

5.– Capability and Capacity Assessment

- 5.– Capability and Capacity Assessment1
- Introduction2
- Data Availability2
 - FEMA Flood Data2
 - Gauge Data3
 - High Water Marks3
 - Future Conditions Data3
 - Abandoned Mine Land Data3
 - Local Data4
 - Limitations4
- Local Planning and Policies5
 - Community Plans5
 - Ordinances and Regulations9
 - Limitations10
- Staffing and Training11
 - Limitations11
- Additional Initiatives and Considerations11
 - Environmental Permitting11
 - NFIP12
 - US Army Corps of Engineers (USACE) Section 202 Program12

Introduction

The purpose of conducting a capability and capacity assessment is to determine the ability of a local jurisdiction to identify and implement policies, programs, or projects that reduce flood risk. As in any planning process, it is important to try to establish which actions are feasible based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability and capacity assessment helps to determine which flood risk reduction activities are practical, and likely to be implemented over time, given a local government's planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate. Information for the capability and capacity needs assessment was gathered from county officials during Planning Team meetings and targeted stakeholder interviews.

A capability and capacity assessment includes, at a minimum, reviewing available flood-related data, plans and policies, and staffing capabilities, as well as providing recommendations for revisions or new policies to enhance the county's capability in floodplain management; and review of policy, including identified incentives, for restoring or preserving riparian and wetland vegetation. Careful examination of local capabilities will detect any existing gaps, shortfalls, or limitations with ongoing government activities that could hinder proposed flood risk reduction activities and possibly exacerbate community flood vulnerability. A capability and capacity assessment also highlights the positive measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future efforts.

Going forward, a county lead will be identified to track capacity building and each identified flood risk reduction action will be assigned to a responsible party and a timeline for completion will be included. Recommended actions will support a long-term strategy to maintain capacity and capabilities, such as regular staff training as well as potential budget strategies to support staff in that work and to maintain a newly achieved CFM certification. Flood risk reduction actions and projects, including those identified to maintain and enhance county capability and capacity, are presented in [Section X: Flood Risk Reduction Action Plan](#).

Data Availability

Relevant data, such as flood risk studies, maps, and gage information, help communities understand flood risk by providing information regarding the location, severity, and likelihood of potential flood events. Further, local data, such as building and asset data, can be assessed alongside flood data to understand a community's vulnerability to flooding. Therefore, data availability is directly linked to a community's capability to understand flood risk, as well as to develop and implement strategies to effectively reduce future flood risk. As part of the planning process, flood-related data was collected from local, state, and federal sources to inform capability. This data was also used in [Section X: Risk Assessment](#), to better understand flood risk within Buchanan County. A summary of available flood data sources is provided below.

FEMA Flood Data¹

Regulatory Flood Insurance Rate Maps (FIRMs) show the location of the mapped 100-year and 500-year floodplains in Buchanan County, and are used for flood insurance. The effective FIRM for Buchanan County was developed in 1997.

¹ FEMA Map Service Center. [FEMA Flood Map Service Center | Search All Products](#).

Flood risk products (FRPs) are non-regulatory and are used for community planning and emergency preparedness purposes. In 2014, FEMA and the US Army Corps of Engineers completed a Flood Risk Study for the Tug Fork Watershed, which includes the northern portion of Buchanan County, including the Hurley and Guesses Fork areas. The Flood Risk Study includes depth grids, and percent chance of flooding grids (annual and 30-year).

Gauge Data

Buchanan County has a system of IFLOW rain and stream gauges throughout the county.² However, it was noted but county officials that the gauges are not updated in real time, and therefore cannot be relied upon to determine when a flood stage has been reached. Officials also noted that the stream gauges are located along the same waterway, and therefore do not provide adequate coverage for the county. In addition to the IFLOW system, there is one USGS station in Buchanan County, located along Levisa Fork near Big Rock.

High Water Marks

High water marks, or visible lines that show the location and height of floodwaters after they have retreated, can be used to determine the extent and severity of the flooding. High water marks connected to inland river flooding can be used for future flood forecasting, predicting the severity of future floods and also for delineating the FEMA floodplain maps. County officials noted that high water marks were collected for 2021 flood, but not for other flood events. Further, while high water marks were provided to the county, they were not put in a geospatial data format that can be used for local planning, project, and funding purposes.

