West Virginia Statewide Risk Assessment: An Overview

Many communities in West Virginia are updating their hazard mitigation plans (HMPs) to reflect current risks and priorities. These communities now have access to a wealth of detailed information on local flood and landslide risks. The data were produced by the West Virginia Statewide Risk Assessment. This is an ambitious project led by the West Virginia GIS Technical Center (WVGISTC) at West Virginia University. It features building-level risk assessments for flood and landslide hazards across the state. The building-level flood risk data have also been aggregated across multiple geographic scales, including 55 counties, 55 unincorporated areas, 229 incorporated places, 11 Planning and Development Council (PDC) regions, 33 watersheds, and 156 rivers. Based on these data, several tools have been developed to help quantify riverine flood risk across multiple geographic scales.

About This Resource

This fact sheet is the first in a series published by FEMA Region 3. The goal is to help mitigation planning teams use the West Virginia Statewide Risk Assessment for plan updates. The fact sheets should be read in order:

1. ***Overview:*** The first fact sheet gives an overview of the Statewide Risk Assessment tools and datasets. It explains how planning teams can use the results in each phase of mitigation planning.
2. *Identify and Prioritize At-Risk Significant Structures:* The second fact sheet focuses on accessing and extracting key data; analyzing exposure, vulnerability, and potential impacts on significant structures from flood hazards; incorporating local knowledge and context; and using community values and priorities to identify the most critical at-risk structures and develop problem statements.
3. *Property-Level Mitigation:* The third fact sheet focuses on using building-level flood risk and mitigation data to identify and prioritize properties for further mitigation evaluation; assessing flood exposure, physical vulnerability, and potential losses; verifying conditions and previous mitigation using local knowledge; and considering appropriate property-level mitigation options.

About the West Virginia Statewide Risk Assessment

The WVGISTC developed this project with support from FEMA and the state Emergency Management Division. It aims to help planning teams understand local disaster risks in more detail and create more effective solutions. The project focuses on floods and landslides. These are the two costliest natural disasters in the state. Then, with support from a grant provided by the National Science Foundation (NSF), the WVGISTC developed the West Virginia Risk Explorer (WVRE), processing and aggregating the flood risk data across multiple geographic scales.

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The Statewide Risk Assessment and WV Risk Explorer include the following information: 1) a full inventory of the buildings in the state; 2) detailed, building-level flood risk assessments; 3) building-level (BL) flood risk tools; 4) interactive flood risk maps; 5) aggregated flood risk reports; 6) flood dashboards (risk, mitigation, & fatality); 7) flood visualizations; 8) landslide risk assessments; and 9) Hazard Library. The flood risk assessments are known as Total Exposure in Floodplain (TEIF). The landslide risk assessments are known as Total Exposure Area Landslide (TEAL). These results are provided in a range of formats, including interactive tables, spreadsheets, reports, maps, GIS files, and interactive map viewers. Plan owners and planning consultants can access the results online. They can also ask the WVGISTC for a customized data package. Communities can also use the results to support local floodplain management activities that meet or exceed the requirements of the National Flood Insurance Program (NFIP). Table 1 lists the risk and mitigation assessment tools available online, while Table 2 lists selected datasets available for online access.

