

JEFFERSON COUNTY

Multi-Jurisdictional All-Hazard Mitigation Plan 2012

JH Consulting LLC

JEFFERSON COUNTY, WEST VIRGINIA MULTI-JURISDICTIONAL ALL-HAZARD MITIGATION PLAN

SPONSORED BY THE JEFFERSON COUNTY COMMISSION

RELEASED DECEMBER, 2012

FOR JEFFERSON COUNTY, WEST VIRGINIA, AS WELL AS THE MUNICIPALITIES OF BOLIVAR, CHARLES TOWN, HARPERS FERRY, RANSON, AND SHEPHERDSTOWN

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1.0 INTRODUCTORY MATERIALS

1.0 INTRODUCTION

The *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* update has been completed in accordance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390). The guidelines for the completion of this plan appear in the Code of Federal Regulations (CFR) under Title 44: Emergency Services, Part 201.6, as well as Comprehensive Preparedness Guide 201 (CPG 201): Threat and Hazard Identification and Risk Assessment (THIRA) Guide. The West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) – Mitigation and Recovery Branch further monitored both the original and update planning processes. Funding for the original project was distributed through a Federal Emergency Management Agency (FEMA) Project Impact Grant. The first and second update to the plan was funded locally by the County Commission of Jefferson County.

Jefferson County Homeland Security and Emergency Management (JCHSEM) acted as the lead agency for the completion of this plan update at the local level, and worked in cooperation with municipal governments, citizens, and business owners of Jefferson County to complete the update. JCHSEM administered a consulting contract for both the Hazard Risk Assessment (HRA) and Action Plan (AP). The original HRA was completed in 2003; the first updated HRA was completed in March, 2008; the second update was completed in February of 2013. The original AP was completed in 2003; the first updated AP was completed in March, 2008; and the second update was completed in February of 2013. The original plan was formally adopted by participating jurisdictions in 2003. The first update was adopted in March of 2008 and this second update was adopted in February of 2013.

The *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* is considered “multi-jurisdictional” for several reasons. In addition to the county governing body of Jefferson County, all five (5) municipal jurisdictions participated in the data compilation and AP development. The municipal jurisdictions provided representatives on the Hazard Mitigation Core Planning Committee (CPC) and contributed at least one (1) project to the AP. Further, all five (5) governmental entities in Jefferson County formally adopted the plan by resolution (see Appendix 5).

The updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* will serve to better prepare the county to become more disaster resistant to natural and

man-made hazard events such as flooding, severe winter storms, hazardous materials incidents, and terrorism. The updating of this plan provides continued eligibility for future mitigation funds for Jefferson County and its citizens.

A number of documents were utilized as resources throughout the development and updating of the hazard mitigation plan. References to these documents are, at times, direct and cited; other references are indirect and implied. This paragraph serves to formally recognize these documents.

- *Bolivar Comprehensive Plan, 2000*
- *Charles Town Comprehensive Plan, 2010*
- *Harpers Ferry Baseline Report, 2012*
- *Harpers Ferry Ordinances, 2011*
- *Harpers Ferry Comprehensive Plan, 2007*
- *Harpers Ferry Source Water Assessment and Protection Plan, 2006*
- *Jefferson County Continuity of Operations Plan, 2012*
- *Jefferson County County-Wide Groundwater Assessment, 2012*
- *Jefferson County Hazardous Materials Commodity Flow Study, 2012*
- *Jefferson County Agricultural Statistics, 2011*
- *Jefferson County Emergency Operations Plan, 2012*
- *Jefferson County Property Safety Ordinance, 2010*
- *Jefferson County Tier II Assessment, 2010*
- *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan, 2008*
- *Jefferson County Comprehensive Plan, 2004*
- *Ranson Comprehensive Plan, 2012*
- *Ranson Ordinances, 2012*
- *Shepherdstown Planning & Zoning Ordinances, 2011*
- *Shepherdstown Comprehensive Plan, 2001*

1.1 DOCUMENTATION OF THE PLANNING PROCESS

§201.6(b) and §201.6(c)(1)	An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

At the direction of Jefferson County Homeland Security and Emergency Management (JCHSEM), Jefferson County and its municipalities have developed and conducted the second update to their Multi-Jurisdictional All-Hazards Mitigation Plan in a continuing effort to indicate probable hazard risks, profile future hazard events, estimate damage and losses as a result of future hazard events, and advocate mitigation projects to reduce the effects of the identified hazards on the communities within the county. The plan's aim is to create safer, more disaster-resistant communities. The following plans, studies, reports, and technical information were integrated into this plan:

- *Bolivar Comprehensive Plan, 2000*
- *Charles Town Comprehensive Plan, 2010*
- *Harpers Ferry Baseline Report, 2012*
- *Harpers Ferry Ordinances, 2011*
- *Harpers Ferry Comprehensive Plan, 2007*
- *Harpers Ferry Source Water Assessment and Protection Plan, 2006*
- *Jefferson County Continuity of Operations Plan, 2012*
- *Jefferson County County-Wide Groundwater Assessment, 2012*
- *Jefferson County Hazardous Materials Commodity Flow Study, 2012*
- *Jefferson County Agricultural Statistics, 2011*
- *Jefferson County Emergency Operations Plan, 2012*

- *Jefferson County Property Safety Ordinance, 2010*
- *Jefferson County Tier II Assessment, 2010*
- *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan, 2008*
- *Jefferson County Comprehensive Plan, 2004*
- *Ranson Comprehensive Plan, 2012*
- *Ranson Ordinances, 2012*
- *Shepherdstown Planning & Zoning Ordinances, 2011*
- *Shepherdstown Comprehensive Plan, 2001*

The planning process utilized by Jefferson County is in accordance with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act), as amended by Section 322 of the *Disaster Mitigation Act of 2000* (Public Law 106-390), the *National Flood Insurance Act of 1968,* as amended by the *National Flood Insurance Reform Act of 2004* (Public Law 108-264), and *44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning*. Several resources were used during the development and updating of the plan, including the US Department of Homeland Security's (USDHS) Federal Emergency Management Agency (FEMA) *Mitigation Planning How-To Series*, the governing regulations found in Title 44 – Emergency Management of the Code of Federal Regulations (CFR), and guidance documents provided by the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM). The planning process utilized to update the plan included the following steps, which will be described in greater detail throughout the plan:

- Step 1: Reestablishment of a Core Planning Committee (CPC),
- Step 2: Conducting an update to the Hazard Risk Assessment (HRA),
- Step 3: Development of an update to the Action Plan (AP), and
- Step 4: Re-adopting and implementing the updated plan.

To guide the completion of the plan update at the local level, a multi-jurisdictional Core Planning Committee (CPC) was reestablished and a Steering Committee was utilized to examine the community's risks and vulnerabilities to natural and man-made hazards. These committees were comprised of key officials representing state, county, municipal, and private entities with a stake in mitigation, and included the following.

JCHSEM Steering Committee Membership

Name	Organization
Barbara Miller	Jefferson County Homeland Security & Emergency Management, Director
Sheriff	Law Enforcement Representative
Chuck Ellison	Utilities Representative
Ed Smith	Fire and Rescue Representative
Holly Morgan-Frye	Shepherd University Service Learning Program Education Representative
Jane Tabb	County Commission Representative
Jeff Jefferies	Health Representative
Jeff Polczynski, EPN	Jefferson County Emergency Communications Center Representative
Jessica Owens	Jefferson County Homeland Security & Emergency Management, Administrative Assistant
John Reisenweber	Jefferson County Development Authority Representative
John Sherwood	Chair, Chamber of Commerce Representative
Katherine Dunbar	Non-Governmental Organization Representative
Kelly Parsons	Private Industry Representative
Lorraine "Lori" Kelly	Vice Chair, American Red Cross Representative
Mason Carter	Jefferson County Department of Engineering Representative
Sanford "Sandy" Green	Region 3 Homeland Security Area Liaison
Terri Mehling	Jefferson County Homeland Security & Emergency Management, Program Manager/Planner/Deputy Director

Table 1.1

Jefferson County Core Planning Committee (CPC)

Name	Organization
Andrew Blake	City of Ranson
Ashley Petrolino	Citizen
Barbara Miller	Jefferson County Homeland Security & Emergency Mgmt.
Casey Hamner	JH Consulting, LLC
Dale Manuel	Jefferson County Commission
Debbi Palmer	Eastern Panhandle Chapter American Red Cross
Doug Britvec	JH Consulting, LLC
Frances Morgan	Jefferson County Commission
Frank Welch	City of Shepherdstown Public Works Dept.
Jeff Jefferies	Jefferson Memorial Hospital
Jeff Levesque	Eastern Panhandle Chapter American Red Cross
Jeff Polczynski	Jefferson County Emergency Communications Center
Jennie Brockman	Jefferson County Planning Dept.
Jessica Gormont	Jefferson County GIS Dept.
Jessica Owens	Jefferson County Homeland Security & Emergency Mgmt.
Joe Cosentini	City of Charles Town
Johnnie Parkin	Citizen
Karin Christensen	NCTC
Kevin Johnson	Loudoun County Office of Emergency Mgmt.
Lyn Widmyer	Jefferson County Commission
Mason Carter	Jefferson County Dept. of Zoning & Engineering
Matt Piepenburg	Jefferson County Public Service District
Nancy Williamson	Harpers Ferry Job Corps Center
Neal Nilsen	Ask Neal, LLC
Patsy Noland	Jefferson County Commission
Paul Burke	Citizen
Robert Hardy	Mayor of Bolivar
Sallie Edwards	Citizen
Sandy Hite	Jefferson County Health Dept.
Scott Coyle	City of Charles Town
Sheri Hoff	Jefferson County Schools
Sue Lawton	Jefferson County Public Service District
Terri Mehling	Jefferson County Homeland Security & Emergency Mgmt.
Todd Fagan	Jefferson County GIS/Addressing Office
Walt Pellish	Jefferson County Commission

Table 1.2

1.1.1. Plan Development & Updating Process

The original process in 2003 was led by the Jefferson County Project Impact members and supported by the planning and engineering firm Edwards & Kelcey (EK). The first update to the plan was compiled by Jefferson County Homeland Security and Emergency Management (JCHSEM) staff and its Core Planning Committee (CPC), as well as Stantec Consulting Services, Inc. This second update to the plan was also compiled by JCHSEM Staff, its CPC, and JH Consulting, LLC.

