration and one that would boost the County's ability to focus resources on the most vulnerable properties within floodplain zones. Using this alongside of the County's GIS resources will help target regions that may need greater assistance than others

2. What obstacles, problems, or delays did the project encounter?

Current problems with the County's dated GIS software and the transition to the new GIS program reboot have delayed efforts to develop a comprehensive list effected floodplain properties. Once this software and personnel are in effect the Floodplain Management office has expressed interest in working through a program to help those most impacted by flooding events.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #16

Project Background:	Identify older homes and Pre-FIRM residential structures in the floodplain that are in need of mitigation measures in order to bring them into compliance when funding is available. Parcel layer is needed within GIS to adequately identify.
Responsible Entity:	Department of Planning and Zoning: Department of Emergency Services; GIS Department
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

This project is a tentative actionable item that has gained interest to help new floodplain homes. The program aims to target the niche of older homes that have been added to the FIRM as a result of the new 2020 flood maps. These homes will be the ones targeted for funding and flood proofing.

2. What obstacles, problems, or delays did the project encounter?

Some of the issues that lay in the way are funding from governmental sources. This project has also suffered from the lack of a GIS layer that can identify the properties in need of mitigation measures to bring them into compliance. The current reboot of the County's new GIS program is aimed to bring the technology needed to bring new projects like this into fruition.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #17

Project Background:	Assess all shelters and their ability to sustain damage for specific hazard types and identify retrofitting projects based on this assessment.
Responsible Entity:	Department of Emergency Services; BOE; MDEM
Contact Name:	Carrie Hughes
Contact Email:	chughes@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

   There were no accomplishments during this reporting period.

2. What obstacles, problems, or delays did the project encounter?

   The project suffered a delay due to employee overturn and COVID-19 delays.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

   This project should be continued and updated with the new 100 year flood plain levels.

4. Other Comments

   No additional comments.

Mitigation Action Item #18

Project Background:	Include the current 21 repetitive loss properties on the County's flood buyout listing.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The County has continued working through a grant project entitled Garden City Mobile Home Park located on Winchester Road in LaVale. This project is working to buyout and relocate a total of 25 mobile home lots from the floodplain. This will relocate individuals into another area where they will not be impacted by flood water.

2. What obstacles, problems, or delays did the project encounter?

Current properties that are a part of the flood buyout list have been placed on hold while the current pending queue is working. Additional repetitive loss properties will be considered for relocation once the current project has been closed out.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #19

Project Background:	Prioritize and continue to purchase properties on the flood buyout listing. Currently there are 61 properties on the listing, however inclusion of the repetitive loss properties, the total number of properties would be 82.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The current properties on the list have been prioritized to make the best use of federal dollars to remove vulnerable homes out of the flood zone. The current moves have been delayed as a result of a current project that is requiring the majority of the time and office resources. This project called Garden City is in the process of relocating 25 homes out of the floodplain.

2. What obstacles, problems, or delays did the project encounter?

Issues have been that offices resources are consumed by a current relocation project. Once this project has been completed the County will work to purchase more properties on the flood buyout list.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #20

Project Background:	Identify and prioritize essential and critical facilities or shelters that may be in need of a generator. Based upon the assessment, apply for grant funding to purchase and install an emergency generator that ensuring continued power of essential facilities and shelters. One identified critical facility in need of a generator is the Cumberland County's Road Garage.
Responsible Entity:	Department of Emergency Services; Department of Public Works; MDEM
Contact Name:	Carrie Hughes
Contact Email:	chughes@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The generator at Midland Fire Department was repaired and one partially installed at Mount Savage Fire Department.

2. What obstacles, problems, or delays did the project encounter?

The project suffered a delay due to employee overturn and COVID-19 delays.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

The project needs to be revisited with public works to determine priority and generator status.

4. Other Comments

No additional comments.

Mitigation Action Item #21 – Project F

Project Background:	For the eight (8) essential facilities listed as having a high vulnerability in the risk assessment and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; MDEM
Contact Name:	Carrie Hughes
Contact Email:	chughes@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

There were no accomplishments during this reporting period.

2. What obstacles, problems, or delays did the project encounter?

N/A

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project needs revisited based on the new 100 year flood plain levels.

4. Other Comments

No additional comments.

Mitigation Action Item #22

Project Background:	Obtain funding to acquire the Trade Wind and Garden City Mobile Home Parks located in LaVale. The mobile home parks are co-located and vulnerable to the 100-year flood event. Out of 75 mobile homes, 40 are within the 100-year floodplain.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; GIS Department
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The County has continued working through a grant project entitled Garden City Mobile Home Park located on Winchester Road in LaVale. This project is working to buyout and relocate a total of 25 mobile home lots from the floodplain. This will relocate individuals into another area where they will not be impacted by flood water.

2. What obstacles, problems, or delays did the project encounter?

No obstacles or issues have been encountered.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

N/A

4. Other Comments

This project is ongoing until all mobile homes are removed from the floodplain.

Mitigation Action Item #23

Project Background:	Distribute information concerning HazMat Transportation to highly commercialized areas that are located within the transportation route, specifically to the facilities located along Interstate 68.
Responsible Entity:	Department of Emergency Services; LEPC; Department of Public Works
Contact Name:	Carrie Hughes
Contact Email:	chughes@alleganygov.org
Project Status:	○ Project Completed ◉ Project Canceled ○ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

N/A

2. What obstacles, problems, or delays did the project encounter?

N/A

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This project is not relevant due to the number of hazardous materials transportation vehicles that travel the 68 corridor every day. Emergency Services responders are trained to mitigate all hazards that they may come across.

4. Other Comments

This project is canceled and will not be carried over into the next hazard mitigation plan update.

Mitigation Action Item #24 – Project B

Project Background:	Consider purchasing repetitive loss properties in the county when funding becomes available. Update the volunteer buy-out program letter of interest and distribution listing.
Responsible Entity:	Department of Planning and Zoning; Department of Emergency Services; GIS Department
Contact Name:	Jim Squires
Contact Email:	jsquires@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ◉ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

The current properties on the list have been prioritized to make the best use of federal dollars to remove vulnerable homes out of the flood zone. The current moves have been delayed as a result of a current project that is requiring the majority of the time and office resources.

2. What obstacles, problems, or delays did the project encounter?

Issues have been that offices resources are consumed by a current relocation project. Once this project has been completed the County will work to purchase more properties on the flood buyout list.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

4. Other Comments

No additional comments.

Mitigation Action Item #25 – Project H

Project Background:	Obtain funding to purchase mobile message signs that can be utilized during hazard events for hazard warning and notification.
Responsible Entity:	Department of Public Works; Department of Emergency Services; MDEM
Contact Name:	Dan DeWitt
Contact Email:	ddewitt@alleganygov.org
Project Status:	(●) Project Completed ( ) Project Canceled ( ) Project Delayed ( ) Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Portable message board signs were purchased and are currently being utilized by the Allegany County Department of Public Works and the Allegany County Sheriff's Office. These signs can be programmed and updated remotely from a desktop computer and are used during high traffic events, emergencies, construction projects, etc.

2. What obstacles, problems, or delays did the project encounter?

None.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

N/A

4. Other Comments

This project has been completed.

Mitigation Action Item #26

Project Background:	Implement low impact development techniques in areas where stormwater is an issue. These techniques could include, infiltration trenches, vegetated swales, buffer strips.
Responsible Entity:	Department of Public Works; Department of Planning and Zoning; MDE
Contact Name:	Whitney Patterson
Contact Email:	wpatterson@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

All new development projects, as well as maintenance/repair projects have and continue to implement low impact development practices per Allegany County Code which incorporates the MD Stormwater Design Maryland.

2. What obstacles, problems, or delays did the project encounter?

No obstacles, problems, or delays were encountered

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is an ongoing project and follows any updates released by the State of Maryland or Allegany County.

4. Other Comments

No additional comments.

Mitigation Action Item #27

Project Background:	Implement necessary mitigation measures to alleviate flooding issues listed in the following table; Tables 16.2 and 16.3.
Responsible Entity:	Department of Planning and Zoning; Department of Public Works, Emergency Services
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: Ongoing

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Continued maintenance and oversight by County Roads and Planning and Zoning of the forested buffer zones has reduced flooding in these historically prone locations. These areas have been a part of the Flood buyout list to removed vulnerable infrastructure. Forested buffers are in continual need of promoting natural growth habitat.

2. What obstacles, problems, or delays did the project encounter?

Funding for mitigation efforts and community support and paradigm shifts of the public are among the greatest challenges to further remove potential loss structures.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

This is still a relevant project.

4. Other Comments

No additional comments.

Mitigation Action Item #28

Project Background:	Mitigate stormwater issues listed in the County's Drainage Complaint Database (database no longer maintained but still contains listing of issues).
Responsible Entity:	Department of Public Works; MDE
Contact Name:	Whitney Patterson
Contact Email:	wpatterson@alleganygov.org
Project Status:	○ Project Completed ○ Project Canceled ○ Project Delayed ◉ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

Allegany County has completed most of the projects within that database and continues to complete projects as time and funding allows.

2. What obstacles, problems, or delays did the project encounter?

Most common obstacles, problems, and/or delays that occurs during these projects are that most stormwater issues are on private property. Participation by the private property owner is required to complete these projects.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

These projects/issues are ongoing the completed as time and funding allows.

4. Other Comments

No additional comments.

Mitigation Action Item #29

Project Background:	Retrofit railroad trestles located throughout the Georges Creek Region to mitigation flooding.
Responsible Entity:	Department of Planning and Zoning; CSX; Department of Emergency Services
Contact Name:	Jerrod Cook
Contact Email:	jcook@alleganygov.org
Project Status:	○ Project Completed ◉ Project Canceled ○ Project Delayed ○ Project on Schedule Anticipated Completion Date: _____

Please provide a summary of project progress for this reporting period by answering the following questions.