Future Conditions Data

Future conditions data helps communities understand how their flood risk may change over time. Buchanan County is expected to experience increased annual precipitation in the future, including more severe extreme rainfall events. While the county does not have future rainfall or flood data developed from downscaled climate models, national sources and tools such as the National Climate Assessment, NOAA's Climate Mapping for Resilience and Adaption, Headwaters Economics Neighborhoods at Risk, EPA's EJScreen, FEMA's National Risk Index, and USACE studies are available to understand future conditions associated with flood risk.

Abandoned Mine Land Data

Buchanan County has thousands of abandoned mines distributed throughout the county. Abandoned mines pose a threat due to flooding from "blowouts," when mines fill with water during extreme rainfall events and burst, resulting in large volumes of water cascading down steep slopes into valleys below. These events are difficult to predict, and can also result in landslides and mudflows. While many abandoned land mines have been mapped and rehabilitated, many remain unmapped throughout the county. According to county officials, Virginia Department of Energy (DOE), formerly the Department of Mines Minerals and Energy (DMME), located and mapped many abandoned mines in the 1970s but as many as ten thousand unlocated abandoned mines may exist throughout Buchanan County. DOE

² Virginia Flood Observation and Warning Network. [Virginia Flood Observation and Warning Network \(mtiv-tools.com\)](https://mtiv-tools.com).

maintains an online mapping tool to show the location of known abandoned mines and associated impacts.³

The presence of unknown, unmapped abandoned mines makes it difficult for county officials to predict where mine blowouts may occur, and makes it challenging to differentiate between flood events caused by extreme rainfall alone and those exacerbated by mine blowouts.

Local Data

Local building and community asset data was collected as part of the planning process in order to better inform risk. The county maintains geospatial data to include address points and use, as well as parcel and value data used for tax assessment purposes. Publicly available building footprint data (i.e., Bing) was also utilized for the Risk Assessment, however there is limited attribute data available through this data source.

More information about how available data was used to assess flood risk is detailed in [Section X: Risk Assessment](#).

Limitations

- **Flood Mapping Data:** The county would benefit from depth and velocity grids for the entire county, especially considering noted issues with houses and mobile homes being swept off their foundations and carried downstream during flood events.
- **Gauge Data:** In its current state, the network of stream and rain gauges in the county provides little benefit in terms of emergency management and warning. An expanded network of stream and rain gauges that update in real time can provide warning when flood stages are being approached. Further, information gathered by gauges can be used to understand the extent and severity of extreme rainfall events and can be used in floodplain mapping.
- **High Water Marks:** Without high water marks from previous flood events, future updates to flood maps may not accurately reflect severity and extent of flooding in Buchanan County. A process for collecting high water marks after flood events and storing data in geospatial format would enhance the county's ability to plan for flood risk reduction and work with state and federal agencies to develop accurate flood risk data.
- **Future Conditions:** Future flood risk data developed specifically for Buchanan County, such as changes in the severity and frequency of extreme rainfall events, may help the county better plan to reduce future flood risk. For example, capital projects and infrastructure can be constructed to withstand projected future events rather those of the past.
- **Abandoned Mine Lands:** Buchanan County does not have a complete inventory of abandoned mines within the county. Although the DMME has made significant progress in mapping abandoned mines, a complete survey of the county for unmapped abandoned mines would allow the county to work with local, regional, and state entities to understand where flood risk may be increased due to the presence of abandoned mines and to mitigate potential effects of flooding associated with mine blowouts.
- **Localized Building Data:** The county would benefit from an inventory of digitized building footprints that include attributes such as use, building age and material, first flood elevation,

³ Virginia DMME. [Virginia Abandoned Coal Mine Feature Inventory \(arcgis.com\)](https://arcgis.com).

number of stories, and improvement value. This information can be used to understand building-specific vulnerability to flooding.

Local Planning and Policies

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction's commitment to guiding and managing growth, development, and redevelopment while maintaining the general welfare of the community. It includes emergency response and hazard mitigation planning, comprehensive land use planning, and transportation planning, as well as enforcement of ordinances and building codes, and protection of environmental, historic, and cultural resources in the community. Although conflicts can arise, these planning initiatives present significant opportunities to integrate flood risk reduction principles into the local decision-making process.

Community Plans

In Buchanan County, plans are developed by both the county and the Cumberland Plateau Planning District Commission (CPPDC). The CPPDC is a regional body that provides planning technical assistance to Buchanan, Dickenson, Russell, and Tazewell Counties. Plans and policies are often developed at a minimal level in order to meet state and federal requirements. Table 4-1 provides a summary of plans for Buchanan County.