The local hazard mitigation planning process in Jefferson County began when the area was designated as a Project Impact Community. The Federal Emergency Management Agency (FEMA)-Region III and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) recommended Jefferson County as the fourth (4^{th}) and final Project Impact Community in West Virginia based on community commitment and interest. On May 15, 2001 the county Commission of Jefferson County entered into a contract with FEMA to provide $300,000 to the community for this initiative. The county was also required to provide an in-kind match of $100,000, which was accomplished in early 2002.

In 2004, Project Impact transitioned into the Jefferson County Office of Homeland Security, and in the summer of 2007, merged with the Emergency Management Department to become Jefferson County Homeland Security and Emergency Management. The structure is made up of a Steering Committee, Public Awareness/Public Education Committee, Partnership Development Committee, Counter Terrorism Committee, Animals in Disaster Committee, Emergency Planning for People with Special Needs Committee, and Risk Assessment/Mitigation Planning Committee. JCHSEM is a department of the Jefferson County Commission and is guided by a Steering Committee, which is made up of county, state, federal, and private entity representatives.

One of the early acts of the Jefferson County Project Impact was to establish a Risk Assessment and Mitigation Planning Committee to examine the community's risk and vulnerability to natural and man-made hazards. This committee, originally formed in April 2002, comprises representatives from federal, county, municipal, and private entities.

Due to recent federal regulations requiring local hazard mitigation plans, Jefferson County decided to allocate the bulk of its funding and resources to hazard identification, risk assessment, and hazard mitigation planning activities. The Risk

Assessment and Mitigation Planning Committee was tasked with most of the activities related to the development of this plan and was considered the Core Planning Committee (CPC). Committee members have worked throughout the process from the initial crafting of the Request for Proposal to the final selection, original plan development, and two (2) subsequent updates of the plan. Table 1.3 below provides a timeline of the process utilized to develop the original plan, as well the first and second updates to the plan.

1.1.2. Planning Process Timeline

Jefferson County All Hazard Mitigation Planning Process Timeline

Date	Activity	Purpose
Original Plan Development		
February, 2002	Partnerships formed with community	Establish Project Impact partnership
April, 2002	Risk Assessment/Mitigation Planning Committee formed	Begin risk assessment and mitigation planning process
April, 2002	Contacted other PI Communities	For examples of hazard mitigation plans
April, 2002	Mitigation 101 Educational Workshop	Conducted for Risk Assessment/Mitigation Planning Committee
May 28, 2002	Risk Assessment/Mitigation Planning Committee finalize scope of services and RFP	Make recommendation to Steering Committee
April-June, 2002	Risk Assessment/Mitigation Planning Committee meetings	Data collection
June 15, 2002	Gather existing information from agencies	Data collection
June 19, 2002	FEMA workshop	Training on new planning regulations
June 25-28, 2002	Revised RFP	Update to include DMA 2000 requirements
June 28, 2002	Revised RFP to Scope of Services Committee	Review and approval
July 9, 2002	Scope of Services Committee meeting Risk Assessment Committee meeting	Finalize RFP for release
July 23, 2002	Steering Committee action	Approved RFP
July 29, 2002	Legal ad for Spirit of Jefferson Mail out legal ad to list of potential bidders	Advertise RFP
July 30, 2002	WVDHSEM Hazard Mitigation Planning Workshop	Obtain additional information about mitigation planning and state support
August 1 & 8, 2002	Legal ad to appear in local newspaper	Advertise RFP
August 8, 2002	Prepare Pre-bid packets and presentation	For pre-bid meeting
August 13, 2002	Pre-bid meeting	Mandatory meeting for interested bidders
August 14-29, 2002	PI Office appointments and Q&A period	Review GIS data and obtain clarification on RFP
August 30, 2002	Deadline to submit proposals Deadline for municipalities to name representatives	Solicit consultant support for participation on Risk Assessment/Mitigation Planning Committee to meet multi-jurisdictional plan requirements
September 3, 2002	Scope of Services Committee meeting	To open bids and distribute copies

Date	Activity	Purpose
September 3-9, 2002	Scope of Services Committee action	Review of bid documents
September 9, 2002	Scope of Services Committee meeting Notices to short-listed bidders	To select forms for interview
September 17, 2002	Consultant Interviews	To select firm
September 24, 2002	Steering Committee meeting	Recommendation of selected firm
September 26, 2002	County Commission meeting	Approval of selected firm
October 1, 2002	Notification of selected firm	To commence consultant activities
October 10 & 17, 2002	Legal Notice in The Spirit of Jefferson	Notification of kick-off meeting
October 22, 2002	Kick off meetings	For public officials and general public
October 24, 2002	Quarterly Project Impact Partnership meeting Signing of contract	Hazard identification activity To commence consultant activities
November 4, 2002	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	Focus on risk assessment-data collection, hazard identification
November 28, 2002	Legal Notice in The Spirit of Jefferson	Notification of Public meeting
December 2, 2002	Draft risk assessment and maps submitted	For review by core planning team and steering committee
December 5, 2002	Legal Notice in The Spirit of Jefferson	Notification of Public meeting
December 9, 2002	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	To present draft risk assessment and obtain comments
December 16, 2002	Public Meetings	To present draft risk assessment and obtain comments
December 17, 2002	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	Develop goals and objectives for mitigation plan
January 10, 2003	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	Develop mitigation strategies
January 29, 2003	Draft Plan submitted	For review by core planning team and steering committee
January 30, 2003	Legal Notice in The Spirit of Jefferson	Notification of public meeting
February 5, 2003	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	To present draft plan and obtain comments
February 6, 2003	Legal notice in The Spirit of Jefferson	Notification of public meeting
February 10, 2003	Public Meeting	To present draft plan and obtain comments
February 10-March 10, 2003	Public comment period	To obtain public comments
March 7, 2003	Steering Committee meeting	Final plan review
March 10, 2003	Plan to WVDHSEM for review	To obtain state comments
March 13, 2003	Final plan submitted to Jefferson County	Final version with revision incorporated
March 13, 2003	Jefferson County Commission meeting	Presentation of plan for adoption
March 17, 2003	Charles Town City Council meeting	Presentation of plan for adoption
March 18, 2003	Ranson City Council meeting	Presentation of plan for adoption
April 1, 2003	Bolivar city Council meeting	Presentation of plan for adoption
April 8, 2003	Shepherdstown City Council meeting	Presentation of plan for adoption
April 14, 2003	Harpers Ferry City Council meeting	Presentation of plan for adoption
TBD	Adopted plan submitted to FEMA Region III for approval	Plan comment, review, and approval
TBD	Plan revision	As needed based on FEMA review

Date	Activity	Purpose
June 15, 2004	End of grant period	Jefferson County Project Impact
First Plan Update		
May 10, 2007	WVDHSEM-Mitigation Department-Jefferson County received fax regarding review process of the All Hazard Mitigation Plan	To notify the County regarding review process
November 6, 2007	JCHSEM Staff Meeting	To review process and prepare for kick-off meeting
November 14, 2007	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	Focus on risk assessment – data collection, hazard identification
January 23, 2008	Risk Assessment/Mitigation Planning Committee (Core Planning Team) meeting	Focus on risk assessment goals and objectives
February 27, 2008	Risk Assessment/Mitigation Planning Committee (Core Planning Team) plan update meeting	Focus on updating the loss estimations section; goals, objectives and strategies section, and all remaining sections
Second Plan Update		
June, 2009	Risk Assessment Committee Meeting.	Conducted annual plan review.
June 30, 2010	Risk Assessment Committee Meeting.	Conducted annual plan review.
June 22, 2011	Risk Assessment Committee Meeting.	Conducted annual plan review.
March, 2012	Partnerships formed with community	Established project partnerships.
April, 2012	Risk Assessment/Core Planning Committee reformed.	Begin risk assessment and mitigation planning process.
April, 2012	Core Planning Committee finalized scope of services.	Make recommendation to County Commission.
May 16, 2012	Accept proposals from consultants.	Select consultant to assist with plan update.
May 24, 2012	Notification of selected firm.	To commence consultant activities.
July 24, 2012	JCHSEM & Mitigation Planning Committee Meeting.	Annual review of the mitigation plan. Primarily discussed updating goals, objective, and strategies.
August 7, 2012	Project Kick-off Meeting	For CPC and consultants to kick to project off.
August 29, 2012	Two (2) Core Planning Committee / Public Meeting one (1) @ 2pm and one (1) @ 7pm.	Discussed and presented what a risk assessment is, discussed hazards that should be included in the plan, any that should be added or removed, discussed profiling hazards and development trends within the county.
Sept. 18, 2012	Core Planning Committee Meeting / Public Meeting	Review of the Hazard Risk Assessment to integrate changes that have taken place.
October 23, 2012	Core Planning Committee Meeting/ Public Meeting	Review of the Action Plan to assign status notes to goals, objectives, and strategies.
November 27, 2012	Core Planning Committee Meeting/ Public Meeting	The purpose of the meeting was to try and develop new goals, objectives, and strategies for the municipalities of Jefferson County.
December 5, 2012	Draft Hazard Risk Assessment Submittal to CPC.	To present draft plan and obtain comments from the CPC and public.
December 20, 2012	Draft Action Plan Submittal to CPC.	To present draft plan and obtain comments from the CPCD and public.
January, 2013	Final Plan Submittal to State and Federal Reviewing agency, plan adoptions.	End Project.

Table 1.3

1.1.3. Public Involvement

Throughout the initial process in 2003, there were several opportunities for public input. Three (3) public meetings were held at different stages in the process: the first to announce the kick-off of the project and describe the planning process; the second to present the initial findings of the draft Hazard Risk Assessment (HRA); and the third to present the draft plan. Each of the meetings was advertised through legal notices in the local newspaper, The Spirit of Jefferson. Copies of the Jefferson County HRA and draft plan were made available for the public at various viewing locations in the county and the municipalities. Information about the planning process and copies of planning documents were also made available on the Jefferson County Project Impact website to allow the public, neighboring communities, businesses representative, academia, nonprofit organizations and other interested parties to view them. Comment forms were available to the public on the website and also at each display location. All comments that have been received to date from the public have been reviewed and incorporated into the final version of the plans as appropriate.

During the first revision of this document in 2008, the public was invited to attend the Risk Assessment Committee Meetings. Copies of the updated/revised risk assessment plan were made available for the public at the Jefferson County Homeland Security & Emergency Management (JCHSEM) during regular business hours as well as online at the JCHSEM website to allow neighboring communities, business representatives, academia, nonprofit organizations and other interested parties to view and comment on the plan. A news release concerning the project was released in May to encourage the public to give comments.