1. What was accomplished for this project during this reporting period?

This potential project has not been a major concern since the RR line currently has removed sections of rail and this property is privately owned for the purpose of reactivating at a later date for business purposes. This RR line poses a minimal concern to the flooding factor when compared to dated properties that remain unprotected in this region.

2. What obstacles, problems, or delays did the project encounter?

Problems working with the affected landowners adjacent to this track cause community unrest. The current RR line owner is uninterested in removing additional sections of the rail line that are meant to boost their businesses revenue.

3. If incomplete, is the project still relevant? Should the project be changed or revised?

Not a relevant project.

4. Other Comments

This project is canceled and will not be carried over into the next hazard mitigation plan update.

Appendix G: Capability Assessment Matrix

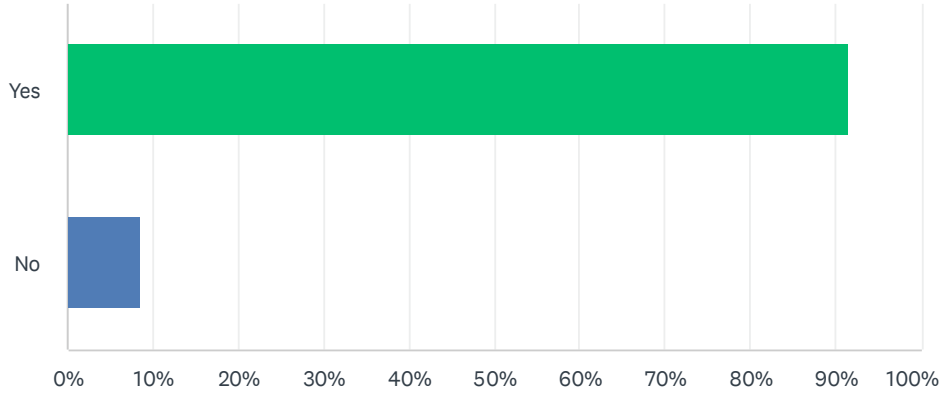
Hazard Mitigation Capability Assessment Matrix							
	Barton	**Cumberland**	**Frostburg**	**Lonaconing**	**Luke**	**Midland**	**Westernport**
Comprehensive Plan with Hazard Mitigation	Yes	No	Yes	Yes	No	Yes	Yes
Land Use Plan	Yes - 2010	Yes - 2013	Yes - 2011	Yes - 2010	No	Yes - 2010	Yes - 2010
Subdivision Ordinance	Yes - County	Yes - 2009	Yes - July 2001	No	Yes - County	Yes - County	No
Zoning Ordinance	Yes - County	Yes - 2008	Yes - 1996	Yes	Yes - County	Yes - County	Yes
Flood Mitigation Assistance Plan (FMA)	No	No	No	No	No	No	No
Floodplain Management Ordinance	Yes	Yes	Yes	Yes	No	Yes	No
- # of 1% Floodplain Buildings?	4	3	0	54	0	13	37
- # of Flood Insurance Policies	3	4	0	24	0	23	29
- # of Repetitive Losses?	2	5	0	2	0	1	5
CRS Rating	None	None	None	None	None	None	None
Stormwater Program	No	Yes - 2010	Yes		County	No	Yes
Building Code	Yes	Yes	Yes - 2009 IBC	Yes	Master Building Permit for NewPage	Yes	Yes
Building Official	No	Yes - Jay Oliver	Yes	Yes	Yes - SPECS	No	Yes
Inspections?	No	Yes - David Cox & Chris Gary	Yes - MEGCO Inspections	No	No	No	Yes
Building Code Effectiveness Grading Schedule (BCEGS) Rating	N/A	No	No	No	No	N/A	No
Warning-sirens?	Yes	Yes	Yes	Yes	Yes - Luke Mill Community Alert	Yes	No
NOAA Weather Radio?	No	Yes	Yes	No	No	Yes	No

Hazard Mitigation Capability Assessment Matrix							
	Barton	**Cumberland**	**Frostburg**	**Lonaconing**	**Luke**	**Midland**	**Westernport**
Property Protection	Yes	No	No	No	No	No	No
Critical Facility Protection	Yes	No	No	No	No	Yes	No
Natural / Cultural Resources Inventory	No	No	No	No	No	No	No
Erosion Control	Yes - County	Yes	Yes - ACSEC/ACSCD	No	Yes - County	Yes - County	No
Sediment Control	Yes - County	Yes	Yes - ACSEC/ACSCD	No	Yes - County	Yes - County	No
Public Information Program	Yes	Yes	Yes	No	No	No	Yes
Environmental Education Program	No	No	No	No	No	No	No

Appendix H: Public Survey Summarized Results

Q1 Are you a resident of Allegany County?

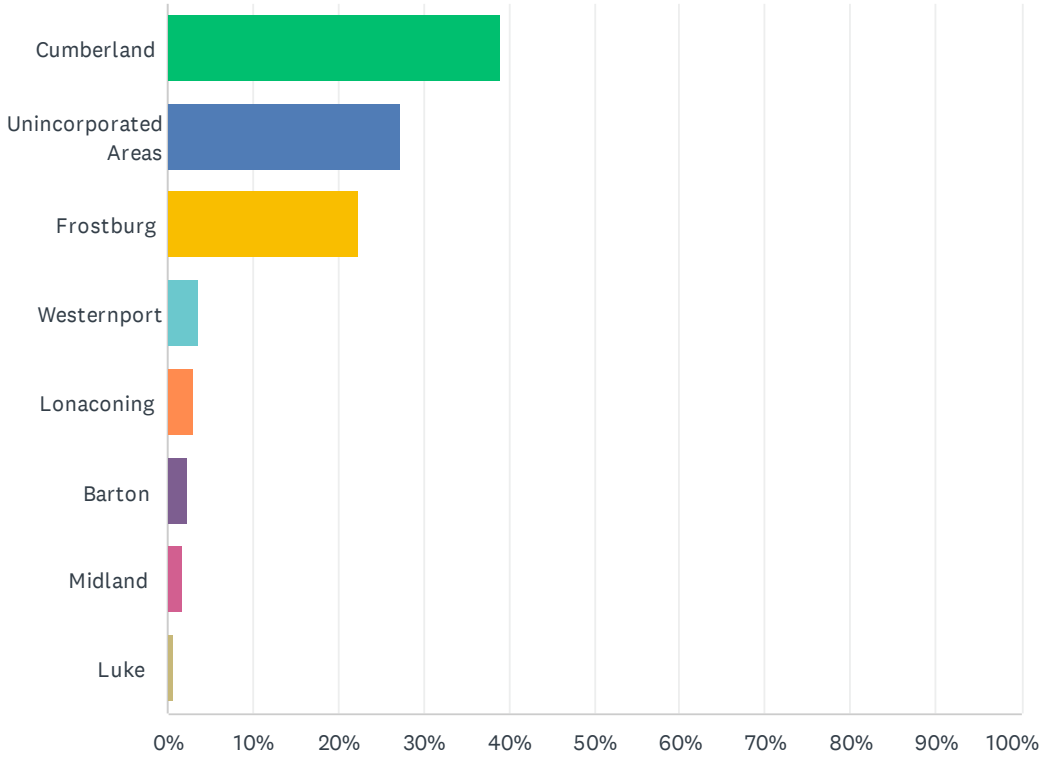
Answered: 174 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	91.38%	159
No	8.62%	15
TOTAL		174

Q2 Please provide the community where you currently live.

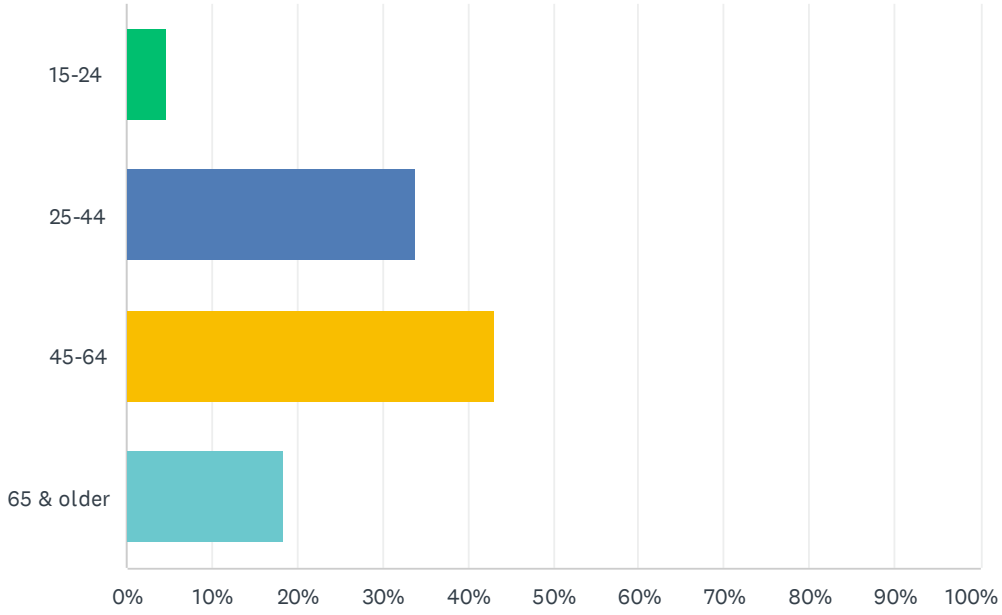
Answered: 169 Skipped: 5



ANSWER CHOICES	RESPONSES	
Cumberland	39.05%	66
Unincorporated Areas	27.22%	46
Frostburg	22.49%	38
Westernport	3.55%	6
Lonaconing	2.96%	5
Barton	2.37%	4
Midland	1.78%	3
Luke	0.59%	1
TOTAL		169

Q3 What age group do you belong?