Table 4-1: Buchanan County Summary of Plans

Plan Title	Purpose
Buchanan County Capital Improvement Plan (CIP)	A CIP provides a working blueprint for sustaining and improving a community’s infrastructure systems. A CIP contains all the individual capital projects and equipment purchases for a local government, in conjunction with construction schedules and financing plans.
Buchanan County Comprehensive Plan	A comprehensive plan serves as a broad policy guide to assist in the decisions necessary for future development and redevelopment.
Buchanan County Emergency Operations Plan (EOP)	An EOP outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.
CPPDC 2021 Comprehensive Economic Development Strategy (CEDS)	A CEDS contributes to effective economic development through a locally-based, regionally-driven economic development planning process. A CEDS is intended to implement economic development planning by engaging community leaders, leveraging the involvement of the private sector, and establishing a strategic blueprint for regional collaboration.
CPPDC Coalfields Regional Water Study	The purpose of the Virginia Coalfields Regional Water Study is to develop and evaluate, without regard to geographical or political boundaries, alternatives for regionalized water systems capable of providing water service to previously unserved areas and improving service to areas currently served.
CPPDC Hazard Mitigation Plan	A hazard mitigation plan represents a community’s blueprint for how it intends to reduce the impact of natural and human-caused hazards on people and the built environment. A community must have a current hazard mitigation plan to qualify for FEMA Hazard Mitigation Assistance (HMA) funding opportunities. Aligning risk reduction actions within this flood resilience plan with the community’s hazard mitigation plan may expand funding opportunities for flood mitigation within the County.
CPPDC Southwest Virginia Regional Wastewater Study	The Southwest Virginia Regional Wastewater Study is intended to serve as a road map for future implementation of sanitary sewer collection, treatment and disposal projects in Southwest Virginia.
CPPDC Southwest Virginia Regional Water Supply Plan	The Southwest Virginia Regional Water Supply Plan was developed to follow the State Water Control Board’s regulation 9 VAC 25-780, Local and Regional Water Supply Planning. The plan addresses water sources, water use, and natural resources in the region and well as water demand management information, and drought response and contingency planning.

Plan Title	Purpose
CPPDC Southwest Virginia Economic Analysis Report	This report assesses economic development trends in Southwestern Virginia, including the growth of the “creative economy,” general economic trends, talent and human capital, recreation, and quality of life.

In addition to plans already in place, several types of plans that have not been developed or implemented by the county or CPPDC were identified that have the potential to reduce flood risk. These present potential opportunities to enhance flood resilience within the county. These plans include:

- **Disaster Recovery Plan:** A Disaster Recovery Plan serves to guide the physical, social, environmental, and economic recovery and reconstruction process following a disaster. In many instances, hazard mitigation principles and practices are incorporated into local disaster recovery plans with the intent of capitalizing on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.
- **Emergency Evacuation Plan** – Evacuation Plans pre-determine safe evacuation routes for residents to relocate out of harm’s way during a disaster. Having an evacuation plan prior to a flood event not only reduces the time needed to take action, but also allows local governments to adequately prepare evacuation routes. For example, roads designated as evacuation routes may be prioritized for improvements or receive signalization preference during emergency events. Further, evacuation route plans can be socialized with a community so that residents are aware of where they should go during a disaster event. This may also help reduce the number of 911 calls received during a disaster event, which was noted as a problem in Buchanan County. The Planning Team noted that emergency evacuation route planning is needed for areas across the county.
- **Continuity of Operations Plan:** A Continuity of Operations Plan (COOP) details how an organization will remain operational and perform essential functions following any event that makes it unsafe or impossible for employees to work in the normal location. COOPs go beyond activities detailed in an emergency action plan including:

 - Delegation of transfer of authority;
 - Identification of essential functions (information technology, payroll, communications);
 - Alternate facilities for performing work;
 - Alternate transportation and remote work capabilities;
 - Access to and safeguarding of information (physical, local server, cloud); and,
 - Return to normal operations.

Ordinances and Regulations

The county has adopted and maintains several ordinances which support the ability of county officials to reduce flood risk. The ordinances are described below.