Throughout the second update of the plan in 2012, there were several opportunities for public input. As many as five (5) public meetings were held at different stages in the process. Meetings were advertised through legal notices in the local newspaper, The Spirit of Jefferson, and via mass emails to committee members. The purpose of the first two (2) CPC/Public Meetings was to announce the kick-off of the project, and describe the planning process, they were held on the same day at two (2) different times to allow for as much public participation as possible. The third CPC/Public Meeting was to present and discuss changes that have taken place in Jefferson County since the first update to the plan that would have an effect on the Hazard Risk Assessment (HRA), and to redefine which

hazards should be included in the updated plan. The fourth CPC/Public Meeting was held in an effort to review the existing goals, objectives, and strategies, and assign a status to them, as well as to identify new goals, objectives, and strategies, for each of the participating municipalities. The fifth and final CPC/Public Meeting was to allow the public a final chance to make any comments on the HRA and/or the Action Plan (see Meeting Minutes & Sign-in-Sheets in Appendix 4).

An invitation to each of these meetings was also sent to Emergency Management Agencies from surrounding counties. In a continuing effort to obtain public input, Household Hazard Preparedness Questionnaires were also distributed to the public, and those in attendance at the meetings (see Appendix 4). Copies of the updated/revised HRA were made available for the public at the Jefferson County Homeland Security & Emergency Management (JCHSEM) during regular business hours as well as online at the JCHSEM website to allow neighboring communities, business representatives, academia, nonprofit organizations and other interested parties to view and comment on the plan. Comment forms were also available to allow anyone to make comments on the plan discreetly; without having to speak in front of a crowd.

1.1.4. Methodology

The Hazard Risk Assessment (HRA) phase of the mitigation plan was completed and updated using a variety of research techniques. Federal Emergency Management Agency (FEMA) Geo-Hazards, Storm Event Records contained in the National Climatic Data Center (NCDC) Storm Event Record Database and other Internet sites were searched for historical hazard event records. JH Consulting, LLC. conducted searches of local newspaper archives and existing reports and plans, which were on file with the governing bodies in the county to assist in the determination of hazard susceptibility areas. Interviews and other discussions were conducted with numerous local officials, including first responders, insurance agents, and West Virginia Division of Highways officials, to ascertain the risks associated with particular hazards in specific areas of the county. After identifying the areas in which the hazards were most prominent, they were profiled and positioned into a base map of the county. This Geographic Information System (GIS)-based map contains several layers with information regarding the individual hazards. Within each of the denoted "hazard risk areas", assets (structures, utilities etc.) were

inventoried and loss estimates were calculated for each of the inventoried assets with respect to that particular hazard.

Following the completion of the updated HRA, the Core Planning Committee (CPC) used information such as the hazard profiles and loss estimations to formulate updated mitigation goals, objectives, and strategies. For this phase of the project, the CPC met separately to discuss baseline strategies. Such an action was reasoned most appropriate, as project stakeholders are individuals that deal with hazard events on a regular basis and will be directly affected by the implementation of the plan. Members of the CPC were notified via memoranda and telephone correspondence from the JCHSEM. The stakeholders' ideas were used as a starting point for further planning steps. The baseline mitigation strategies were presented to the public at the general public meetings to ensure the fair participation of all sectors of the county.

During the initial stages of the updating process, JCHSEM published an advertisement in the local newspaper inviting the public to review the original plan at the Jefferson County Homeland Security and Emergency Management's Offices during regular business hours. A Public Comment Form was developed and distributed by the JCHSEM to any member of the public that visited JCHSEM to review the original plan, allowing them to comment on improvements that could be made to the first updated plan during this update.

Following the compilation of the updated/revised plan, JCHSEM published an advertisement in the local newspaper inviting the public to review the revised *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* at the JCHSEM Offices during regular business hours; Public Comment Forms were distributed for the revised/updated plan as well. Copies of the updated/revised plan were also made available for public online at the JCHSEM website, this also allowed neighboring communities, local and regional agencies involved in hazard mitigation activities, business representatives, academia, nonprofit organizations, and other interested parties a chance to view and comment on the plan. Following FEMA approval and the formal adoption of the plan, the JCHSEM notified neighboring county emergency managers of the plan's completion via a letter.

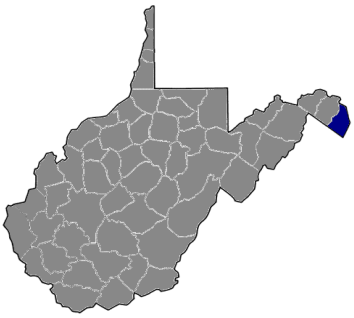
1.1.5. Formal Adoption of the Plan

The updated *Jefferson County Multi-Jurisdictional All-Hazards Mitigation Plan* was developed as a multi-jurisdictional plan; therefore, to meet the requirements of Section 322 the final plan was re-adopted by formal resolution by each of the municipalities as well as the county to implement the plan in their jurisdiction. This process was aided by the on-going participation of the jurisdictions during the update process. Further, Jefferson County Homeland Security and Emergency Management (JCHSEM) provided technical assistance to any governing body requesting it during the adoption process. To ensure that jurisdictions only needed to sign a single resolution, the adoption process was started once state and federal approval had been conditionally granted. See Appendix 5 – Adopting Resolutions for signed adoption letters for the county and each participating municipality. As a result of this update, the next required five (5) year plan update will be scheduled for 2018.

1.2 DESCRIPTION OF THE PLANNING AREA

1.2.1. Jefferson County

Jefferson County is one (1) of 55 counties in the State of West Virginia and is located in the midst of the Blue Ridge and Appalachian Mountains in the eastern-most portion of the state's eastern panhandle. It is bordered on the north by the Potomac River and Washington County, MD; on the east by the Potomac and Shenandoah Rivers and Loudoun County, VA; on the south by Clarke County, VA; and on the west by Opequon Creek and Berkeley County, WV. Jefferson County was created by an act of the Virginia General Assembly on January 8, 1801 from parts of Berkeley County. It was named in honor of Thomas Jefferson, who was then President-elect of the United States, the author of the Declaration of Independence and one of America's greatest statesmen. The county contains five (5) incorporated municipalities including the Towns of Bolivar and Harpers Ferry, the Corporation of Shepherdstown, and the Cities of Ranson and Charles Town, which functions as the county seat with a population of 5,259. Jefferson County has a total population of 53,498 (U.S. Census, 2010). The county including the municipalities has a land area of 212 square miles and varies in elevation from a low of 247 feet above sea level at Harpers Ferry to a high of 1,553 feet east of Shannondale. Metropolitan cities located within close proximity to Jefferson County include Washington, DC (58 miles); and Baltimore, MD (67 miles).



Located at the confluence of the Potomac and Shenandoah Rivers, Jefferson County is separated into three (3) major drainage divides by the county's rolling topography. The Shenandoah River has a drainage area of 105 square miles at the downstream county boundary, the Potomac River has a drainage area of 62 square miles, and Opequon Creek has a drainage area of 44 square miles. The majority of the streams in the county flow in a northwest-southeast orientation toward either the Opequon Creek or Shenandoah River, and ultimately flow into the lower Potomac River and the Chesapeake Bay. The topography of Jefferson County is characterized by a series of parallel ridges and valleys pierced by occasional water gaps. The county is comprised of karst topography that indicates dissolution of underlying rocks by surface water or ground water. There are numerous subdivisions on the eastern side of the

Shenandoah River – Shannondale, Blue Ridge Acres, Keyes Ferry Acres, River View Park to name a few. There are 3,265 addressable structures in this area of the county. Raven Rocks Subdivision is only accessible from Virginia and has 50 addressable structures located in that section of the county.

According to the U.S. Census (2011) the county has a total area of 212 square miles and the land area of the unincorporated areas in the county is 196 square miles.

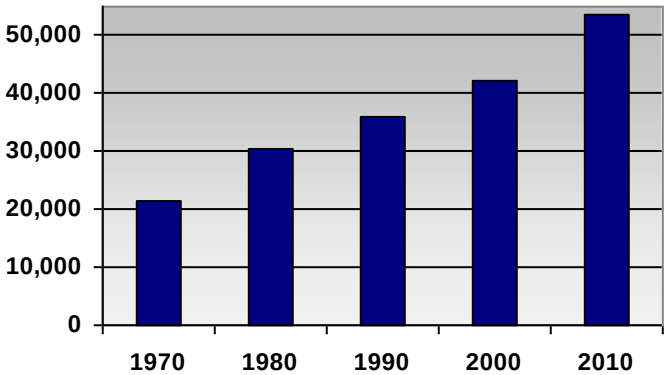
Climate

Jefferson County has a continental-type climate, predominantly influenced by air from the west. There is considerable variation in seasonal temperatures, with none of the temperatures being considered severe. The climate of Jefferson County is seasonal in nature, with warm summers, cold winters, stormy springs and mild fall seasons. The average temperature in January is 29°F, the July average temperature is 73°F, creating a mean average temperature of 51°F. Precipitation is evenly distributed throughout the year, with an annual average of approximately 37 inches. Data from the Sterling, Virginia National Weather Service (NWS) Office (n.d.) indicate that the area experiences approximately 25-30 inches of snowfall per year, usually during the December to March winter season, and relative humidity ranges between 53 percent (53%) and 78% daily.

Population Trends

Demographic information is an integral part of community and mitigation planning. According to the Federal Emergency Management Agency's (FEMA) *Risk, Hazard and Value Evaluation*, "an awareness of changes in population projections help decision makers anticipate needs before they arise." Jefferson County's population continues to grow primarily due to the county's close proximity to the Washington D.C. Metro Area. Many of the towns in the county are considered bedroom communities for the greater Washington, D.C. area. Jefferson County's population

Jefferson County Population Trends 1970-2010



Source: U.S. Census **Figure 1.1**

growth is represented in Figure 1.1 above. According to 2010 population data from the U.S. Census Bureau, Jefferson County has a population of approximately 53,498, which is a significant increase from 1970. Census figures also indicate that there are 22,119 housing units in Jefferson County. Housing units include both traditional houses and apartments. The county has an average of 2.42 persons per household. Further, the county's Median Household Income (MHI) is listed at $65,603.