Table 1: Risk/Mitigation Assessment Tools Available Online

Tool	Description
WV Flood Tool (Risk MAP View) (Property-level)	The West Virginia Flood Tool is an interactive map viewer that shows the best available flood mapping data from FEMA and other approved sources. It shows background layers from federal, state, local, and commercial sources. The WVGISTC published about 98,000 building-level risk assessments to the Risk MAP View. It also includes critical infrastructure layers, verified LOMAs, USGS High Water Marks, and mitigated property layers. Other hazards like landslide susceptibility and high-risk dams are displayed on the Risk Map View as well. Most of the risk assessment data available in GIS Files, tables, and static maps can be viewed on the Risk Map View of the WV Flood Tool (www.mapwv.gov/Flood).
WV Building-Level (BL) Risk – Primary Structures (Property-level)	This tool provides a detailed inventory of all primary structures identified within the high-risk 1% annual chance (100-year) effective and advisory floodplains. Advisory 1%-annual-chance floodplains are non-regulatory high-risk flood zones that are likely to become effective in the future. The structures mapped in the WV Flood Tool are available in this interactive tabular tool, along with their detailed location attributes, floodplain information, building characteristics, and damage estimates. The inventory can be filtered across multiple geographic scales or by various attributes to generate detailed structure lists for specific analysis and planning purposes. The URL of a filtered list can be copied and shared to provide direct access to the query results. The “Export to CSV” option allows users to download a spreadsheet of the list displayed online. The tool provides a link to the WV Flood Tool for each structure. A tabular report for each structure can also be viewed online and downloaded in PDF format.
WV Building-Level Flood Risk Dashboard (Property-level)	This building-level dashboard provides an interactive inventory of all primary structures within high-risk floodplains, displaying detailed building, floodplain, and risk attributes, along with summary indicators such as exposure, building value, flood depth, loss estimates, and population displacement. As users zoom to specific locations, the dashboard dynamically narrows the results to the visible area, enabling targeted analysis and decision-making.
WV Building-Level (BL) Risk – Significant Structures at Risk	This building-level tool provides an inventory of significant structures at risk, including essential facilities such as police and fire stations, emergency operations centers, schools, hospitals, and nursing homes, assessed for both the 100-year effective and advisory floodplains as well as the 500-year flood event. It also inventories historical and non-historical community assets within the high-risk 100-year effective and

Tool	Description
(Property-level)	advisory floodplains. Historical assets include structures listed on the National Register of Historic Places or located within registered historic districts and built before 1930. Non-historical assets include government facilities, emergency medical services, religious organizations, utilities, post-secondary educational facilities, and other significant community structures. This interactive tabular inventory can be filtered by location, facility type, or other attributes to generate detailed structure lists for specific analysis and planning purposes. The URL of a filtered list can be copied and shared to provide direct access to the query results. The "Export to CSV" option allows users to download a spreadsheet of the list displayed online. The tool provides a link to the WV Flood Tool for each significant structure. A tabular report for each structure can also be viewed online and downloaded in PDF format.
WV Property Viewer (Property-level)	A popular gateway application to the WV Flood Tool that provides advanced statewide property search capabilities using tax assessment attributes, including location, ownership, parcel identification, property class, land use, appraisal, and other information. Users can search properties and view the corresponding parcels in the map viewer for additional location and flood risk information.
WV Mitigated Structures Dashboard (Property-level)	This dashboard provides an interactive inventory of flood-mitigated structures across West Virginia, displaying structure locations, mitigation types such as elevation and relocation, detailed property attributes such as their foundation types, and images of elevated structures. Users can filter mitigated structures by source, county, community, or mitigation type to explore spatial patterns, review individual structure details, and assess mitigation outcomes, including the total number of mitigated structures and estimated loss avoidance. For each mitigated structure, a link to the WV Flood Tool is provided. Images of many elevated structures can also be viewed directly on the dashboard.
WV Open-Space Mitigation Dashboard (Property-level)	This dashboard provides an interactive inventory of flood mitigation buyout and open-space preservation parcels across West Virginia, including parcel locations, program sponsors, open-space/buyout classifications, and related parcel attributes. Users can filter parcels by sponsor, parcel class, county, or community to explore spatial patterns, review parcel details, and assess mitigation outcomes, including total open-space parcels and estimated loss avoidance.
WV Risk Explorer Maps	This tool is designed to visualize and explore individual flood risk indicators, as well as cumulative flood risk, on an interactive map to identify areas of higher risk. Users can select the geographic scale and entity, and filter by risk indicator to view either a percent rank map, showing how each geographic unit compares to others, or a values map classified using natural breaks based on indicator values. A risk summary panel is also available for each selected geographic unit. This tool is also linked to the Risk Reports tool, described below.
WV Risk Explorer Reports	This tool allows users to view and download detailed flood risk assessment, comparison, and summary reports for selected geographic entities across multiple scales. For each selected entity, both a comprehensive report covering all flood risk indicators and a report highlighting the top 20% highest-risk indicators are available, along with cumulative flood risk scores, rankings, and notable flood risk facts. Countywide or regional reports can also be generated to compare risk indicators across all geographic entities within a county or Planning and Development Council (PDC) region.