Floodplain Management

The county has an existing Floodplain Damage Prevention Ordinance that was adopted in 1997. A new, updated Floodplain Damage Prevention Ordinance is currently in the draft phase (as of October 2022) with plans to be adopted in **MONTH YEAR**. The ordinance regulates uses and development within the FEMA mapped Special Flood Hazard Areas (SFHAs), such as the 100-year floodplain (equivalent to the 1.0% annual chance flood hazard area) and floodways. As proposed, the updated draft ordinance provides enhanced protection against flood risk, such as additional freeboard, or elevation above base flood levels. An adopted Flood Damage Prevention Ordinance that complies with FEMA requirements allows the county to participate in the National Flood Insurance Program (NFIP), which makes flood insurance available to residents.

Soil and Erosion Control

The county has an adopted Soil and Erosion Control Ordinance. Big Sandy Soil and Water Conservation District (SWCD) administers the Local Erosion Control Program for Buchanan County through a joint memorandum of understanding (MOU) with the Buchanan County Board of Supervisors.

Soil and erosion control regulations are effective, however there is a lack of awareness among the public as to when permits are required. For example, soil and erosion control permits are often not sought for construction and/or expansion of single-family homes even though it is a requirement. County staff noted that soil and erosion control for construction within the county is not a significant contributor to flood problems.

Building Codes

Buchanan County has adopted and enforces the Virginia Uniform Statewide Building Code. Building codes regulate construction standards. In many communities, permits, and inspections are required for new construction. Decisions regarding the adoption of building codes, the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of risk faced by a community.

Zoning and Subdivision Ordinances

Zoning codes and subdivision ordinances are tools used by communities to regulate land uses and building types within certain geographic areas. When used correctly, zoning and subdivision ordinances can be used to manage development in a logical, harmonious way that keeps residents safe. For

instance, zoning can direct sensitive land uses out of hazard areas. Buchanan County does not currently have zoning or subdivision ordinances in place.

Limitations

While the county has implemented numerous plans and policies to help mitigate flood risk, certain planning and policy limitations were identified by the Planning Team in addition to the ones described in the above sections. These limitations are described below.

- **Floodplain management:** Flood regulations for new development within SFHAs are well-enforced within the county. Homes built within the floodplain go through the permitting process and experience limited damage during flood events relative to pre-1997 construction, which was not subject to flood damage prevention requirements. However, enforcement to keep sheds, trucks, and other encroachments out of the floodplain is challenging. Additionally, private bridges (e.g., driveways) are common throughout the county and are not typically constructed to floodplain management standards. During flood events, bridges have the potential to constrict floodways and washed away bridges may contribute to jammed waterways.
- **Logging:** A lack of controls on logging may contribute to flood problems within the county due to runoff generated by logging practices. Logging is enforced by the Virginia Department of Forestry (DOF). It is unknown if the county has the authority to regulate runoff from logging. Further, the county currently lacks the staffing capacity to enforce logging runoff controls. It was noted that while DOF is responsive to soil and water notification of problems from the county, the agency does not have current initiatives to proactively enforce logging controls within the county.
- **Stormwater:** The Virginia Department of Environmental Quality (DEQ) possesses the authority to regulate stormwater. Currently, little is done with the sheet flow from roadways. Implementation and enforcement of stormwater controls would likely reduce flood risk within the county, especially for roadways and access.
- **Stream buffers:** Constraints regarding available land for development and infrastructure placement (due to topography) limit the implementation of stream buffers within the county. Vegetation along streams is often within residential yards and not subject to any stream buffer requirements. One potential avenue for implementing stream buffers is an agricultural cost-share program, which Big Sandy Soil & Water administers for the county's limited agricultural lands. It was noted that this program is not well utilized due both to the removal of available land and challenges meeting program requirements.
- **Communications systems:** The county has reverse 911 capabilities for emergency notifications. However, residents in the Hurley and Guesses Fork communities do not have adequate cell coverage, radio coverage, or broadband availability to receive emergency alerts.

Staffing and Training

The ability of a local government to develop and implement flood risk reduction projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. As summarized below, county staff currently has limited capacity to implement flood risk reduction. Documented staffing-related capabilities to implement flood risk reduction measures include an official to conduct reviews and enforcement of the building code and flood damage prevention ordinance. This official also acts as the County's emergency manager. Additionally, the county has a staff member dedicated to maintaining geospatial data.

Limitations

The Planning Team noted that most county officials serve multiple roles within the county, which impacts staff members' capacity to pursue new initiatives, such as funding opportunities or partnerships. Similarly, additional trainings or cross-training may not be feasible. Further, county officials noted that if funding was acquired to hire additional staff, there would be limited resources and capacity to train new staff. County officials also recognize the need to have a Certified Floodplain Manager (CFM) on staff who would be able to pursue flood-risk reduction measures.