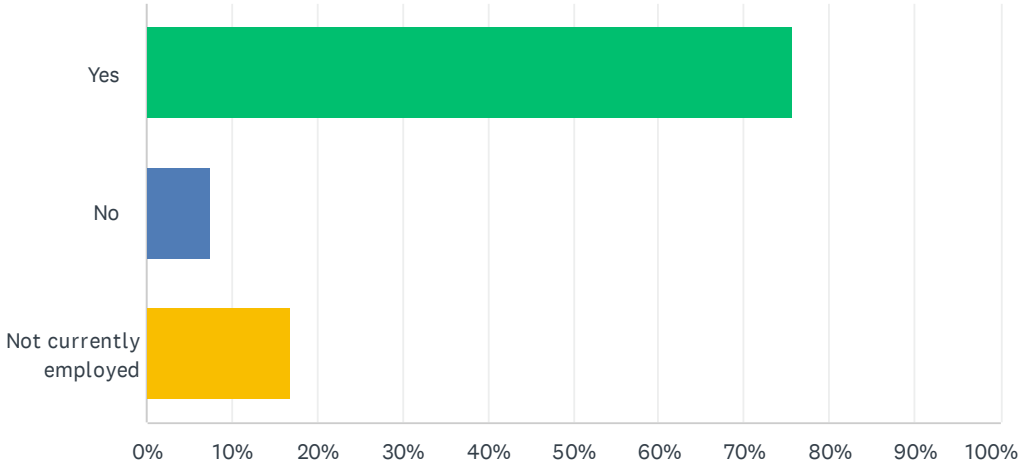
Answered: 174 Skipped: 0



ANSWER CHOICES	RESPONSES	
15-24	4.60%	8
25-44	33.91%	59
45-64	43.10%	75
65 & older	18.39%	32
TOTAL		174

Q4 Do you work in Allegany County?

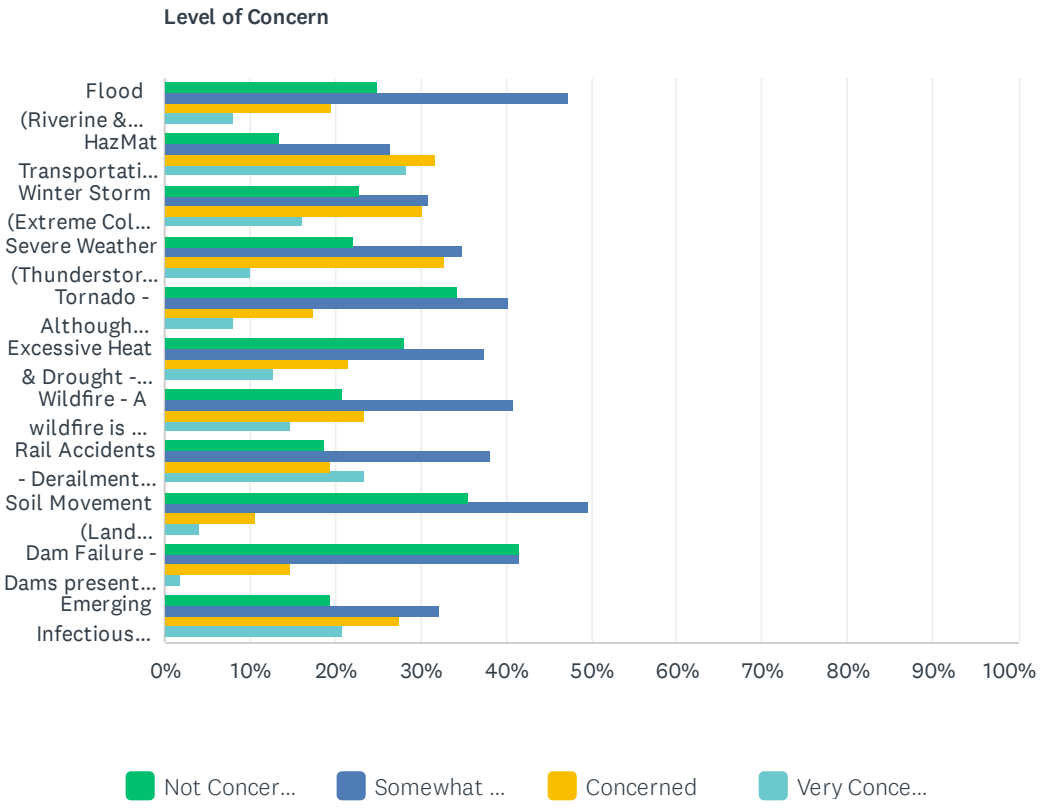
Answered: 173 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	75.72%	131
No	7.51%	13
Not currently employed	16.76%	29
TOTAL		173

Q5 Please indicate your level of concern for each hazard using the drop down menu.

Answered: 149 Skipped: 25



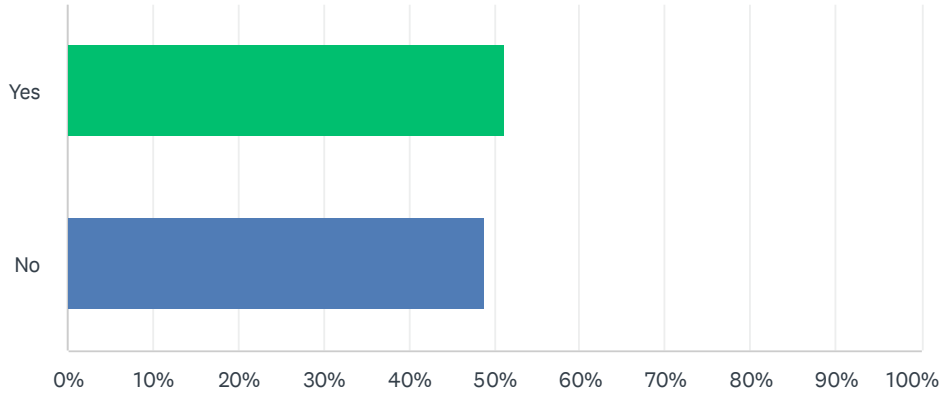
Level of Concern	NOT CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	TOTAL
Flood (Riverine & Flash) - The County is drained by streams generally having their headwaters on steep, sandstone ridges. For the most part, major streams flow through narrow shale and limestone valleys, which are generally parallel to the ridge tops with smaller tributaries draining the ridges. These streams, all of which drain into the Potomac River, are subject to rapid runoff from rainfall and snow melt. Allegany County experiences both flash and riverine flooding. Flash floods occur suddenly with tremendous force, usually as a result of torrential rainfall or thunderstorm event over a short period of time. Riverine flooding in Allegany County is typically associated with snow melt or persistent rain from a strong frontal system, tropical storm, or remnants of hurricanes that have made their way in-land.	25.00% 37	47.30% 70	19.59% 29	8.11% 12	148
HazMat Transportation - Historically, most HazMats moving though Allegany County have been on Interstate 68 and the CSX Transportation. The same is true for today, the bulk of hazardous materials still passing through the County by truck utilize Interstate 68, which crosses the northern part of the County from west to east. Additional routes utilized to transport hazardous materials include: State Routes 36, 40, 220 and 51. Hazardous materials continue to be transported via the CSX Railroad. One of the company's major rail yards is located within the City of Cumberland. The railway traverses the southern border of Allegany County as well as along Route 36 through the Georges Creek and Jennings Region.	13.51% 20	26.35% 39	31.76% 47	28.38% 42	148
Winter Storm (Extreme Cold) - While the average snowfall for the State is 6+ inches, in the mountainous portion of the State, winter storms occur with much greater frequency and are usually more severe in terms of cold temperature, wind speed and duration. Sometimes, however, the typical mid-latitude winter storm or nor'easter passes far to the east of Allegany County and the area receives only a dusting of snow while communities east of the Allegheny Plateau receive the bulk of precipitation. The type of storm that is most common in Garrett County and portions of Allegany County in winter months is the "Lake Effect" storm which is generated over the Great Lakes and may continue for days at a time with near constant snowfall, high winds, low visibility and cold temperatures.	22.82% 34	30.87% 46	30.20% 45	16.11% 24	149
Severe Weather (Thunderstorm, Lightning Strike, Hail & Fog) - Thunderstorms are usually high intensity storms of short duration originating in a warm moist air mass that either is forced to rise by mountainous terrain or by colliding with a cooler dense air mass. Allegany County is affected by thunderstorm activity both by the interaction of warm and cool air masses and by the lifting of warm air as it passes over the Appalachian Plateau. Intense thunderstorms over the steep terrain in Allegany County result in rapid runoff, particularly in the headwaters of small stream basins. The Georges Creek Watershed is particularly steep and	22.15% 33	34.90% 52	32.89% 49	10.07% 15	149

has high runoff rates. Western Allegany County is prone to dense fog conditions in every season, but particularly so during winter and spring months when temperature inversions are common. This condition is more pronounced when the ground is snow covered and warm air flows into the county from the west and south. Dense fog occurs more than 30 times a year on average in western Allegany County.					
Tornado - Although Allegany County is located in mountainous terrain it still has been subjected to violent storms including tornadoes. In 1998 there were 2 reported touchdowns of tornadoes in Allegany County. Both of these events were related to thunderstorms developing from passing cold fronts. The combination of warm moist air flowing up slope from the southwest and a cold front passing from the north and west created ideal conditions for tornado activity. The County has also had significant damage occur due to high wind events. In 2003 and 2006, not only were homes damage but power outages had occurred countywide, leaving residents without power for extended periods of time. Minor tornados incidents have occurred in 2009, 2010, and 2012.	34.23% 51	40.27% 60	17.45% 26	8.05% 12	149
Excessive Heat & Drought - According to the National Weather Service, when temperature and humidity together exceed certain levels (85 F and 100% humidity, 90 F and 70% humidity, or 110 F and 30% humidity) heatstroke is likely if exposure continues for many hours. Allegany County normally averages close to the same temperature and humidity during the summer months as the overall State of Maryland. Additionally, Allegany County averages 84 days of receiving precipitation of 0.1 inch or more within a year and averages a humidity level of 74.56%. Considering Allegany County's summer months' average temperatures above 90 F and combined with the average humidity level, the County is highly susceptible to drought and long periods of excessive heat.	28.19% 42	37.58% 56	21.48% 32	12.75% 19	149
Wildfire - A wildfire is an uncontrolled fire spreading through vegetative fuels, threatening and possibly consuming structures and other community assets. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. The areas of higher concern are within and surrounding the seven municipalities due to the fact that they are population centers. Structures within the growth areas may be more susceptible to damage caused by wildfires due to their forested conditions. Additionally, the area of the County containing the most contiguous forest stand is the Green Ridge State Forest, located in eastern Allegany County	20.81% 31	40.94% 61	23.49% 35	14.77% 22	149
Rail Accidents - Derailment is by far the leading cause of rail accidents followed by rail-highway crossing incidents. The railway traverses the County, parallels the Potomac River and tracks through major population centers. There are 392.76 miles of railway within the County. Considering the railway traverses the County, railway accidents are of concern due to the numerous crossing found throughout the County. There are approximately 163 railroad crossings within Allegany County. Possible secondary effects of these accidents	18.79% 28	38.26% 57	19.46% 29	23.49% 35	149