Tool	Description
WV Flood Visualizations	This suite of tools provides interactive 2D and 3D flood visualizations at both community and building scales to help users better understand flood hazards and potential impacts. Available visualizations include community-scale 3D flood movies, bird's-eye viewsheds, building-level flood profiles for different storm magnitudes, and story maps of major flood events. These visualizations present complex flood information in a more intuitive and publicly understandable format, supporting flood risk communication, planning, and decision-making.
WV Flood Fatality and Mitigation Research Dashboard By Disaster	This interactive dashboard presents 12 of the deadliest flood disasters in West Virginia from 1870 to 2016, along with selected recent flood events. Users can explore each disaster by event date, location, flood type, fatality count, FEMA flood zone, cause and location of death, victim age and gender, and other fatality characteristics. The dashboard also identifies mass-casualty events and presents information on post-disaster mitigation measures, helping users examine how flood impacts and subsequent risk-reduction efforts have varied across major flood disasters in the state.
WV Flood Fatality and Mitigation Research Dashboard By County	This interactive dashboard presents flood fatalities across West Virginia by county, combining records from the state's deadliest historical flood disasters with fatalities from more recent flood events. Users can explore the geographic distribution and characteristics of flood deaths by county and year, including FEMA flood zone, cause and location of death, victim age and gender, and other factors. The dashboard also presents post-flood mitigation information, providing a more current county-based perspective on flood fatalities and risk-reduction efforts across the state.
WV Landslide Tools	The WV Landslide Tools page provides a suite of data products and interactive tools for assessing landslide susceptibility and risk across West Virginia. Available resources include community-level landslide susceptibility data summarizing high-, medium-, and low-susceptibility areas for each jurisdiction, as well as an interactive map viewer displaying the best available statewide data on landslide incidence and risk. These tools support hazard awareness, planning, and decision-making, while providing an accessible way to understand landslide risk at broader geographic scales.
WV Hazard Library	The WV Hazard Library provides a comprehensive searchable collection of hazard-related data, documents, and visual media relevant to West Virginia. Resources include GIS and tabular data, guides, plans, reports, maps, articles, dashboards, web tools, videos, images, and other media. Users can search resources by title, subject, media type, disaster event, geographic scale and entity, author, publication year, and other criteria, with subject categories and cross-indexing supporting more targeted searches. The library includes resources collected or developed through the WV Flood Resiliency Framework, with a primary focus on risk assessment and planning, mitigation, and flood disaster events.