In addition to the limitations described above, Buchanan County experienced significant flood events in 2020, 2021, and 2022. Because of these events, county staff has focused efforts on emergency response and recovery rather than preemptive flood risk reduction. However, the recovery process presents opportunities for reducing flood risk during rebuilding.

Additional Initiatives and Considerations

Environmental Permitting

County officials noted limited capacity and staff expertise to comply with federal environmental permitting and regulations, such as the Endangered Species Act, specifically in regard to stream maintenance. This adds complexities or directly prevents removing debris and collected sediment from clogged streams that was previously allowed – both which are a significant contributor to floods. The inability to remove debris and sediment from impacted streams was expressed as the largest barrier to reducing flood risk, as removing debris promotes unobstructed stream flows and allows streams to store and channel greater volumes of water within their banks.

Certain streams within Buchanan County are designated as critical habitat for the endangered Big Sandy crayfish. While the Big Sandy crayfish was already protected under the Endangered Species Act, the March 2022 designation of certain streams as critical habitat implemented additional protections. The designation will not affect adjacent landowner activities unless those activities involve federal funding or federal permits and impact designated streams. Critical habitat designation does not establish a wildlife refuge, allow the government or public to access private lands, or require non-federal landowners to restore habitat or recover species.⁴

⁴ U.S. Fish and Wildlife Service (2022). Press Release. U.S. Fish and Wildlife Service designates Critical Habitat for the conservation of two rare crayfishes. Retrieved from [U.S. Fish and Wildlife Service designates Critical Habitat for the conservation of two rare crayfishes | U.S. Fish & Wildlife Service \(fws.gov\)](https://www.fws.gov/news/press-releases/2022-03-22-us-fish-wildlife-service-designates-critical-habitat-for-the-conservation-of-two-rare-crayfishes).

NFIP

The county joined the NFIP in 1997. As of October 27, 2022, the county has 142 policies with over \$25.9 million of insurance in force. Since joining the NFIP, the county has had 266 losses paid, totaling over \$2 million. The Town of Grundy has 28 policies with almost \$7.8 million of insurance in force. The town has 129 paid losses totaling \$1.65 million.⁵

The county does not currently participate in the Community Rating System (CRS) program, which is an incentive-based program that encourages counties and municipalities to undertake defined flood risk reduction activities that go beyond the minimum requirements of the NFIP. All CRS flood mitigation activities are assigned a range of point values. As points are accumulated and reach identified thresholds, communities can apply for improved CRS class ratings, which are tied to flood insurance premium reductions.

US Army Corps of Engineers (USACE) Section 202 Program

Section 202 was incorporated into the Energy and Water Development Act of 1981 (P.L. 96-367) and authorized the USACE to design and construct such flood control measures as would be necessary and advisable to prevent future flood damages within several communities, including the Tug and Levisa Forks and Upper Cumberland River Basins. Buchanan County is included in the Section 202 program because of the damaging impacts from the April 1977 flood. The program is implemented by the USACE Huntington District, and does not include the Town of Grundy as it was addressed previously in a separate Huntington District Flood Risk Management project. The primary components of the project include:

- School relocations out of flood hazard areas;
- An Emergency Evacuation Plan (EEP); and,
- A voluntary floodproofing and floodplain evacuation program.

Under Section 202, the Buchanan County Career and Technical Center qualifies for a floodproofing Ring wall around the facility, for which USACE Huntington District completed a Design Documentation Report in November 2019. Hurley High School is eligible for relocation outside of the floodplain. In January 2021, the Buchanan County Board of Education, which owns both schools, voluntarily proposed to consolidate the Tech Center and Hurley High School into a shared replacement facility on a new relocation site at Southern Gap. The Huntington District is currently in Relocations/ Floodproofing Agreement negotiations with the Board of Education for this Agreement.

Structures in the county that were flooded by the April 1977 flood are eligible for either voluntary floodproofing (elevating the structure above the April 1977 high flood level or 100-year flood level, whichever is greater) or acquisition & demolition (purchasing the structure if it cannot safely be elevated). The Huntington District maintains updated maps and performs site visits to confirm eligibility. Eligible landowners received a letter providing information on voluntary floodproof and acquisition eligibility, the application process, and direction to this website for information on the program. The district accepted eligible applications from October 2020 through June 30, 2022.

⁵ FEMA Community Information System (CIS). Retrieved October 27, 2022.