include chemical/hazardous material spills, fires (both urban and rural), and utility failures (depending on the accident venue). The maximum transportation-related threat to Allegany County is when the incident occurs in or near a heavily populated area.					
Soil Movement (Land Subsidence) - The most common types of soil movement are the landslide and the slump. Allegany County is underlain by layered sedimentary rocks that have been folded moderately. These rock units alternate between sandstone, shale and limestone. When exposed on steep slopes, normally the sandstone forms the cap rock at the top of the slope with shale or limestone lying underneath. When these weaker rocks are disturbed, the sandstone eventually fails and moves downslope. The slump type of soil movement is most common, particularly in road cuts and in strip mining operations in the Georges Creek Watershed area. While these movements are not normally on a large scale, they do result in road blockage from time to time, particularly where narrow valley floors are shared by a stream and a road or railroad. Route 36 and many county roads in the Georges Creek and Jennings Run watersheds are prone to this type of slope failure.	35.57% 53	49.66% 74	10.74% 16	4.03% 6	149
Dam Failure - Dams present risks but they also provide many benefits, including irrigation, flood control, and recreation. Dams have been identified as a key resource of our national infrastructure that is vulnerable to terrorist attack. According to FEMA, dams can fail for several reasons, including: overtopping caused by floods, acts of sabotage, upstream dam failure (i.e., the failure of another nearby dam), structural failure of materials used in dam construction, or earthquakes. A total of ten (10) dams are located within Allegany County.	41.61% 62	41.61% 62	14.77% 22	2.01% 3	149
Emerging Infectious Disease - Emerging Infectious Diseases can be considered as part of a broad hazard category that could be termed “public health emergencies.” In addition to disease epidemics, such events can take the form of large scale incidents of food or water contamination, infestations of disease bearing insects or rodents, or extended periods without adequate water or sewer service.	19.46% 29	32.21% 48	27.52% 41	20.81% 31	149

Q6 When you moved into your residence or commercial property, did you consider the impact a natural or non-natural hazard event could have on your property?

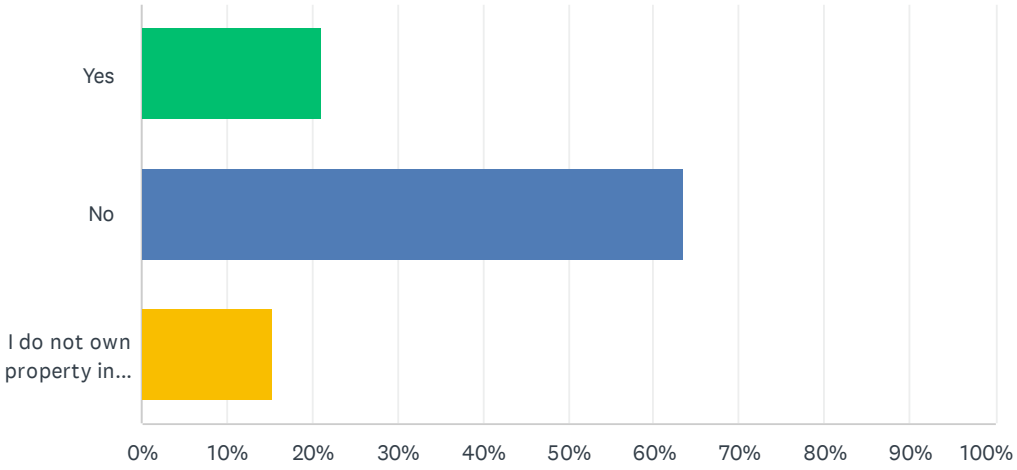
Answered: 135 Skipped: 39



ANSWER CHOICES	RESPONSES	
Yes	51.11%	69
No	48.89%	66
TOTAL		135

Q7 If you own your home or commercial property, do you have flood insurance?

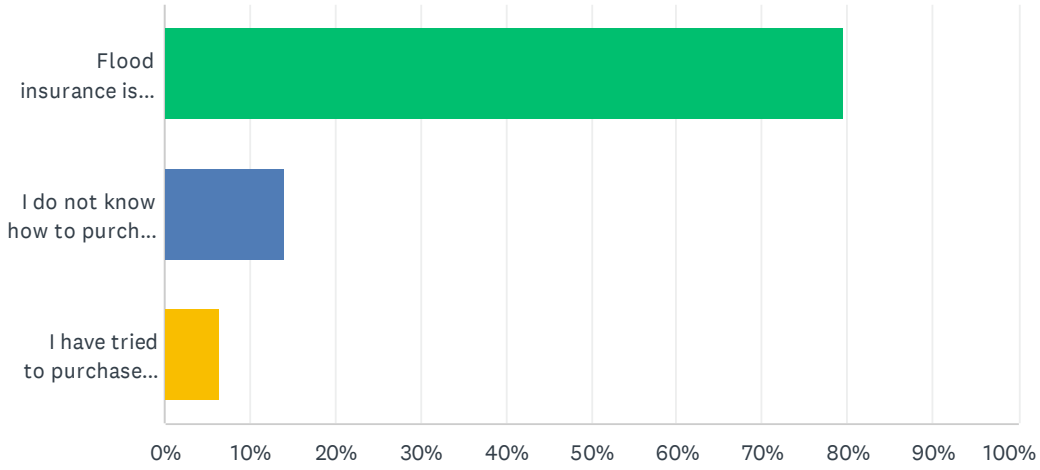
Answered: 137 Skipped: 37



ANSWER CHOICES	RESPONSES	
Yes	21.17%	29
No	63.50%	87
I do not own property in Allegany County	15.33%	21
TOTAL		137

Q8 If “No”, what is the primary reason why you do not carry flood insurance?

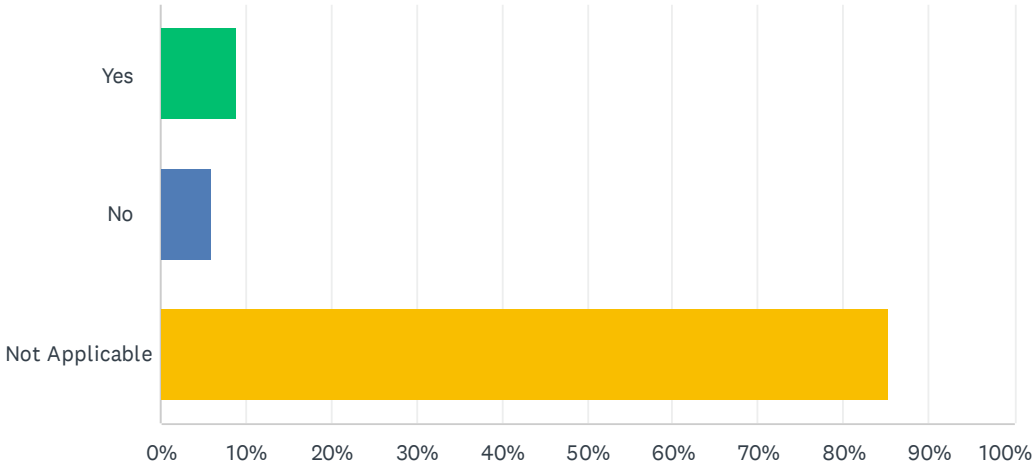
Answered: 78 Skipped: 96



ANSWER CHOICES	RESPONSES	
Flood insurance is too expensive	79.49%	62
I do not know how to purchase flood insurance	14.10%	11
I have tried to purchase flood insurance but have been unsuccessful	6.41%	5
TOTAL		78

Q9 If you rent your place of residence, do you have renter's content insurance?