Table 2: Risk Assessment Data Sources Available Online

Data Source	Description
Access Data	This page serves as the central data access hub for the West Virginia Risk Explorer (WVRE), allowing users to download flood risk assessment, mitigation, floodplain, and landslide datasets for use in external analyses, maps, and applications. Available data include aggregated-level risk indicators, building-level flood risk assessments, significant structures at risk, mitigation buyout properties, and supporting GIS layers, along with metadata and data dictionaries describing the datasets.
Building-Level Risk Assessment (BLRA) Table *(Password required; contact the WVGISTC for help)*	A statewide spreadsheet lists each building in the effective or advisory 1%-annual-chance floodplain. Advisory 1%-annual-chance floodplains are non-regulatory high-risk flood zones that are likely to become effective in the future. The table includes about 100 data fields for each building. These include 19 data fields related to the building identification and location and 6 related to its flood zone. They also include 29 data fields related to building characteristics (what is at risk) including the construction year and Flood Insurance Rate Map (FIRM) status (Post-/Pre-FIRM) and more than 20 others related to estimated flood losses (the degree of risk). The "Metadata" tab describes all the available data fields in more depth. Upon request, current *Communitywide, Countywide, Regional* and *Most Vulnerable Building Lists* can also be extracted from the Statewide Building-Level Risk Assessment (BLRA) geodatabase for more focused analyses. Data extracts include High Building Value Exposure, High Damage Loss Structures, and High Minus-Rated Structures.
Building-Level Risk Assessment (BLRA) Geodatabase *(Password required; contact the WVGISTC for help)*	This is a statewide geodatabase. It includes all buildings in the effective or advisory 1%-annual-chance floodplain. It can be used by plan owners and planning consultants with GIS capabilities. All these points are displayed on the Risk MAP view of WV Flood Tool as well.
Essential Facilities Table (Significant Structures)	This is a statewide spreadsheet. It lists all essential facilities in the effective or advisory 1%-annual-chance floodplain as well as the 0.2%-annual-chance floodplain. The WVGISTC defines essential facilities as those that provide critical services to the community. They include police and fire stations, emergency operations centers, schools, hospitals, and nursing homes. These essential facilities are also included in the WV Flood Tool (Risk MAP View). Community-level tables and 2021 regional reports are available at this download link.
Community Assets Table (Significant Structures)	This is also a statewide spreadsheet. It lists all community assets in the effective or advisory 1%-annual-chance floodplain. These may be non-historical community assets including government facilities (federal, state, local), emergency medical services, religious organizations, utilities, post-secondary educational facilities, and other buildings of significance. These community assets can be viewed on the WV Flood Tool (Risk MAP View). Community assets may also be historical structures listed on the National Register of Historic Places to include buildings listed in registered historic districts that were constructed before 1930. These historical community assets can also be displayed on the WV Flood Tool (Risk MAP View, under Critical Infrastructure). Community-level tables and 2021 regional reports are available at this download link.

Data Source	Description
Building Exposure Maps (Count and Value)	These are statewide maps. They show the distribution of buildings and median building value in the 1%-annual-chance floodplain at the community level. The records for individual structures in floodplain can be accessed via the WV Flood Tool (Risk MAP View).
Community-Level Estimated Loss Tables	The folder includes statewide spreadsheets. For each community, a spreadsheet provides the total estimated building damage and debris generated for the 1%-annual-chance flood based on the Hazus Depth/Damage model. First Floor Height (FFH) is a determining factor in the loss model; therefore, inaccuracies in FFH may introduce uncertainty into the loss estimates. Another spreadsheet provides the number and estimated loss amounts of buildings expected to be substantially damaged by a 1%-annual-chance flood. Substantial damage refers to damage of any origin for which the cost of restoring a structure to its pre-damage condition equals or exceeds 50 percent of the structure's market value before the damage occurred. Two additional datasets provide communitywide damage claim counts and amounts, as well as repetitive loss counts from previous disasters.
Transportation Flood Inundation Models	The folder includes statewide spreadsheets. For each community, the spreadsheets list the miles of Interstate, U.S., State, and other roads in addition to railroads and number of inundated bridges in the 1%-annual-chance floodplain. They also show the miles and percentage of total roads exposed to different flood depths in each community. Flood depth affects evacuation, vehicle rescue, and response. Inundation of transportation infrastructure can also be viewed on the WV Flood Tool (Risk MAP View, under Critical Infrastructure).
Repetitive Loss Structures	Information on repetitive loss structures and areas may be available upon request, as these data are not publicly available.
Communities Downstream of High Hazard Dams	Information on communities downstream of high hazard dams may be available on request.
Additional Resources	• Learn More Page of West Virginia Risk Explorer (WVRE) • Risk Assessment Information Index (legacy version, 2023) • TEIF/TEAL Project Closeout Report and Resources • Flood Risk Assessment and WV Flood Tool presentation (May 2023) • Landslide Risk Assessment presentation (April 2022) • Static Statewide Map Catalogs

Planning Process

Mitigation planning teams in West Virginia can use the Statewide Risk Assessment results and the West Virginia Risk Explorer (WVRE) to drive mitigation action at the local level. Moving from data to action, however, needs a robust planning process that engages local stakeholders. These stakeholders have the context needed to understand and prioritize local risks. They also have the authority needed to take actions that reduce local risks. Plan owners, planning consultants, and plan participants each have a role to play in building the risk assessment results into the planning process.