"Jefferson County's population grew slowly in the early part of the 20th century increasing from approximately 16,000 people to 21,280 over the fifty-year period ending in 1970. The county's population increased dramatically throughout the 1970s, growing by 42.4 percent (42.4%) from 21,280 to 30,300 in 1980. While no other decade has since equaled that amount of growth, the county's population continued to increase rapidly throughout the 1980s and 1990s.The population growth rate was 18.56% from 1980 to 1990 and 17.4% from 1990 to 2000. The population totals at the end of those periods were 35,926 and 42,190 respectively. Since 1920, the average population growth has been around 3,776 people per decade." (Jefferson County Comprehensive Plan, 2012)

Population projections for Jefferson County are based on information obtained from West Virginia University (WVU) – College of Business and Economics, Bureau of Business and Economic Research (2012). This source predicts the following populations:

Jefferson County Population Projections		
Year	**Percent Increase over Year 2010 Population**	**Population Projections**
2015	7.60% increase	57,891
2020	14.66% increase	62,691
2025	20.24% increase	67,075
2030	24.87% increase	71,208

Table 1.4

"As all communities exist within a larger network of influences, Jefferson County is noticeably affected by regional influences. Although it has been decades since Jefferson County was relatively independent from the effects of the larger Washington D.C. metropolitan influences, with each decade that passes, the county becomes more intertwined into the ever growing Washington D.C. cosmopolitan environment. The easier it becomes to travel into the urban core and the more quality pay careers come to Jefferson County and surrounding communities just to the east of Jefferson County, the

more the physical and psychological distances to opportunities decreases. As a result, Jefferson County is now more closely linked than ever before to the employment centers and housing markets of the Washington metropolitan region. With Jefferson's location 65 miles from downtown Washington D.C., the employment and population growth occurring within the region has, and will continue to directly influence growth and development within the County." (Jefferson County Comprehensive Plan, 2012)

Population Density

Population density is measured in person per square mile. Because Jefferson County's boundaries are set and the population is increasing, population density is also increasing. The population density within the incorporated areas of Jefferson County is much higher than in the rural areas. Table 1.5 below demonstrates this fact. Such a situation can be expected in future years, as municipalities offer the greatest access to such services as health care, emergency services, educational facilities, recreation, etc.

Municipal Population Densities			
Name	**Population 2010**	**Land Area *(in sq.mi.)***	**Persons per Square Mile**
Bolivar*	1,045	0.5	2,090
Charles Town	5,259	5.8	907
Harpers Ferry*	286	0.6	477
Ranson	4,440	8.1	548
Shepherdstown*	1,734	0.4	4,335
Unincorporated Areas	40,734	209	195
Jefferson County (Total)	53,498	212	252

** Persons per square mile totals are higher than populations because municipalities are less than 1 square mile.*

Table 1.5

As can be seen, the highest concentration of residents live in the Cities of Charles Town and Ranson as well as the Corporation of Shepherdstown. The rural areas are less densely populated; however, unincorporated areas account for approximately 76 percent (76%) of the county's total population.

The population density within what are termed "rural areas" can vary significantly as well. For instance, subdivision or unincorporated communities may include clusters of residents and homes that result in very small, dense areas located sporadically throughout rural Jefferson County.

According to the Jefferson County Office of Planning, several subdivisions have made certain areas of the county very dense in terms of population and residential

housing structures. For example, the Thorn Hill subdivision to be located on WV State Route 9 east of Charles Town that will contain approximately 179 homes. (Using Census figures for person per household, this equals an approximate population of 400.) Other existing subdivisions, such as Huntfield and Briar Run Estates and Breckenridge contain large populations in small areas.

Highway infrastructure

Jefferson County's transportation infrastructure is comprised of highway, railway, and air elements. There are no Interstate systems that traverse Jefferson County, the county contains approximately 19 miles of US Highways, 46 miles of State Highways, and 318 miles of County Highways. (West Virginia State Division of Highways Study, 2010) WV State Route 9 and US Route 340 are the principal arterial routes through the county. Many sections of these roadways are four-lane, divided highway. Upgrades to WV State Route 9 to make it a four-lane, divided highway throughout Jefferson County to the Virginia state line was completed in November of 2012 and upgrades have been completed between Charles Town and Martinsburg. Other components of Jefferson County's highway infrastructure are illustrated in Table 1.6.

Highway	Approximate Route/Location
	Shepherdstown west to Berkeley County line.
	Charles Town west to Berkeley County line.
	Shepherdstown south to Halltown (intersects/ends at US Route 340).
	Shepherdstown south to Kearneysville.
WV CR 1	Kearneysville south through Middleway and Summit Point to Virginia state line.
WV CR 13	Charles Town southwest through Summit Point to Virginia state line.
WV CR 25	Mechanicstown south to Virginia state line.
WV CR 28	North/South along Potomac River in the northeast portion of the county.

Table 1.6

Jefferson County's transportation infrastructure is sufficient to meet the needs of most of the county's current population. As the county continues to grow and develop, so too should the transportation system. The completion of WV State Route 9 to the Virginia state line is a prime example of the development of the roadway network. There are also plans to upgrade U.S. Route 340 to a four (4) lane divided highway to Berryville. However, major construction causes many inconveniences, not the least of which is to emergency services responding to an incident. Although Jefferson County contains miles of highway, there are towns and municipalities with limited access, which could create a problem if those areas were required to evacuate during an emergency situation.

Railway Infrastructure

Railway lines are also a part of the county's transportation infrastructure. The Norfolk-Southern Railroad runs north south through the center of the county, passing near the communities of Charles Town, Ranson and Shepherdstown. Two (2) CSX lines are located in the county. The first line runs southeast in the northern portion of the county near Kearneysville, Shenandoah Junction and Reedson into Harpers Ferry. The second line runs northeast in the southern portion of the county near Summit Point and through Charles Town and Ranson on its way to Harpers Ferry. The Maryland Area Regional Commuter Train Service (MARC) does offer boarding at Duffields and Harpers Ferry. In addition to these two (2) lines, Amtrak service and MARC are offered in Harpers Ferry, and at Duffields.

Airway Infrastructure

Airways also play a part in the county's transportation infrastructure. Airports within close proximity to Jefferson County include the Eastern West Virginia Regional Airport located 15 miles to the west in Martinsburg which provides general aviation, and Dulles International Airport located 39 miles to the east in Dulles, VA outside of Washington, D.C. which provides commercial and international services.

Economic Trends

"Jefferson County has a very diverse employment sector, and is one of the hundred fastest growing counties in the nation. The Washington metropolitan region has been one of the most dynamic regions in the country in terms of job growth. The continuing influence of the federal government and the spinoff of consultants and contractors that prefer to locate in proximity to the federal agencies will result in continued job growth for the region and Jefferson County." (Jefferson County Comprehensive Plan, 2012)

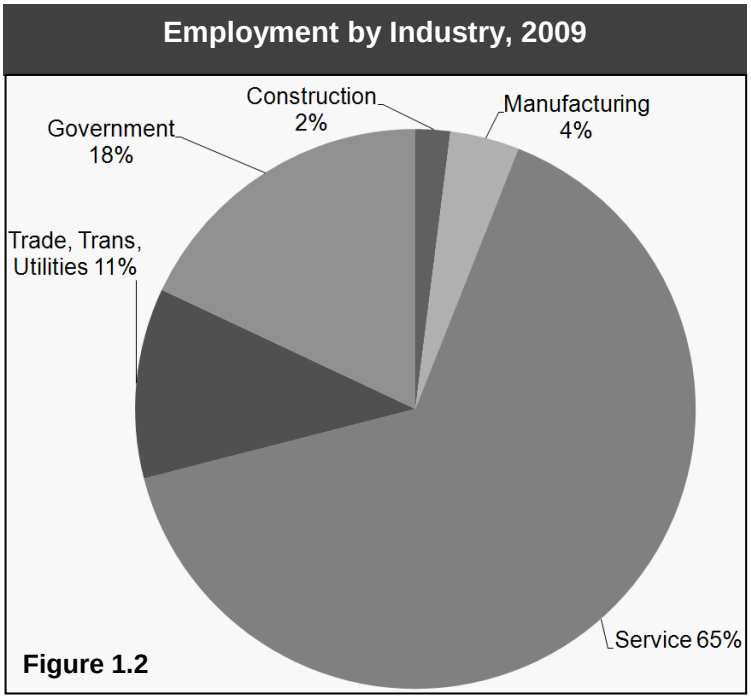


Figure 1.2

According to 2009 Economic Census information for the West Virginia Department of Commerce, the largest areas of employment are service, government, and Trade/Transportation/ Utilities, as illustrated in Figure 1.2. Total employment is currently 24,770 persons. The county's unemployment rate is at approximately six percent (6%). The major employers of the county include PNGI Charles Town Gaming, Jefferson County Board of Education, Shepherd University, American Public University System, U.S. Customs and Border Patrol, Royal Vendors, Inc., Jefferson Memorial Hospital, Wal-Mart Stores Inc., Department of the Interior (National Park Service, USDA, and USGS), Jefferson County Commission, and the Department of Agriculture. The utility providers of Jefferson County include Potomac Edison, Frontier Communications, Local Public Service Districts, and Comcast Cable.

In many ways, the economic climate of Jefferson County has steadily improved. The Median Household Income (MHI) has risen, as has the per capita income and the median value of owner-occupied housing units. MHI is perhaps the strongest indicator of economic gain at the level of the individual citizen. Figure 1.3 below show recent MHI trends.

Per capita income has also risen significantly from $7,553 in 1969 to $29,602 in 2011. These figures indicate that Jefferson County residents are making more money. Such a rise in income can be generated in several ways. General prices of goods and services are more expensive in today's economy than in years past. Therefore today's dollars have been adjusted so comparison to 1989 dollars can be made. Finally, many county residents commute to work in areas with a higher cost of living, where positions inherently come with a slightly higher pay scale.

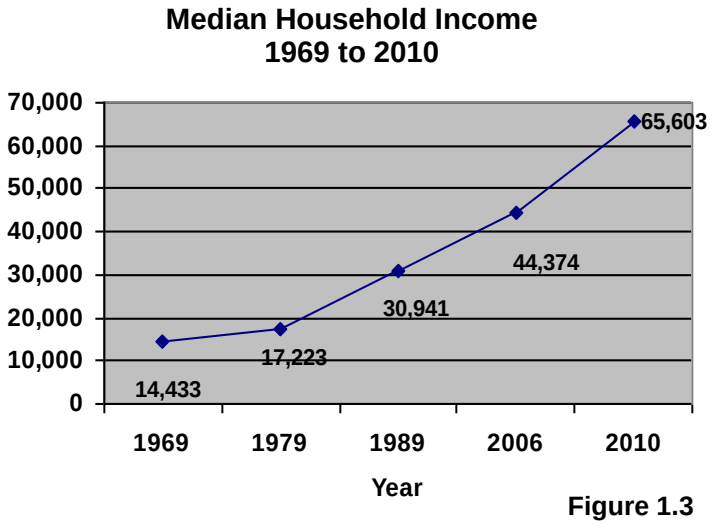


Figure 1.3

According to the Jefferson County GIS/Addressing Office, there were 25,312 structures in the county as of December 2012, a large percentage of these buildings are considered residential. However, Jefferson County offers several other amenities, including 31 schools, eight (8) police stations, seven (7) fire departments, three (3) university campuses, a 45 bed hospital, an emergency communications facility, and an Emergency Operations Center (EOC). There are 13 industrial sites available in the county, totaling 2,808 acres and three (3) industrial parks located near the community of Bardane; the Burr Industrial Park, Burr Business Park and Sunnyside Industrial Park. A new hospital is planned to be constructed as well as a new facility for Hospice of the Panhandle in the next couple of years.