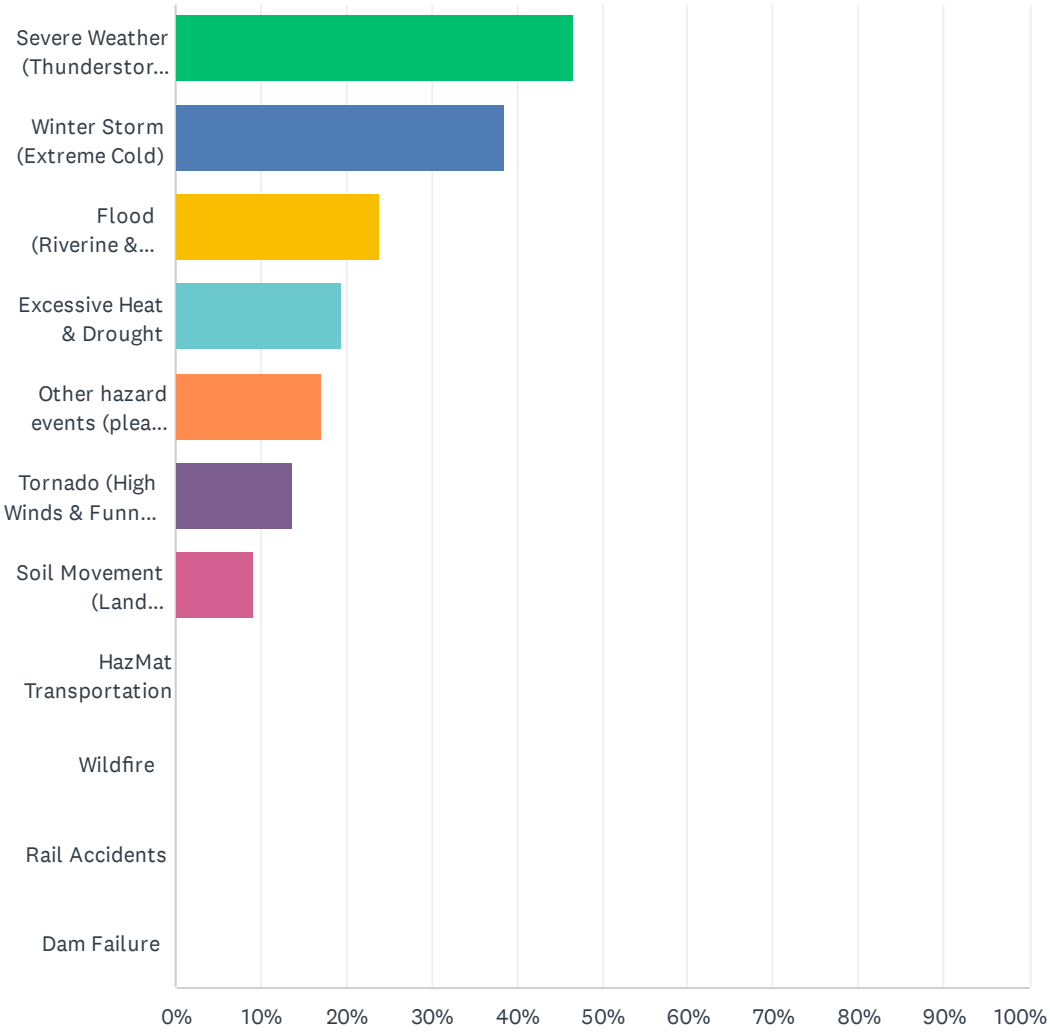
Answered: 135 Skipped: 39



ANSWER CHOICES	RESPONSES	
Yes	8.89%	12
No	5.93%	8
Not Applicable	85.19%	115
TOTAL		135

Q10 If your residence or commercial property has experienced damage from a hazard event, which of the following types of events have you experienced at your property?

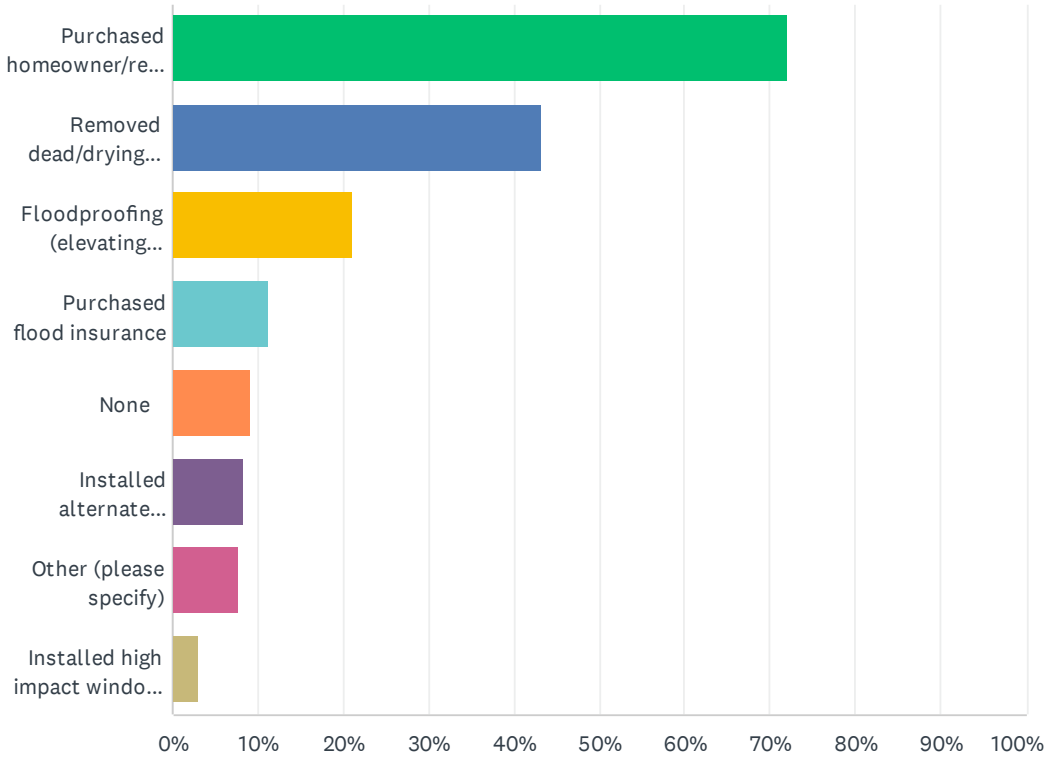
Answered: 88 Skipped: 86



ANSWER CHOICES	RESPONSES	
Severe Weather (Thunderstorm, Lightning Strike, Hail & Fog)	46.59%	41
Winter Storm (Extreme Cold)	38.64%	34
Flood (Riverine & Flash)	23.86%	21
Excessive Heat & Drought	19.32%	17
Other hazard events (please describe)	17.05%	15
Tornado (High Winds & Funnel Clouds)	13.64%	12
Soil Movement (Land Subsidence)	9.09%	8
HazMat Transportation	0.00%	0
Wildfire	0.00%	0
Rail Accidents	0.00%	0
Dam Failure	0.00%	0
Total Respondents: 88		

Q11 Have you taken any of the following actions to reduce the risk of hazards to your residence or commercial property?

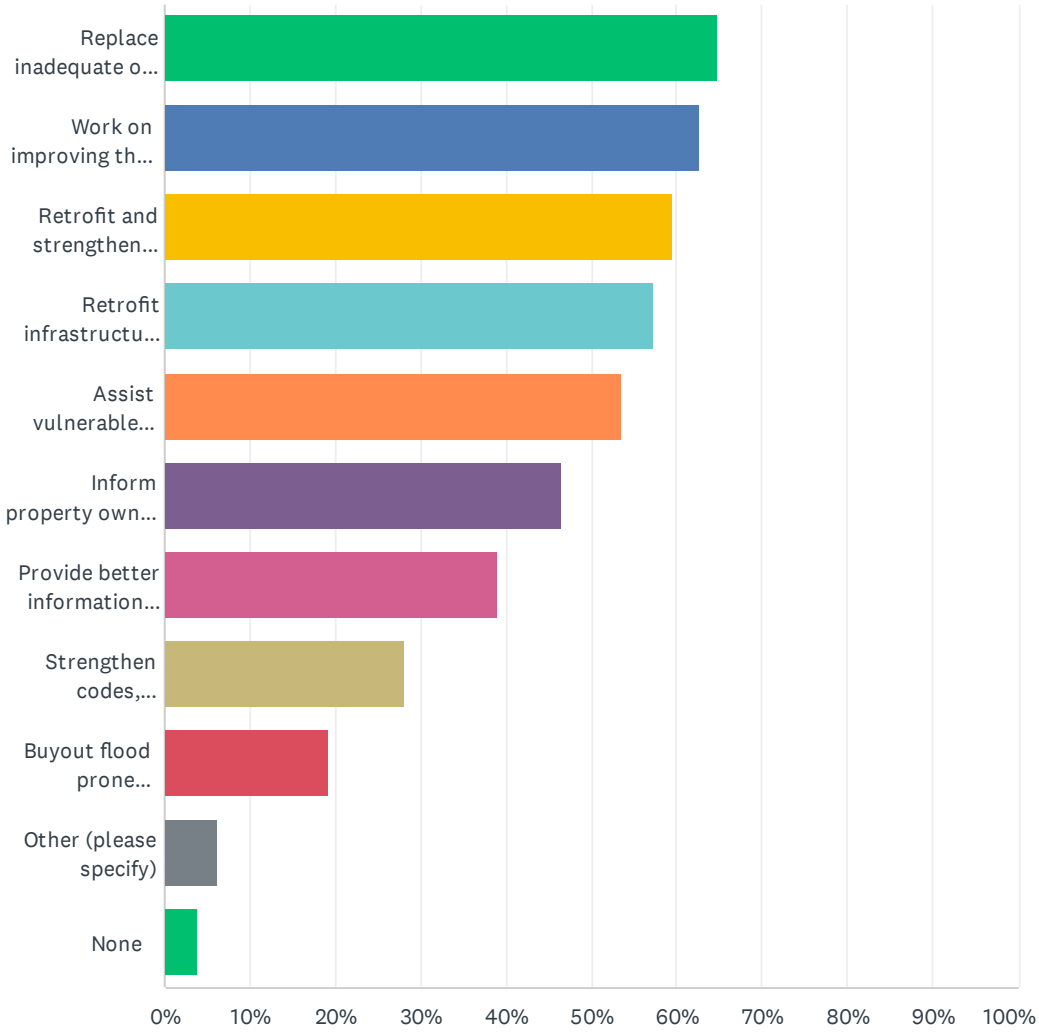
Answered: 132 Skipped: 42



ANSWER CHOICES	RESPONSES	
Purchased homeowner/renter's insurance policies	71.97%	95
Removed dead/drying trees and vegetation from around the home	43.18%	57
Floodproofing (elevating furnace, water heaters, electric panels)	21.21%	28
Purchased flood insurance	11.36%	15
None	9.09%	12
Installed alternate power/water supply	8.33%	11
Other (please specify)	7.58%	10
Installed high impact windows or doors to withstand high winds	3.03%	4
Total Respondents: 132		

Q12 Which of the following mitigation project types do you believe should be focused on to reduce disruptions of services and strengthen the community (check all that apply)?