Plan owners and planning consultants should take the lead in giving plan participants access to the data and guiding dialog and decision-making. They should work with the WVGISTC early on to learn about the risk assessment and mitigation products available for their planning area. If needed, they can request a customized data package for each participating jurisdiction. Plan owners and planning consultants should also build the results of the Statewide Risk Assessment into the engagement strategy. They should develop a strategy that helps plan participants interact with the data. It should provide them with the time and training they need to work with the data for their community. It should also help plan participants add local information, set priorities, and create problem statements. Training needs will depend on the planning area. In some cases, a group training may be needed on a certain product. In other cases, one-on-one training on several products may be needed for a certain community.

Plan owners should take the lead in adding expected engagement and training activities to the plan update Scope of Work (SOW). FEMA suggests that plan owners consider the timing and costs of these activities before preparing the SOW. This way, the mitigation grant schedule and budget can include enough time and resources. FEMA also suggests that plan owners include these engagement and training activities in any request for proposals. This way, plan owners can clarify what is expected of planning consultants.

Plan participants should take the lead in using the data from the Statewide Risk Assessment to understand local risks, update local priorities, and create local solutions. Local knowledge, values, and skills are the basis of mitigation planning. Plan participants should understand the results of the Statewide Risk Assessment, fix any incomplete or incorrect data, and add local context. They can then use this information to identify changes in local flood and landslide risks, and changes in local priorities. They can also develop mitigation actions and find gaps in local capabilities. By taking the time to engage with the data, plan participants can stay ahead of flood and landslide risks in their communities. They can act before the next disaster strikes to keep families and neighborhoods safe.

The **plan owner** is the entity sponsoring the development of an HMP. In West Virginia this could be a regional planning and development council or a county.
The **planning consultant** works under contract to the plan owner to give professional and technical support for plan updates. Planning consultants can come from private consulting firms, academic institutions, or nonprofit organizations.
Plan participants are local officials and community representatives from participating jurisdictions. They are most affected by the plan's outcomes. They also have the authority to carry out the mitigation actions.

Risk Assessment

The detailed information from the Statewide Risk Assessment can help planning teams in West Virginia identify flood and landslide risks with greater accuracy and precision. Risk, for the purpose of hazard mitigation planning, is the potential for damage, loss, or other impacts created by the interaction of natural hazards with physical or human assets. The tasks for conducting a risk assessment can be divided into four steps: 1) describe hazards, 2) identify at-risk assets, 3) analyze vulnerability and impacts, and 4) summarize risk. The results of the Statewide Risk Assessment can help with each of these steps.

The datasets developed by the Statewide Risk Assessment can be considered "best available data" for flood hazards, landslide hazards, and building/human exposure. The location and extent of high-risk floodplains can be viewed on the WV Flood Tool. The Risk MAP view provides the most detail. Users can turn on different risk layers to

see the effective 1%-annual-chance floodplain and flood depth. They can also see the draft or preliminary floodplains (if FEMA is updating an area's flood maps) as well as the 0.2%-annual-chance floodplain. Planning teams can download a statewide GIS dataset of high-risk floodplains on the WVGISTC Access Data page under "Floodplain Data." Similarly, the location and extent of landslide hazards can be viewed on the WV Landslide Tool. Users can turn on the Landslide Hazard Susceptibility layer to see the areas with medium and high landslide susceptibility. Planning teams can also download statewide or regional GIS datasets of landslide susceptibility on the WVGISTC Access Data page under "Landslide Data." The primary focus of the Statewide Risk Assessment was to create more detailed flood and landslide risk assessments. However, the project also created a structure-level inventory of buildings and facilities in West Virginia. This inventory includes statewide building replacement costs for 1.1 million structures from 1.4 million parcel centroids and tax assessment attributes. This data may be available from the WVGISTC on request. It can be used to assess other disaster risks.