Jefferson County, West Virginia is home to thirty-four county, state, federal, municipal and private parks. (Jefferson County GIS/Addressing Office, 2012) Jefferson County has a total of approximately 5,610 acres of park land. "The majority of park land in the county is covered by Harpers Ferry National Historical Park and a segment of the Appalachian Trail. Federal parks make up approximately 3339 acres of land. The next largest group of parks is Jefferson County affiliated parks, such as Sam Michael's Park, which make up of a total of approximately 526 acres of land. State affiliated parks, such as the Shannondale Wildlife Management Area (WMA), make up 148 acres of park land throughout the county. Harvest Hills Park and Mission Ridge Park are Jefferson

County's two (2) private parks, covering a total area of around 33 acres." (Jefferson County Comprehensive Plan, 2012)

1.2.2. Town of Bolivar

The Town of Bolivar is located at the easternmost tip of West Virginia, west only of the small town of Harpers Ferry, it was originally known as Mudfort. Bolivar was granted a charter as a town by the Virginia General Assembly in December of 1825. Upon petitioning the Assembly for a town charter, the citizens of Mudfort chose to name their town for the South American Revolutionary leader, Simon Bolivar. The Town of Bolivar can be accessed using US Route 340 and is an hour from Washington, D.C. and Baltimore Maryland. While the limited access to Bolivar enhances its security, it does leave the town susceptible to massive traffic tie-ups if there are problems on U.S. Route 340. The Town is located one (1) mile from the confluence of the Potomac and Shenandoah Rivers, and is surrounded by the Harpers Ferry National Historic Park. The town is nominally bounded by the Potomac River to the north, Harpers Ferry to the east, Shenandoah River to the south and Bolivar Heights Battlefield to the west.



The approximate total land area of Bolivar is 0.5 square miles. Bolivar is primarily a residential town, more than 80 percent (80%) of Bolivar's 549 lots are residential. Today, most lots (365) contain single-family detached units while a smaller number have individually owned townhouses (54), duplexes (34) and multi-family units four (4). Approximately 23 lots are used for some type of commercial activity. Bolivar has four (4) major buildings and institutions: Bolivar Community Center, Harpers Ferry Family Medicine Center, Harpers Ferry Middle School, and Bolivar-Harpers Ferry Public Library.

The largest employers of Bolivar include: Harpers Ferry Middle School, Comfort Inn, D&A Carpentry, Harpers Ferry Family Medicine Center, Anvil Restaurant, and the Bank of Charles Town. Bolivar is currently provided law enforcement by the Harpers Ferry Police Department, and fire suppression is provided by the all volunteer Friendship Fire Department. Healthcare services include West Virginia University Harpers Ferry Family Medicine Center. The Town of Bolivar gets its drinking water from the Harpers Ferry Water Works.

According to the 2010 US Census, the town has a population of 1,045, and contains approximately 519 housing units with an average of 2.01 persons per household. Bolivar boasts a Median Household Income (MHI) of $54,594.

Land Use Map – Bolivar, West Virginia

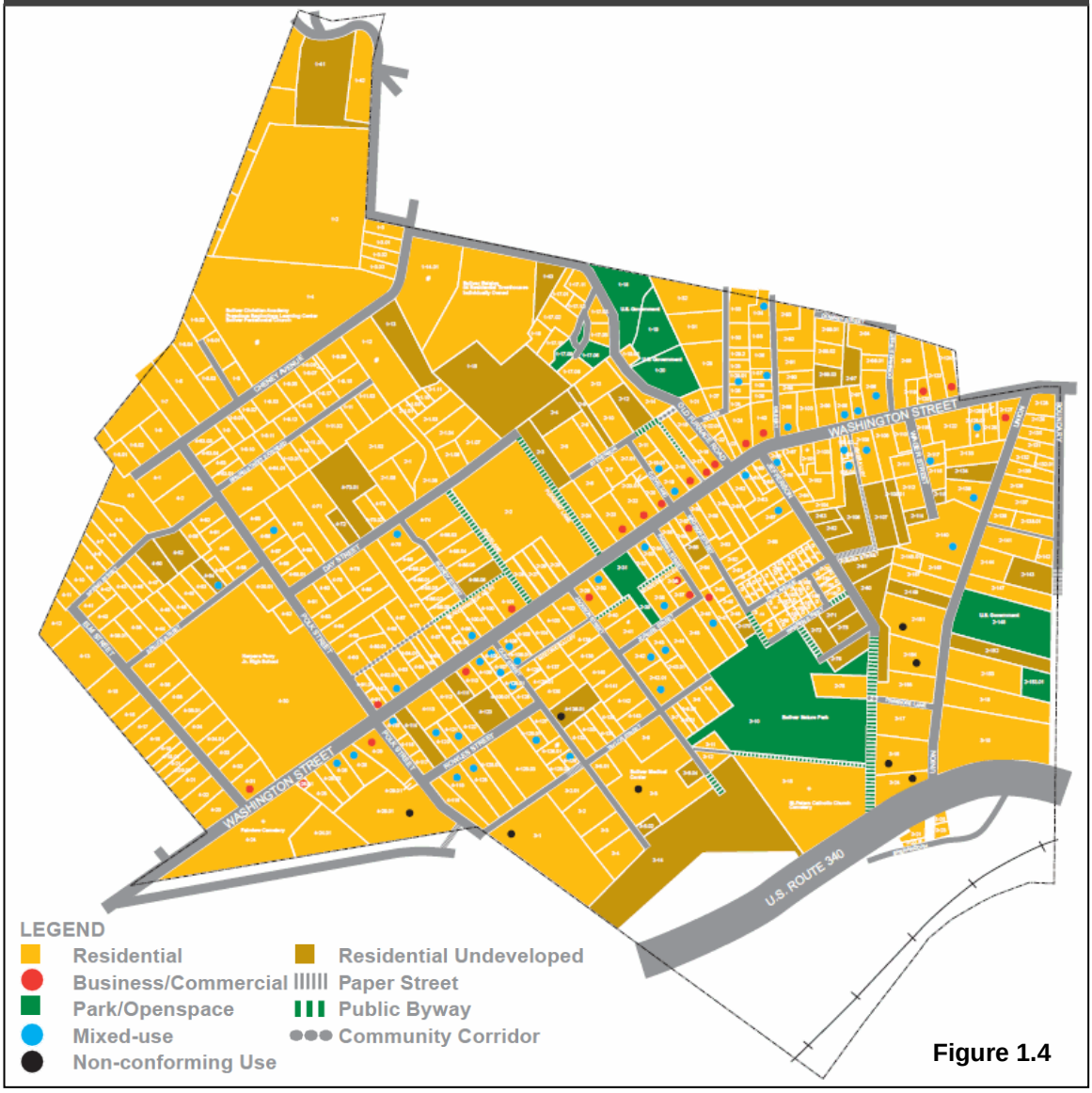


Figure 1.4

1.2.3. City of Charles Town

The City of Charles Town was laid out in 1786 by Charles Washington. Charles Washington was born in Hunting Creek, now Fairfax County, Virginia on May 2, 1738 and was the youngest full brother of George Washington. Charles laid out the streets of Charles Town, naming many of them after his brother and one after his wife, Mildred. He donated the four (4) corner lots at the intersection of George and Washington Streets for public buildings of the town and county, provided that the town became the seat of the county separated from Berkeley County.



Charles Town is located in the center of Jefferson County and is the county seat. It is surrounded by the City of Ranson to the north and on the other sides by unincorporated portions of the county.

Charles Town has a land area of approximately 5.8 square miles. Gentle slopes characterize the topography of Charles Town with elevations ranging from approximately 475 to 560 feet. The greatest local relief occurs along Evitts Run, which flows through the city several blocks to the west of WV State Route 9. “The area around Charles Town contains the headwaters of several perennial streams, such as Evitts Run, Cattail Run, and Bullskin Run. These small creeks or “runs” flow west to east and discharge into the Shenandoah River, a major tributary of the Potomac River. Like most tributaries to the Potomac River, the Shenandoah flows from south to north finally discharging into the Potomac at Harpers Ferry. Approximately six (6) miles from the Shenandoah’s confluence with the Potomac River, Charles Town withdraws about one (1) million gallons per day for drinking water. This is Charles Town’s sole source of water.” (City of Charles Town, 2010)

“Charles Town sets over carbonate (Limestone and Dolomite) bedrock that contains solution channels. These solution channels are the primary way precipitation gets into the water table. Water percolating into and through the carbonate rock dissolves rock materials and enlarges minute fractures in the rock. This has produced a “karst” geology formation containing caves, sinkholes, springs, disappearing or “losing” streams, and underground streams. One such cave is located in downtown Charles

Town and is approximately 300 yards long, of indeterminate width and in places as much as 29 feet high.

Charles Town is largely residential and is considered a bedroom community for metropolitan Washington D.C. The largest portion of the city is made up of single-family residential areas. Approximately 209 acres of the land areas in the city fall within this land use. Duplex and multi-family residential uses account for an estimated 21 acres within the city. Commercial development in Charles Town is primarily focused in the Central Business District (CBD), an area covering approximately 20 acres. The US Route 340 corridor southwest of the CBD is one of the more intensely developed areas, which includes the Hilldale Shopping Center and several other service and retail businesses. Charles Town is also the home to Hollywood Casino at Charles Town Races which is considered a mass gathering site in Jefferson County." (Charles Town Comprehensive Plan, 2010)

Charles Town's existing land uses have been categorized based on the classification system illustrated in the table below, (see Figure. 1.5 below).

Charles Town Existing Land Use		
Land Use	**Acreage**	**Percentage**
Agriculture, Forest, and Open Space	1,650.7	47.9%
Commercial	144.1	4.2%
Government and Institutional	133.4	3.9%
Public and Private Parks	85.3	2.5%
Residential	1,375.2	39.9%
Urban Mixed Use	57.3	1.7%
Total	**3,446**	**100%**

Source: Charles Town Comprehensive Plan, 2010 **Table 1.7**

"There are two fire departments that serve the fire and rescue needs of the City. Citizens Fire Company is located in the City and Independent Fire and Ambulance Company is located in Ranson. The Charles Town Police Department currently operates with one (1) police station located on West Liberty Street in the downtown section of the City.