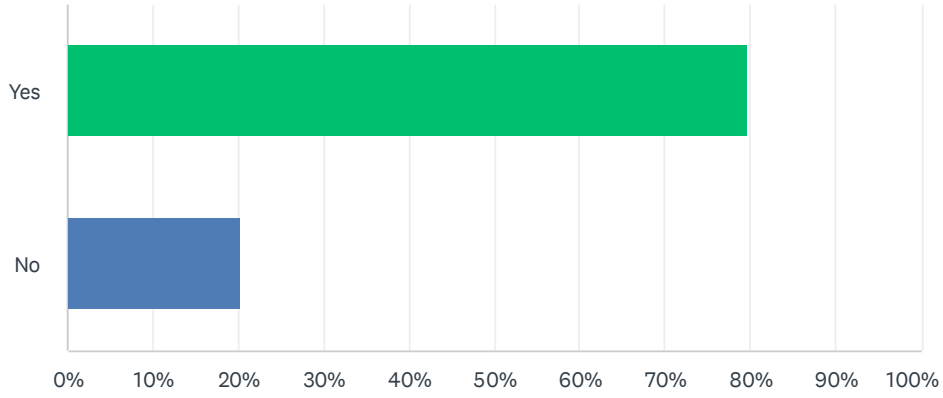
Answered: 131 Skipped: 43



ANSWER CHOICES	RESPONSES	
Replace inadequate or vulnerable bridges	64.89%	85
Work on improving the damage resistance of utilities (electricity, communications, water/sewer, etc.)	62.60%	82
Retrofit and strengthen essential facilities such as police, fire, emergency medical services, hospitals, schools, etc.	59.54%	78
Retrofit infrastructure, such as elevating roadways and improving drainage systems	57.25%	75
Assist vulnerable property owners with securing funding to mitigate impacts to their property	53.44%	70
Inform property owners of ways they can mitigate damage to their property	46.56%	61
Provide better information about hazard risk and high-hazard areas	38.93%	51
Strengthen codes, ordinances, and plans to require higher hazard risk management standards	28.24%	37
Buyout flood prone properties and maintain as open space	19.08%	25
Other (please specify)	6.11%	8
None	3.82%	5
Total Respondents: 131		

Q13 Do you support policies to restrict or prohibit development in designated hazard zones?

Answered: 133 Skipped: 41



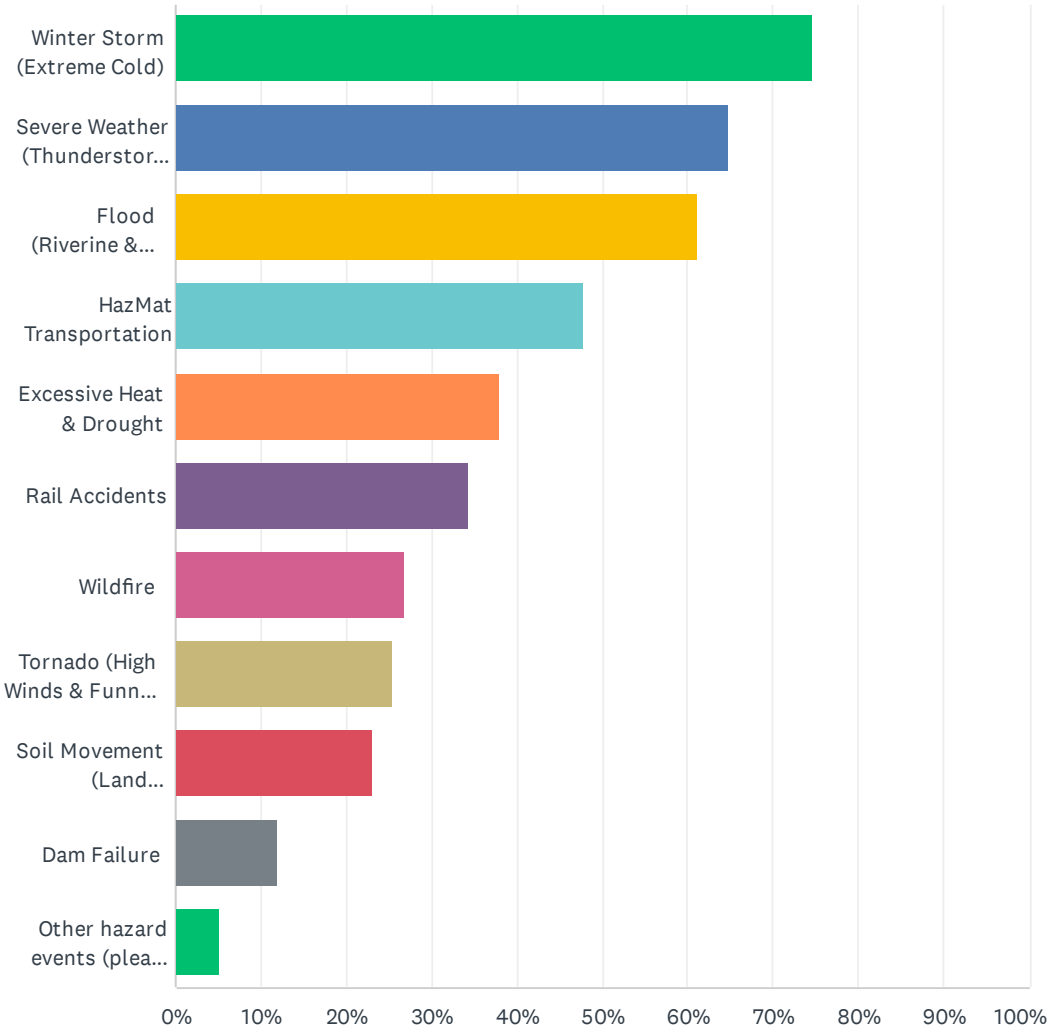
ANSWER CHOICES	RESPONSES	
Yes	79.70%	106
No	20.30%	27
TOTAL		133

Q14 In the last 10 years, have you evacuated from your home or business as a result of a disaster (e.g., flooding, power outage, water failure)? If so, how long were you displaced? Did you go to a shelter?

Answered: 90 Skipped: 84

Q15 Please indicate which hazard events you feel may particularly affect your community. (Please check all that apply)

Answered: 134 Skipped: 40



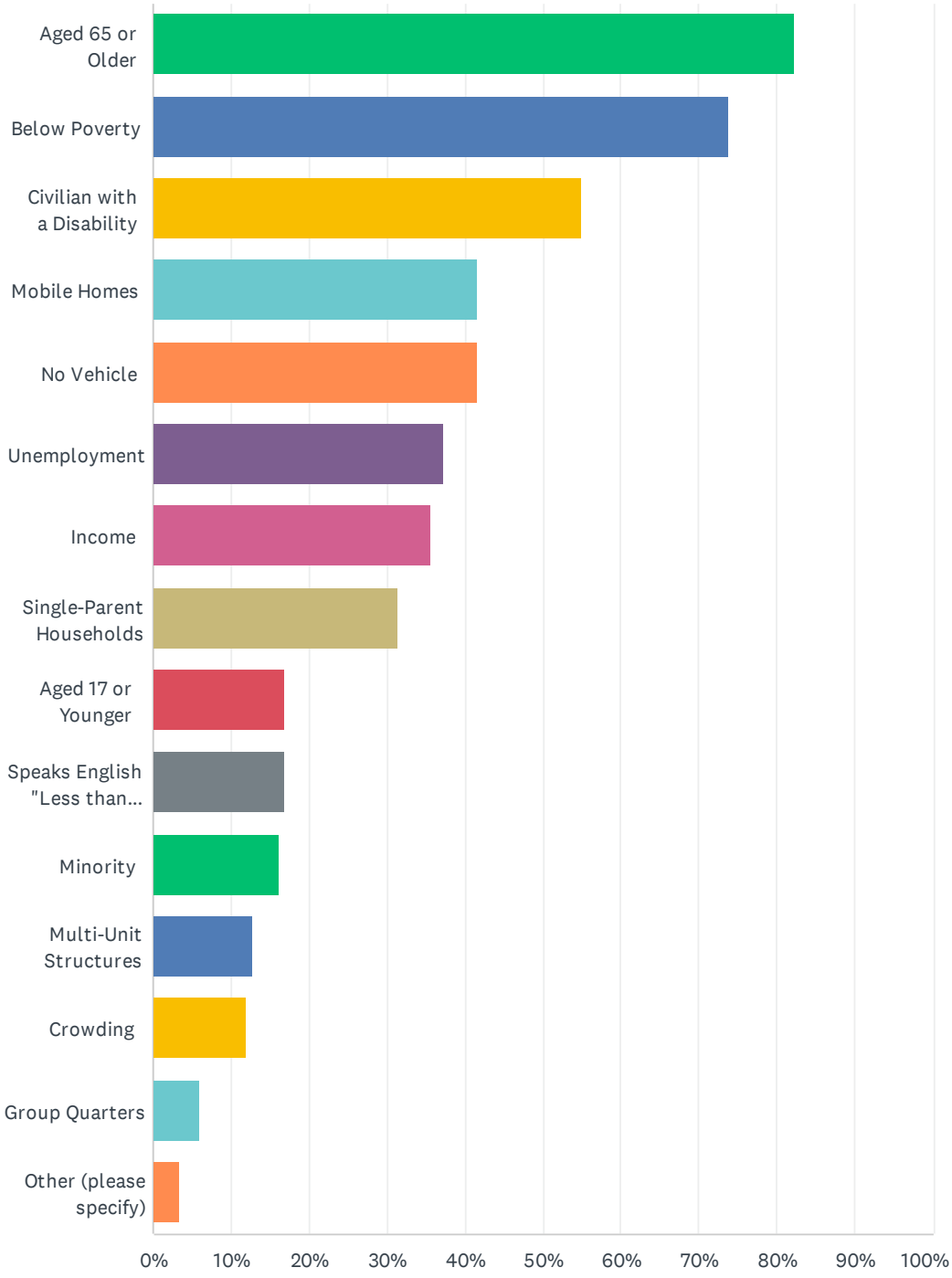
ANSWER CHOICES	RESPONSES	
Winter Storm (Extreme Cold)	74.63%	100
Severe Weather (Thunderstorm, Lightning Strike, Hail & Fog)	64.93%	87
Flood (Riverine & Flash)	61.19%	82
HazMat Transportation	47.76%	64
Excessive Heat & Drought	38.06%	51
Rail Accidents	34.33%	46
Wildfire	26.87%	36
Tornado (High Winds & Funnel Clouds)	25.37%	34
Soil Movement (Land Subsidence)	23.13%	31
Dam Failure	11.94%	16
Other hazard events (please describe)	5.22%	7
Total Respondents: 134		

Q16 Are you concerned with any other hazards not identified in this survey?