After describing hazards and identifying exposed assets, the next step of a risk assessment is analyzing vulnerability and impacts. Exposure refers to which physical assets and populations are at risk and vulnerability is the susceptibility of these exposed elements. Impacts refer to the consequences of a hazard. Examples include fatalities, injuries, and population displacement; building and infrastructure damages; and loss of services. The Statewide Risk Assessment created a range of community-level and building-level risk assessment products that can help with this step. Table 3 lists some of these products and their role in analyzing vulnerability and impacts.

Table 3: Risk Assessment Products Available to Analyze Vulnerability and Impacts

Data Product	How to Use the Product
WV Building-Level (BL) Risk – Primary Structures	Planning teams can interact with this online tool to identify structures in the high-risk flood zone. They can sort and filter at-risk buildings based on geographic scales and entities, building characteristics, flood zone information, and estimated flood losses. Then, they can download their queries or share them using a unique link generated by the tool.
Building-Level Risk Assessment (BLRA) Table *(Password required; contact the WVGISTC for help)*	Similar to the above tool, but on a spreadsheet after downloading.
Essential Facilities Table	Planning teams can use this data to learn more about at-risk essential facilities. For more detail see the factsheet: *West Virginia Statewide Risk Assessment: Identify and Prioritize At-Risk Significant Structures.*
Community Assets Table	Planning teams can use this data to learn more about at-risk community assets. For more detail see the factsheet: *West Virginia Statewide Risk Assessment: Identify and Prioritize At-Risk Significant Structures.*
Transportation Flood Inundation Models	Planning teams can use this dataset to understand the extent of roads, railroads, and bridges at risk of flooding.
Community-Level Estimated Loss Table	Planning teams can use this data to describe the potential impacts of flooding on each community in terms of building repair costs and debris generated.

Data Product	How to Use the Product
Community-Level Population Displacement and Shelter Needs Table	Planning teams can use this data to describe the population residing in floodplain and potential impacts of flooding on each community in terms of the population that could be displaced and the related short-term shelter needs.
Community-Level Landslide Susceptibility	Planning teams can use this data to describe the potential impacts of landslides on each community in terms of the extent of high and medium landslide susceptibility.

The final step of the risk assessment is summarizing risk. The risk assessment creates a wide range of information on hazards, exposed/vulnerable assets, and potential impacts. This information needs to be summarized. That way, plan participants can use the findings to guide the mitigation strategy, and share findings with local decision makers. One suggested approach is for the planning team to create problem statements for each high-priority significant structure (community asset or essential facility). These short and simple statements highlight key issues from the data. Problem statements should be created through a process that allows local stakeholders to discuss priorities and highlight the issues of most concern. For more detail on setting priorities and creating problem statements, see the fact sheet: *West Virginia Statewide Risk Assessment: Identify and Prioritize At-Risk Significant Structures*.

Planning teams should also consider individual properties that may need further evaluation for mitigation based on flood exposure, physical vulnerability, estimated losses, and local conditions. For guidance on using building-level risk and mitigation data for this purpose, see the fact sheet *West Virginia Statewide Risk Assessment: Property-Level Mitigation*. Note that the summary of vulnerability must also address NFIP-insured structures that have been repetitively damaged by floods. Information on repetitive loss structures may be available from the WVGISTC on request.

Basic Requirements

At a minimum, the risk assessment section of the HMP should include a narrative description of community-level flood and landslide risks. For both hazards, the narrative should describe potential impacts in terms of the number, type, and value of exposed structures. For flood hazards, the narrative should also address future map conditions, FIRM status, and depth in structure. An assessment of future map conditions may identify areas where many buildings are in the mapped-in category. Residents and business owners in these areas may not be aware of their high flood risks. A review of Flood Insurance Rate Map (FIRM) status and depth in structure may also find areas with a high density of Post-FIRM, minus-rated structures. This may show weaknesses in the permitting process that allow unsafe building practices. For more guidance on using these and other building-level indicators to assess physical vulnerability, identify higher-risk properties, and support property-level mitigation priorities, see Fact Sheet 3: *West Virginia Statewide Risk Assessment: Property-Level Mitigation*.