The City of Charles Town provides water and wastewater service to City residents, residents of the City of Ranson, and some areas in Jefferson County. The City of Charles Town provides wastewater treatment for its residents, the residents of the

City of Ranson and approximately 1300 customers of the Jefferson County Public Service District (JCPSD). The City operates a 1.75 million gallon per day (mgd) treatment plant at approximately 95% capacity." (City of Charles Town Comprehensive Plan, 2010)

There are two (2) existing public wastewater treatment plants in the area – the Charles Town WWTP and the Tuscawilla WWTP, both owned and operated by the City of Charles Town by and through the Charles Town Utility Board.

According to the 2010 Census, Charles Town has a population of 5,259 making it the largest municipality in the county. The population of Charles Town grew from 2,907 in 2000 to 5,259 in 2010, or 2,352 over the ten year period. The city contains approximately 2,270 housing units with an average of 2.31 persons per household. The Median Household Income (MHI) among the residents of Charles Town is approximately $56,926.

Land Use Map – City of Charles Town, West Virginia

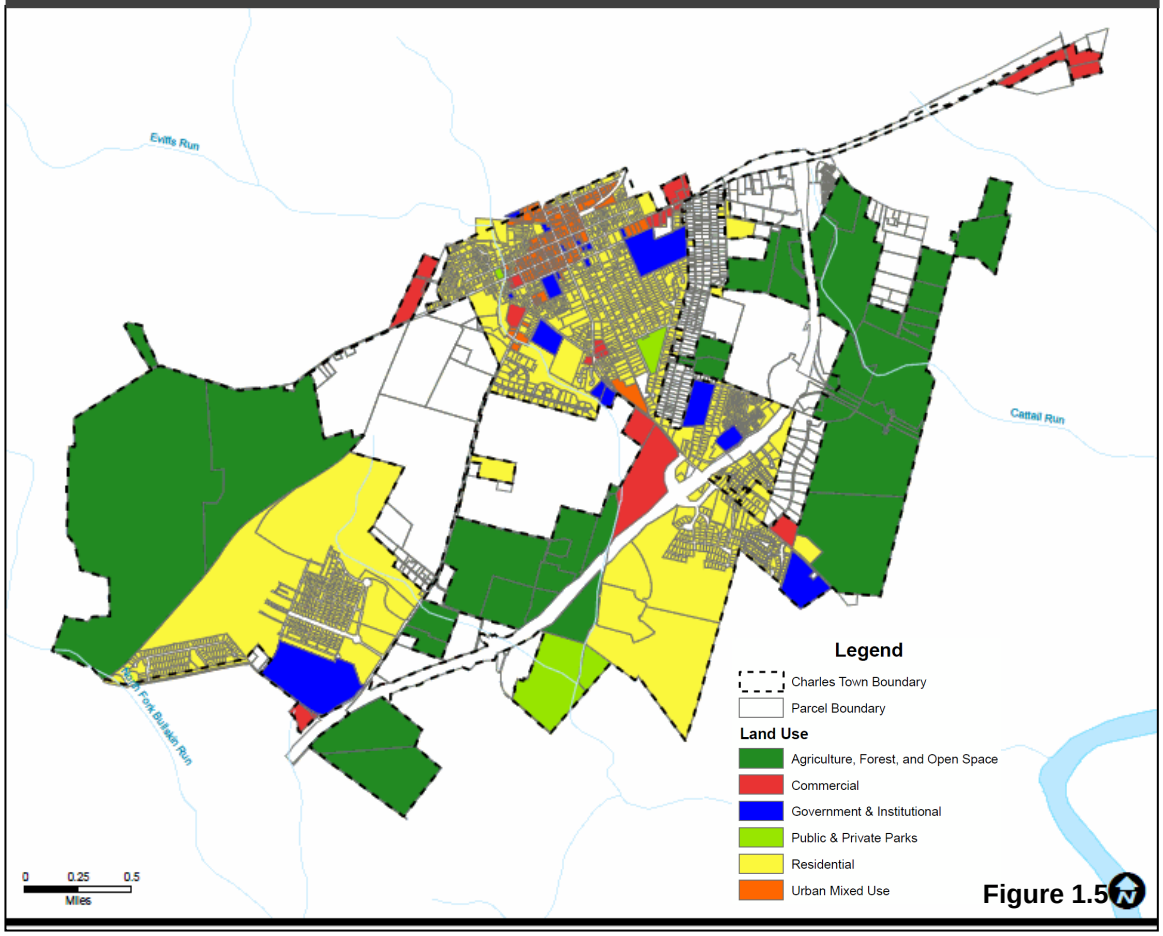


Figure 1.5

1.2.4. Town of Harpers Ferry

Harpers Ferry, West Virginia is a town of fewer than 300 residents located at the point where the Blue Ridge Mountains split, and the Shenandoah River meets the Potomac River. Harpers Ferry was first settled in 1732 by Peter Stephens whose "squatter's rights" were bought in 1747 by Robert Harper, for whom the town was named, and who first operated ferries across the Potomac and Shenandoah Rivers at that point. In 1763, the Virginia General Assembly established the town as Shenandoah Falls at Mr. Harper's Ferry. The State of Virginia officially accepted the charter of the Town of Harpers Ferry in 1851. The town was incorporated under the laws of West Virginia in 1872.



Harpers Ferry is a historic town situated at the confluence of the Potomac and Shenandoah Rivers. The town is located on a low lying flood plain created by the two (2) rivers; it is thus surrounded by higher ground on all sides. The town is approximately 0.6 square miles in area and is surrounded by the 2,300-acre Harpers Ferry National Historical Park. The general elevation of the town ranges from 247 feet above sea level at the Potomac River level which is the lowest point in the state to 489 feet.

Harpers Ferry is a significant community as it was the site of many historical events such as John Brown's Raid, the Civil War, the outfitting of the Lewis and Clark expedition, and the genesis of the NAACP at the former Storer College. Since the 1950s, the National Park Service has tried to rehabilitate and restore the town while at the same time interpret its historical importance to the nearly 2 million people who visit it each year. Harpers Ferry is the focal point of historic tourism in Jefferson County and an important component of the local economy.

"Park and other amenities accessible to residents and visitors in Harpers Ferry include Harpers Ferry National Historical Park; the C&O Canal trail from Washington, DC and Cumberland, Maryland; and the Appalachian Trail which runs from Georgia to Maine. The Shenandoah and Potomac Rivers provide rafting, kayaking, fishing, and other water-related activities." (Town of Harpers Ferry Comprehensive Plan, 2012)

Harpers Ferry can be accessed using US Route 340 and Amtrak, the national passenger rail system provides service to Harpers Ferry two (2) times a day (once in each direction). It is also served by the MARC commuter rail service, on its Brunswick line. In addition, several CSX freight trains pass through Harpers Ferry daily and over the bridge spanning the Potomac River.

Operating under the name Harpers Ferry Water Works, the town's water system currently serves the Towns of Harpers Ferry and Bolivar as well as the Harpers Ferry National Historical Park and some adjacent customers (Bolivar Heights, Cavalier Heights, the KOA campground, and the Quality Inn on Route 340). Source water is provided by Elks Run and Town Spring. The sanitary sewer plant that serves Harpers Ferry began operations in 1979 and is administered and run by the Harpers Ferry – Bolivar Public Service District (PSD).

The Town of Harpers Ferry is served by three (3) police organizations: the Harpers Ferry Police Department, operated by the town; the Jefferson County Sheriff's Office; and the United States Park Police. The Harpers Ferry Police Department also serves the Town of Bolivar. Friendship Fire Company, located on Washington Street in Harpers Ferry, is a volunteer organization that provides fire and emergency medical services (EMS) to the Towns of Harpers Ferry and Bolivar and to the unincorporated areas of Millville, Halltown, Bakerton, and Engle Switch. Friendship Fire Company also provides mutual aid assistance for fire and EMS emergencies throughout Jefferson County, WV; in Loudoun County, VA; and in Washington and Frederick Counties, MD." (Town of Harpers Ferry Comprehensive Plan, 2012)

According to 2010 Census estimates, the town has a population of 286. It contains approximately 175 housing units with an average of 1.63 persons per household. The reported Median Household Income (MHI) for the Harpers Ferry area is $69,730.