Answered: 65 Skipped: 109

Q17 In terms of social vulnerability, do you feel that a specific group, or groups, in Allegany County are particularly at risk for, or could be harmed by, any of the hazards listed in Question 2? This question is not intended to be limited to certain groups - we are eager to learn of any and all types and sizes of groups you think might be at particular risk.Note: CDC 15 Social Factors below.

Answered: 118 Skipped: 56


Aged 65 or Older
Below Poverty
Civilian with a Disability
Mobile Homes
No Vehicle
Unemployment
Income
Single-Parent Households
Aged 17 or Younger
Speaks English "Less than...
Minority
Multi-Unit Structures
Crowding
Group Quarters
Other (please specify)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

ANSWER CHOICES	RESPONSES	
Aged 65 or Older	82.20%	97
Below Poverty	73.73%	87
Civilian with a Disability	55.08%	65
Mobile Homes	41.53%	49
No Vehicle	41.53%	49
Unemployment	37.29%	44
Income	35.59%	42
Single-Parent Households	31.36%	37
Aged 17 or Younger	16.95%	20
Speaks English "Less than Well"	16.95%	20
Minority	16.10%	19
Multi-Unit Structures	12.71%	15
Crowding	11.86%	14
Group Quarters	5.93%	7
Other (please specify)	3.39%	4
Total Respondents: 118		

Q18 In your opinion, what steps could be undertaken to reduce or eliminate the risk of future hazard damages?

Answered: 43 Skipped: 131

Appendix I: Sources

Chapter 1: Introduction

Prepared by Federal Emergency Management Agency. Local Mitigation Planning Policy Guide. 2023.

Prepared by Maryland Department of Emergency Management. 2015 State of Maryland Local Hazard Mitigation Plan Guidance. 2015.

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Chapter 2: County Profile

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Chapter 3: Hazard Identification & Risk Assessment

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Appendix J: Potential Funding Sources

Note: Updated August 2023.

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Department of Emergency Management 5401 Rue Saint Lo Drive Reisterstown, MD 21136	All Hazards Mitigation Planning. Acquisition, relocation, elevation and flood-proofing of flood-prone insured properties, flood mitigation planning, wind retrofit, stormwater improvements, education and awareness.	Federal - 75% Non-Federal - 25%	Local governments must follow the NFIP when a proposed project is located within the 100-year floodplain, also known as the Special Flood Hazard Area (SFHA). Projects must be cost effective, environmentally sound and solve a problem. Repetitive loss properties are a high priority.	After a Presidential Disaster Declaration
Federal Emergency Management Agency, Building Resilient Infrastructure and Communities (BRIC)	Maryland Department of Emergency Management 5401 Rue Saint Lo Drive Reisterstown, MD 21136	BRIC funds may be used for: Capability and Capacity Building (C&CB) Activities, Mitigation Projects, and Management Costs.	Federal - 75% Non-Federal - 25% Economically Disadvantaged Rural Communities (EDRC) are eligible for an increase in funding up to 90% federal cost share/10% non-federal cost share. FEMA provides 100% federal cost share funding for management costs.	Projects must: Be cost-effective, Reduce or eliminate risk and damage from future natural hazards, Meet either of the two latest published editions of relevant consensus-based codes, specifications and standards, Align with the applicable hazard mitigation plan, Meet all environmental and historic preservation (EHP) requirements.	Annual-Spring/Summer
Federal Emergency Management Agency, Flood Mitigation Assistance Program (FMA)	Maryland Department of Emergency Management 5401 Rue Saint Lo Drive Reisterstown, MD 21136	Assist States and communities to implement measures that reduce or eliminate the long- term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program.	RL: Federal - 90% Non-Federal - 10% SRL: Federal - 100% Non-Federal - 0%	Available once a Flood Mitigation Plan has been developed and approved by FEMA.	Annual-Spring/Summer
National Flood Insurance Program (NFIP)	Maryland Department of Emergency Management 5401 Rue Saint Lo Drive Reisterstown, MD 21136	Provides financial protection by enabling persons to purchase insurance against floods, mudslide or flood related erosion.	Varies	Includes Federally backed insurance against flooding, available to individuals and businesses that participate in the NFIP	Anytime

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
Increased Cost of Compliance	Maryland Department of Emergency Management 5401 Rue Saint Lo Drive Reisterstown, MD 21136	ICC coverage provides payment to help cover the cost of mitigation activities that will reduce the risk of future flood damage to a building. If a Flood Insurance Policy Holder suffers a flood loss and is declared to be substantially or repetitively damaged, ICC will pay up to 30,000 to bring the building into compliance with State or community floodplain management laws or ordinances. Usually this means elevating or relocating the building so that it is above the base flood elevation (BFE).	Varies	Once the local jurisdiction determines the building is substantially or repetitively damaged, the policy holder can contact insurance agent to file an ICC claim. When applicable, based on provisions in the 2015 HMA Guidance, up to $30,000 of ICC funding can be used towards the non-federal share for a Hazard Mitigation Assistance (HMA) project.	Anytime
U.S. Economic Development Administration, Economic Adjustment Program	U.S. Department of Commerce Economic Development Administration Curtis Center, 601 Walnut Street, Ste 140 South Philadelphia, PA 19106-3323 215-597-4603	Improvements and reconstruction of public facilities after a disaster or industry closing. Research studies designed to facilitate economic development.	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria.	Anytime
U.S Economic Development Administration, Public Works and Development Facilities	U.S. Department of Commerce Economic Development Administration Curtis Center, 601 Walnut Street, Ste 140 South Philadelphia, PA 19106-3323 215-597-4603	Water and sewer, Industrial access roads, rail spurs, port improvements technological and related infrastructure	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and projects that is consistency with a Comprehensive Economic Development Strategy are important funding selection criteria.	Quarterly Basis
Small Business Administration (SBA)	James Rivera, Office of Disaster Assistance, Small Business	Activities done for the purpose of protecting real and personal	No information	The mitigation measures must protect property or contents from damage that may be caused by future disasters and must conform to the	

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
Pre-disaster Mitigation Loan Program	Administration, 409 3rd Street, SW, STE 6050 Washington, DC 20416 202-205-6734	property against disaster related damage.		priorities and goals of the state or local government's mitigation plan.	
Community Development Block Grants / States Program	U.S Department of Housing and Urban Development, Office of Block Grant Assistance, 451 7th Street SW., Washington, DC 20410-7000 202- 708-1112	Used for long-term recovery needs, such as: rehabilitation residential and commercial building; homeownership assistance, including down-payment assistance and interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities.	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to States for non-entitlement communities.	After a Presidential Disaster Declaration
Fire Suppression Assistance Program	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20024 202-646-2500	Provides real-time assistance for the suppression of any fire on public (non- Federal) or privately owned forest or grassland that threatens to become a major disaster.	Federal - 70% Local - 30%	The State must first meet annual floor cost (if percent of average fiscal year fire costs) on a single declared fire. After the State's out-of-pocket expenses exceed twice the average fiscal year costs, funds are made available for 100 percent of all costs for each declared fire.	Funds from President's Disaster Relief Fund for use in a designated emergency or major disaster area.
Historic Preservation: Repair and Restoration of Disaster- Damaged Historic Properties	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20024 202-646-4621	To evaluate the effects of repairs to, restoration of, or mitigation hazards to disaster-damaged historic structures working in concert with the requirements of the Stafford Act.	Federal - 75% Local - 25%	Eligible to State and local governments, and any political subdivision of a State. Also, eligible are private non-profit organizations that operate educational, utility, emergency, or medical facilities.	After a Presidential Disaster Declaration

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
Transportation: Emergency Relief Program	Federal Transit Authority, FHWA, DOT, 1200 New Jersey Avenue Washington, DC 20590 202-366-4043	Provides aid for the repair of Federal-aid roads and roads on Federal lands.	Federal - 100%	Application is submitted by the State department of transportation for damages to Federal-aid highway routes, and by the applicable Federal agency for damages to roads on Federal lands.	After serious damage to Federal-aid roads or roads on Federal lands caused by a natural disaster or by catastrophic failure.
Animals: Emergency Haying and Grazing	Emergency and Non-insured Assistance Programs, FSA, USDA, 1400 Independence Ave, SW, Washington, DC 20013 202-720-4053	To help livestock producers in approved counties when the growth and yield of hay and pasture have been substantially reduced because of a widespread natural disaster.	No information	Assistance is provided by the Secretary of Agriculture to harvest hay or graze cropland, or other commercial use of forage devoted to the Conservation Reserve Program (CRP0 in response to a drought or other similar emergency.	Anytime
Emergency Watershed Protection Program	Natural Resources Conservation Service 1400 Independence Avenue, SW Washington, DC 20250	Implementing emergency recovery measures for runoff retardation and erosion prevention to relieve imminent hazards to life and property created by a natural disaster that causes a sudden impairment of a watershed.	Federal - 75% Local - 25%	It cannot fund operation and maintenance work or repair private or public transportation facilities or utilities. The work cannot adversely affect downstream water rights and funds cannot be used to install measures not essential to the reduction of hazards.	TBD
Watershed Protection and Flood Prevention Program	Natural Resources Conservation Service 1400 Independence Avenue, SW Washington, DC 20250	To provide technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in watersheds.	Varies due to project type.	Watershed area must not exceed 250,000 acres. Capacity of a single structure is limited to 25,000 acre-feet of total capacity and 12,500 acre- feet of floodwater detention capacity.	TBD