Beyond the Basics

The WVGISTC's building-level flood risk assessments give planning teams in West Virginia the opportunity to exceed the minimum requirements for plan updates. Planning teams can use the data to discuss flood risk at the structure level. They can also use it to consider *why* a significant structure, with the important functions and value it provides to the community, is at risk from flooding. For more information see the FEMA factsheet: *West Virginia Statewide Risk Assessment: Identify and Prioritize At-Risk Significant Structures.*

Example: Without the detailed information from the Statewide Risk Assessment, a community may only be able to determine that it has X structures in the high-risk flood zone. With the data from the Statewide Risk Assessment, the community can also learn about the types of structures at risk from the 1%-annual-chance flood and their function in the community. They can also review information about the extent of flooding, the building characteristics, and the estimated flood losses. Local stakeholders can combine this information with local knowledge to prioritize buildings for mitigation.

Mitigation Strategy

The results of the Statewide Risk Assessment also have a role in creating the mitigation strategy. This is the heart of the HMP. It serves as the long-term blueprint for staying ahead of future disasters and keeping communities safe. The mitigation strategy consists of mitigation goals, mitigation actions, and an action plan. Planning teams can use the Statewide Risk Assessment results to help identify, evaluate, and rank mitigation actions. Working with plan participants to use the Statewide Risk Assessment results is key. Ultimately, they will carry out the mitigation actions.

To identify a range of mitigation actions, the planning team should start with the problem statements from the risk assessment. As described above, the Statewide Risk Assessment can help the planning team highlight key issues and create problem statements. For each problem statement, the planning team should consider different types of mitigation actions. Note that problem statements can include gaps in the available data. The planning team should also revisit the status of previous mitigation actions. Data on completed flood mitigation projects may be available from the WVGISTC. They collected data on a range of mitigation projects including buyouts, elevation, relocation, wet-proofing, dry-proofing, and protection of utilities some reflected in the mitigation dashboards. For each community, an Area of Mitigation Interest (AoMI) map can be provided by the WVGISTC on request to help prioritize areas for potential mitigation actions. Such maps represent flood-prone community areas into three priority zones of highest, moderate, and lower based on the floodplain types and inundation depths. Example maps have been created for the communities of Rainelle and White Sulphur Springs.

Once a range of actions is identified, the planning team will evaluate and prioritize them. The planning team must consider the benefits that would result from a mitigation action versus the cost. Benefits include losses avoided. For example, benefits could include the number and value of structures protected by a mitigation action. The data from the Statewide Risk Assessment can help estimate the benefits of flood mitigation projects. Additional criteria may include social, technical, political, environmental, and economic factors. The planning team needs to agree on these other criteria.

Plan Maintenance and Implementation

The mitigation plan is a living document that must be updated to stay relevant. The WVGISTC can work with the planning team to track progress toward flood mitigation actions. Data on buyout properties and mitigated structures may be available on request. The planning team can then revise the plan to reflect completed projects. The plan should include a table with the number and types of mitigated structures for each flood-prone community.

FEMA suggests that the plan owner create space to monitor the plan on a regular basis. Annual plan reviews are a great way to do this. During annual reviews, the planning team can gather and validate new data on completed

mitigation projects. Plan owners are also encouraged to document and submit updates to the HMP regularly throughout the five-year planning cycle. Updates can reflect shifts in priorities due to changing community traits, risks, or available resources. This will help make the plan as relevant as possible and help fast-track the next plan update.

Maintaining drive throughout the planning cycle is essential. Acting on the plan is the final step in the mitigation planning process. As communities take action to reduce disaster risks, they will build more resilient communities that keep families and neighborhoods safe.

Please see the second fact sheet in the series: *West Virginia Statewide Risk Assessment: Identify and Prioritize At-Risk Significant Structures.*