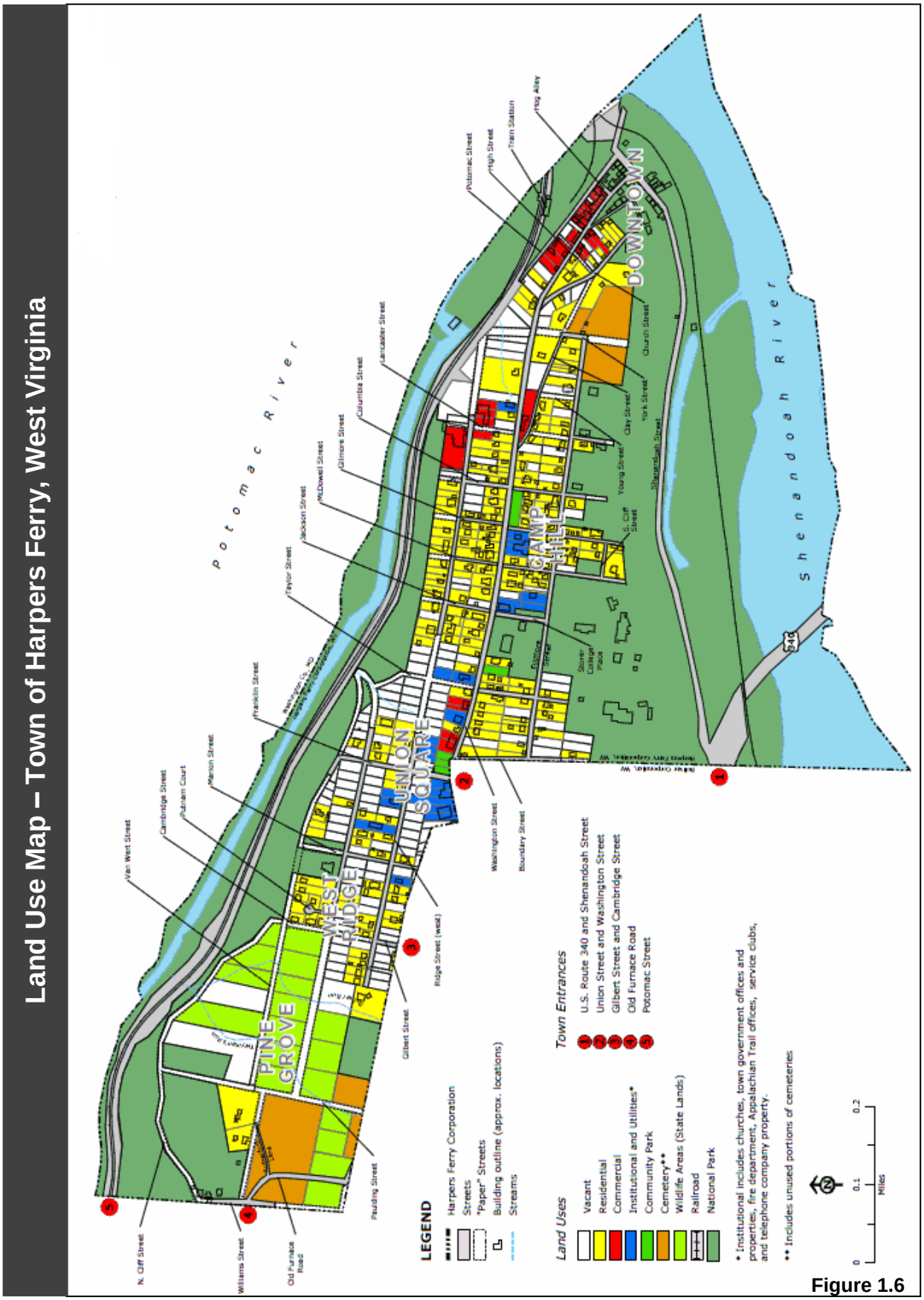
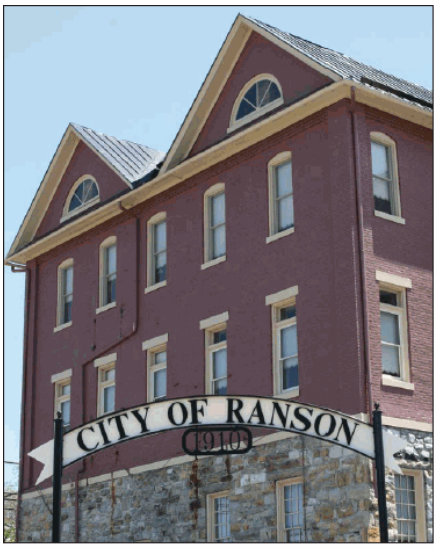

Land Use Map – Town of Harpers Ferry, West Virginia
Potomac River
Shenandoah River
DOWNTOWN
UNION SQUARE
WEST RIDGE
PINE GROVE
CAMP HILL
Potomac Street
High Street
Train Station
Hog Alley
Lancaster Street
Columbia Street
Gilmore Street
McDowell Street
Jackson Street
Taylor Street
Franklin Street
Marion Street
Putnam Court
Cambridge Street
Main West Street
Church Street
York Street
Clay Street
Young Street
Shenandoah Street
S. Cliff Street
Storer College Place
Washington Street
Boundary Street
Ridge Street (west)
Gilbert Street
Fouding Street
N. Cliff Street
Williams Street
Old Furnace Road
340
LEGEND
Harpers Ferry Corporation
Streets
"Paper" Streets
Building outline (approx. locations)
Streams
Land Uses
Vacant
Residential
Commercial
Institutional and Utilities*
Community Park
Cemetery**
Wildlife Areas (State Lands)
Railroad
National Park
* Institutional includes churches, town government offices and properties, fire department, Appalachian Trail offices, service clubs, and telephone company property.
** Includes unused portions of cemeteries
Town Entrances
U.S. Route 340 and Shenandoah Street
Union Street and Washington Street
Gilbert Street and Cambridge Street
Old Furnace Road
Potomac Street
0
0.1
0.2
Miles

Figure 1.6

1.2.5 City of Ranson

Named for the family that owned much of the 850 acres bordering Charles Town on the north and west, Ranson began as an early economic development district overseen by the Charlestown Mining, Manufacturing & Improvement Company. By the turn of the 20th century, buoyed by boom times in the Shenandoah Valley, the community grew into a town on its own. It was incorporated on October 15, 1910.



"It was named in honor of Dr. James Ranson, a dentist and farmer living in the area. With Washington, D.C., a little more than 60 miles to the southeast and connected to Ranson by rail and multi-lane highways, Ranson could tout the lifestyle advantages of a small rural town with easy access to a global political and economic hub. By 2000, the population had grown to 2,951, then added 1,000 more residents by 2006." (City of Ranson Comprehensive Plan, 2012)

Ranson has a land area of approximately 8.1 square miles. There are two (2) main drainage courses, Evitts Run and Flowing Springs Run that carry storm water runoff toward the Shenandoah River. Each of these tributaries of the Shenandoah River has a 100-year floodplain that is delineated on Federal Flood Insurance Rate Maps (FIRM). These floodplains store excess storm water runoff to prevent the flooding of downstream properties outside the designated 100-year limits.

"Ranson is connected to the surrounding communities at numerous points along the city limits. Generally, trips to the north use State Route 9, which provides the most efficient connection to Martinsburg, Shepherdstown or Berryville. Local northern traffic uses State Route 115 (Mildred Street). Traveling east, residents use Fifth Avenue with its connections to trips west or south usually start by heading south into Charles Town along Mildred Street and then taking US Route 340 South out of the center of Charles Town. Fredrick, Baltimore and Washington trips are via US Route 340 North, while Leesburg and Dulles are accessed by US Route 340 South or State Route 9 connecting to State Route 7 East." (City of Ranson Comprehensive Plan, 2012)

The early growth and development of Ranson reflects the late 19th century boom of the Shenandoah Valley and surrounding areas associated with the rise of the railroads, mining, and manufacturing. Today, Ranson is a thriving community that blends

a developing commercial district housing major corporations with rapidly growing residential neighborhoods. Ranson is a largely residential community and is the site of several community facilities such as the Jefferson Memorial Hospital, and the Jefferson County Council on Aging. The United States Department of Agriculture (USDA) Farm Service Center is also located in Ranson. Recent commercial development includes the Potomac Marketplace which is located just off of WV State Route 9.

"Generally, the City has the majority of its private land in residential use with industrial uses located along its southern border with Charles Town and along the abandoned CSX/Norfolk Southern Railroad right-of-way west of Fairfax Boulevard. Commercial operations exist east and west of Mildred Street (WV Route 115) and the Norfolk Southern Railroad on the north edge of the City. There are also commercial uses east of Lancaster Circle between Third and Fifth Avenues. Mixed-use properties exist in different areas throughout the City. Hollywood Casino at Charles Town Races is the largest employer within the Urban Growth Boundary and Jefferson County.

The City has made great strides in providing for Parks and Open Space. The City has acquired the following facilities: Ranson Civic Center, West End Park, Charles C. Marcus Field, Briar Run Park, Cranes Lane Field, and Flowing Springs Park.

The public schools serving Ranson are part of the Jefferson County Schools system. One (1) elementary school presently serves the community – Ranson Elementary School, and it is ideally located in Old Town. Most middle school students attend Wildwood Middle School, with the remainder at Charles Town Middle School. All county high school age students attend Jefferson County High School in Shenandoah Junction or Washington High School.

The only hospital in the area is the Jefferson Memorial Hospital on 5th Street in Ranson, which is in the process of being relocated along US Route 340. West Virginia University Hospitals-East owns the hospital. Along with City Hospital in Martinsburg, the two (2) facilities are a part of a new regional not-for-profit healthcare system serving the Eastern Panhandle. Jefferson Memorial is a fully accredited and licensed community hospital.

The City and the area within its Urban Growth Boundary are the service areas of the Independent Fire Company and the Citizens Fire Company. These companies provide fire and rescue services on a volunteer basis. Paid emergency medical technicians, through the Jefferson County Emergency Services Agency (JCESA), provide paramedics and EMTs around the clock. The City provides its own police force

to serve its citizens. There are 13 full-time law enforcement personnel who are supported by a civilian staff member who operates out of the headquarters located at 700 North Preston Street. The City maintains a Public Works Department along Fifth Avenue consisting of a one-story building, a three-bay maintenance shed, and a four-bay equipment shed within a storage yard.

Ranson is served by two public water utilities: Jefferson Utilities and the Charles Town Utility Board. These utilities provide service to the existing developed areas, while most of the annexed lands have no water infrastructure. The City of Charles Town Waste Water Treatment Plant (WWTP) provides waste water service for Ranson." (City of Ranson Comprehensive Plan, 2012)

According to 2010 Census estimates, the city has a population of 4,440 making it the second largest municipality in the county based on population. Ranson contains approximately 1,936 housing units with an average of 2.29 persons per household. The median household income of the City of Ranson is $29,263.