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
Watershed Surveys and Planning	Natural Resources Conservation Service 1400 Independence Avenue, SW Washington, DC 20250	To provide planning assistance to Federal, State, and local agencies for the development of coordinated water and related programs in watersheds and river basins. Emphasis is on flood damage reduction, erosion control, water conservation, preservation of wetlands and water quality improvements.	No information	These watershed plans form the basis for installing needed works of improvement and include estimated benefits and costs, cost-sharing, operation and maintenance arrangements, and other information necessary to justify the need for Federal assistance in carrying out the plan.	Anytime
Emergency Advance Measures for Flood Prevention	USACE 441 G Street, NW, Washington DC 20314 202-761-0011	To perform activities prior to flooding or flood fight that would assist in protecting against loss of life and damages to property due to flooding.	No information	There must be an immediate threat of unusual flooding present before advance measures can be considered. Any work performed under this program will be temporary in nature and must have a favorable benefit cost ratio.	Governor of State must request assistance
Emergency Streambank and Shoreline Protection	USACE 441 G Street, NW, Washington DC 20314 202-761-0011	Authorizes the construction of emergency streambank protection measures to prevent damage to highways, bridge approaches, municipal water supply systems, sewage disposal plants, and other essential public works facilities endangered by floods or storms due to bank erosion.	No information	Churches, hospitals, schools, and other non-profit service facilities may also be protected under this program. This authority does not apply to privately-owned property or structures.	TBD
Small Flood Control Projects	USACE 441 G Street, NW, Washington DC 20314 202-761-0011	Authorizes the construction of small flood control projects that have not already been specifically authorized by Congress.	No information	There are two general categories of projects: structural and nonstructural. Structural projects may include levees, floodwalls, diversion channels, pumping plants, and bridge modifications. Nonstructural projects have little or no effect on water surface elevations, and	TBD

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
				may include flood proofing, the relocation of structures, and flood warning systems.	
Flood: Emergency Advance Measures for Flood Prevention	USACE 441 G Street, NW, Washington DC 20314 202-761-0011	To mitigate, before an event, the potential loss of life and damages to property due to floods.	No information	Assistance may consist of temporary levees, channel cleaning, preparation for abnormal snowpacks, etc.	Governor of State must request assistance
Continuing Authorities Program (CAP)	USACE 441 G Street, NW, Washington DC 20314 202-761-0011	Initiates a short reconnaissance effort to determine Federal interest in proceeding. If there is interest, a feasibility study is performed.	Federal - 65% Local - 35%	A local sponsor must identify the problem and request assistance. Small flood control projects are also available.	Anytime
Hazardous Materials: State Access to the Oil Spill Liability Trust Fund	Director, USCG National Pollution Funds Center, U.S. Coast Guard Stop 7605. 2703 Martin Luther King Jr. Avenue, SE Washington, DC 20593-7605 202-795-6000	To encourage greater State participation in response to actual or threatened discharges of oil.	No information	Eligible to States and U.S. Trust Territories and possessions.	Anytime
Emergency Management Assistance (EMA)	Maryland Emergency Management Agency 5401 Rue Saint Lo Drive Reisterstown, MD 21136	Funds may be used for salaries, travel expenses, and other administrative cost essential to the day-to-day operations of State and Local emergency management agencies. Program also includes management processes that ensure coordinated planning,	Federal - 50%	EMA funded activities may include specific mitigation management efforts not otherwise eligible for Federal funding. Management Assistance program funds may not be used for construction, repairs, equipment, materials or physical operations required for damage mitigation projects for public or private buildings, roads, bridges, or other facilities.	Anytime

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
		accountability for progress, and trained qualified staffing.			
Maryland Program Open Space	Department of Natural Resources 580 Taylor Ave. Annapolis, MD 21401 410-260-8445	Local provides financial and technical assistance to local subdivisions for the planning, acquisition, and/or development of recreation land or open space areas.	A local governing body may use up to $25,000 annually from its 100% (Acquisition) money to fund planning projects that update the Local Land Preservation and Recreation Plans.	Acquires outdoor recreation and open space areas for public use Administers funds made available to local communities for open and recreational space by the Outdoor Recreation Land Loan of 1969 and from the Land and Water Conservation Fund of the National Park Service, U.S. Department of the Interior.	July 1st
Maryland Recreational Trails Program	Maryland Scenic Byways/Recreational Trails Program* Office of Planning & Preliminary Engineering State Highway Administration 707 N Calvert Street Baltimore, MD 21201 (p) 410.545.8637 (f) 410.209-5012 tmaxwell@sha.state.md.us	Maintenance and restoration of existing recreational trail; Development and rehabilitation of trailside facilities and trail linkages; Purchase and lease of trail construction equipment; Construction of new trails; Acquisition of easements or property for recreational trails or recreational trail corridors; and Implementation of interpretive/educational programs to promote intrinsic qualities, safety, and environmental protection, as those objectives relate to the use of recreational trails.	Administered by the State Highway Administration (SHA), this program matches federal funds with local funds or in-kind contributions to implement trail projects. Projects can be sponsored by a county or municipal government, a private non-profit agency, a community group or an individual (non-governmental agencies must secure an appropriate government agency as a co-sponsor). Federal funds administered by the State Highway Administration are available for up to 80% of the project cost, matched by at least 20% funding from the project sponsor. Matching funds must be committed and documented in the local jurisdiction's budget. A Memorandum of Understanding	Projects must meet state and federal environmental regulatory requirements (NEPA, MEPA, Section 106, Section 4(f)). SHA will aid the project sponsor to acquire these approvals.	July 1st

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
			outlining funding and project implementation responsibilities will be prepared by SHA and signed by all parties before the project funds are released.		
CoastSmart Communities Grant Program	Maryland Department of Natural Resources Chesapeake and Coastal Service (p) 410.260.8718 (f) 410.260.8739 sasha.land@maryland.gov	Municipalities and counties in the coastal zone are eligible to apply for and receive funds: Anne Arundel, Baltimore, Calvert, Caroline, Cecil, Charles, Dorchester, Harford, Kent, Prince George's, Queen Anne's, St. Mary's, Somerset, Talbot, Wicomico, and Worcester counties and Baltimore City. Funding for a one- year project that contributes to understanding, planning for, or implementing planning and outreach measures to address coastal hazard issues.	Up to $75,000 annually	Track A can fund flood vulnerability and risk assessments, updates to planning documents (e.g. hazard mitigation plans, zoning ordinances, building codes, floodplain ordinances, comprehensive plans), education and outreach campaigns and materials, applications to FEMA's Community Rating System in concert with other task outcomes, support for adopting an updated plan and integrating the plan into day-to-day existing planning processes that reduce overall flood risk due to tidal events or stormwater and rain events.	TBD
Green Infrastructure Resiliency Grant Program	Maryland Department of Natural Resources Chesapeake and Coastal Service (p) 410.260.8799 (f) 410.260.8739 (e) megan.granato@maryland.gov	Municipalities and counties within the Maryland portion of the Chesapeake Bay watershed are eligible to apply for and receive funds. Please note that projects proposed in Cecil, Garrett and Worcester counties must be located within the portions of those counties that are within the watershed to be eligible. Funding for one year for Phase 1 and	Up to $100,000 per project	Track B can fund watershed assessments that focus on determining local flood risks and how green infrastructure can be used to address those risks, site or watershed-level green infrastructure implementation plans, and green infrastructure project designs. This track can also fund construction of green infrastructure projects. To apply for construction funding, all applicable permit preapplication meetings must be complete.	TBD

Potential Funding Sources					
Grant Program Name	**Address and Telephone Contact Information**	**Eligible Activities**	**Federal, State and Local Cost Share Requirements**	**Other Program Characteristics**	**Grant Application Due Date**
		Phase 2 projects and up to 2 years for Phase 3 projects that will assess stormwater management needs associated with localized flooding and design or construct targeted green infrastructure practices to address those needs.			
Maryland Community Parks and Playgrounds Program	Department of Natural Resources 580 Taylor Ave. Annapolis, MD 21401 410-260-8445	1. Development of new parks 2. Rehabilitation of existing parks 3. Expansion or improvement of existing parks 4. Purchase and installation of playground equipment 5. Development of environmentally oriented parks and recreation projects 6. Development of new trails or extension of existing trails 7. Creation of access points to water recreation resources 8. Acquisition of land to create new parks.	The source of funds for this program is primarily State General Obligation Bonds, which may be authorized on an annual basis. The Community Parks and Playgrounds Program provides funding to incorporated municipalities and Baltimore City. Grants may be for up to 100% of the project cost and are selected on a competitive basis. Each applicant will be limited to one (1) Grant Proposal List submission package, which may contain several prioritized projects, per award cycle.	The Department of Natural Resources works to provide opportunities for Marylanders, especially our children, to experience nature. The DNR has developed a web site www.dnr.state.md.us/cin/NPS/index.asp that provides information about Nature Play Spaces. Nature Play Spaces are one of the many types of public recreation projects eligible for consideration for Community Parks and Playgrounds grant funding. While land acquisition costs may be considered for project funding, the highest priority will be placed on capital costs associated with park development and improvement.	TBD