Sector map – City of Ranson, West Virginia

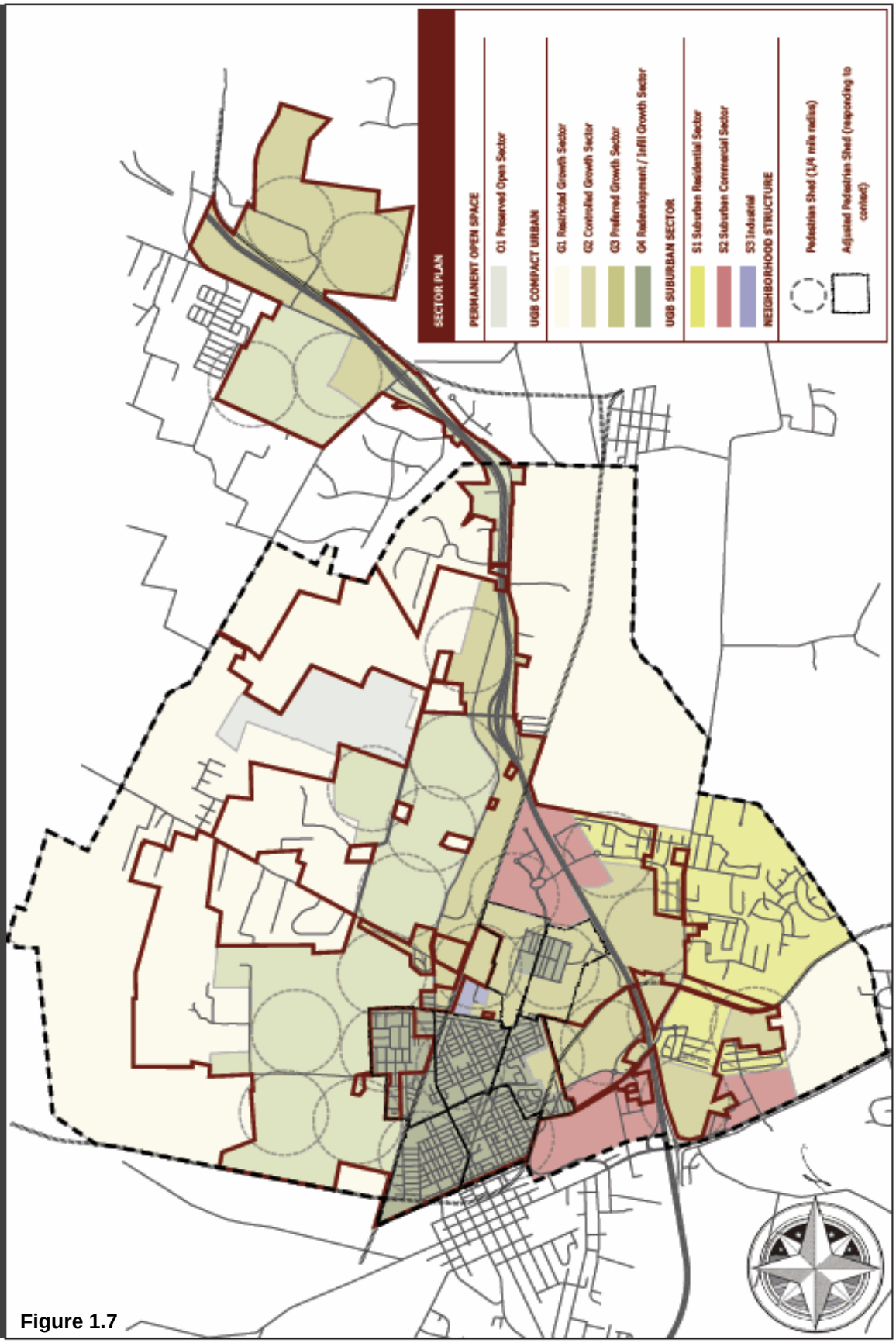


Figure 1.7

1.2.6 Corporation of Shepherdstown

With all of its modern amenities, it's hard to imagine that the small community of Shepherdstown may be the oldest town in the state of West Virginia. Shepherdstown is situated on a bluff overlooking the Potomac River. Once known as Potomoke, it eventually became known as Mecklenburg in the 1730s and was chartered in 1762 by the Virginia General Assembly. It was renamed Shepherd's Town in 1798 in honor of Thomas Shepherd, an early settler. After the Civil War, the community was officially recognized as Shepherdstown. The community was briefly considered as a site for the National Capital. That may have come to pass if it were possible for 19th century sea-going vessels to sail up the Potomac River.



The Corporation of Shepherdstown can be accessed using WV State Routes 230 and 480. Shepherdstown has a land area of approximately 0.4 square miles, and the general elevation of the town is approximately 400 feet above sea level. Shepherdstown is a small residential and university community located in the northern portion of the county. Shepherd University's East Campus and West Campus total 164.6 acres. Current uses of land in Shepherdstown provide a significant amount of open space, giving the town a generally uncluttered character and permitting large trees, shrubbery, and expanses of lawn and greenery.

In general, Shepherdstown's economy is primarily based on commercial shops, service businesses, Shepherd University, and the incomes of residents who are employed elsewhere or retired. Shepherdstown business and commerce is concentrated in a central two (2)-block section of German Street and in the southeast corner of the town. Other isolated business activities are scattered elsewhere in the residential section of the community. Significant developments are taking place along highways leading to Martinsburg and Charles Town. Structures used for public services and buildings are located along King Street in a three (3)-block area and on the north side of the community along the Potomac River. Shepherdstown recent constructed a new town hall and police station.

According to 2010 Census estimates, the town has a population of 1,734. Shepherdstown contains approximately 583 housing units with an average of 2.97 persons per household. Shepherdstown boasts a median household income of $74,985.

1.3 RECORD OF CHANGES

This "Record of Changes" document lists each section of the *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* and indicates if it was updated as part of the 2013 revision. To determine which sections would be updated, the Hazard Mitigation Core Planning Committee (CPC) reviewed and analyzed each section of the plan. The CPC meetings (reference Appendix 4) focused on reviewing all components of Sections 1.0, 2.0, 5.0, and the appendices, as well as reviewing all components of Sections 3.0 and 4.0. These changes are reflected in the following "Record of Changes". Where no changes were made, the group decided that no change was needed and that the information from the original plan remains current and valid.

A master copy of all parts of the *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* will be maintained electronically and in hard copy at Jefferson County Homeland Security & Emergency Management (JCHSEM). A backup copy will be maintained off-site in a secure location. The master copy and its backup will be kept updated with all major revisions to any part of the plan. Any major revision should be documented. Minor revisions such as correcting typographical errors do not need to be documented.

Section	Description of Change
INTRODUCTION	
General, Section-Wide Revisions	• Added 1.0 numbering. • Reorganization of document layout. • Reformatted headers and footers.
1.1 Documentation of the Planning Process	• Notes on the process used to update the plan were included, plan updating schedule was reset, Core Planning Committee (CPC) members was updated.
1.2 Description of the Planning Area	• Verified and/or updated all county and municipal demographic data. • Verified and/or updated population statistics of all jurisdictions (including municipalities). • Verified and/or updated population growth trends. • Verified and/or updated housing data. • Verified and/or updated commercial infrastructure data. • Verified and/or updated employment data. • Verified and/or updated land use data. • Verified and/or updated transportation Infrastructure. • Verified and/or updated economic trends. • Verified and/or updated climatology information.
1.3 Record of Changes	• Revised per changes made to the 2008 plan.

Table 1.8

Section	Description of Change
HAZARD RISK ASSESSMENT	
General, Section-Wide Revisions	• Added 2.0 numbering. • Reformatted headers and footers. • Condensed specific information from original plan development into more general statements and added similar information from updating process (e.g., removed names of agencies consulted during the first process). • Updated hazards list, if and as appropriate, to include events occurring between 2003 and 2012.
2.1 Identify Hazards	• Re-assessment and identification of all natural, and man-made hazards. • Field reconnaissance to obtain updated hazard data for Jefferson County. • Review of local media archives. • Review of existing plans and reports, such as updated Emergency Operations Plans (EOPs) and Comprehensive Plans. • Interviews with local officials. • Add appropriate research sources. • Confirm web addresses. • Included all potential hazards in Table format. • Added Dam Failure as a hazard. • Combined the hazards of Hailstorm and Severe Thunderstorm.
2.2 Profile Hazards	• Delineation of hazard susceptibility areas using previously-compiled data and new data. • Development of GIS base maps of Jefferson County using Census and other available GIS data in cooperation with the Jefferson County GIS/Addressing Office. • Creation of hazard susceptibility area “shape files” for use in GIS mapping. • Creation of GIS-based hazard susceptibility maps for all identified hazards. • Reduced to a single cover page referencing the new Appendix 1. • For usability and overall plan maintenance, the cover page was only included once rather than repeated for each participating jurisdiction. • Developed a “Probability vs. Severity” chart. • Added significant NFIP language to the flooding profile.
2.3 Inventory Assets	• Revised text to focus only on methodology. • Utilized Worksheet #3b. • Added hazard information as another row to Worksheet #3b. • Updated the master, countywide asset inventory list with new facilities, removed closed facilities, updated values where applicable, and added values where applicable. • Revised hazard vulnerabilities. • Created asset inventories for all participating municipalities. • Labeled revised Worksheet #3b for county and municipalities as “tables” in Section 2.3. • Added hazard vulnerabilities for each facility to the master inventory spreadsheet.

Table 1.8 Continued

Section	Description of Change
2.4 Estimate Losses	• Revised text to focus only on methodology. • Revised numbers based on updated asset inventory list. • Significantly revised loss estimate damage percentages in an attempt to be more accurate. • Listed losses in tabular format for greater usability and easier reference.
2.5 Analyze Development Trends	• Updated list of planned development projects. • Listed potential hazard susceptibilities to planned development projects. • Removed much of the hazard-specific language from the development trends narrative to make Section 2.5 easier to update. • Integrated information from county and municipal Comprehensive Plans.
ACTION PLAN	
3.0 Local Hazard Mitigation Goals	• Alphabetized the municipal project listings and re-numbered accordingly. • Added new projects as directed by CPC. • Added a status statement for each project from the original version of the plan to document if the objective has been started, completed, not completed, etc. • Moved the timeframe, funding, coordinating agency, and mitigation type notations to organize all implementation and prioritization discussions under Section 4.0.
4.1 Identification and Analysis of Mitigation Measures	• Moved implementation information (i.e., timeframe, funding source, coordinating agency, mitigation type) to this section for usability (so that all implementation and prioritization information was listed behind a single tab). • Deleted the project list that formerly comprised this section (since the former section was a re-statement of the previously-presented project list). • Updated per the development of new goals, objectives and strategies.
4.2 Implementation of Mitigation Actions	• Revised the project list for consistency with Sections 3.0 and 4.1. • Revised the prioritization methodology so that projects under a single hazard are prioritized in comparison to one other only. Hazards were then prioritized as a means of ranking the entire project list. • Revised language formerly referring to a “benefit-cost analysis” to now read “benefit cost review” per FEMA publication 386-5. • Incorporated the STAPLEE method of prioritizing projects into the Jefferson County plan.

Table 1.8 Continued

Section	Description of Change
5.0 Plan Maintenance Process	• Revised the updating schedule to be a formal process every five (5) years rather than after every significant hazard event. Such a decision was made by the Core Planning Committee (CPC) to encourage greater participation (by lessening the time commitments and number of meetings). Additionally, waiting for the full five (5)-year period would allow CPC members to determine trends as opposed to making decisions based on what could have been an anomalous hazard event. • Added additional, secondary performance measures to guide future plan updates. • Formally identified Jefferson County Homeland Security and Emergency Management (JCHSEM) as the custodial agency for this document. • Added a discussion as to how the project administration requirements of other funding sources that could be involved in mitigation projects could assist in the overall monitoring of plan maintenance. • Strengthened the discussion on implementing mitigation strategies through existing programs, using projects that actually were implemented via the framework established by existing programs as evidence.
APPENDICES	
Appendix 1: Multi-Jurisdictional Hazard Risk Assessment	• Re-named “Hazard Profiles, Loss Calculations, and Mapping”. • All original risk assessment information was revised appropriately and moved to Section 2.0: Risk Assessment. • Hazard list revised accordingly so that tabbing could be accurate. • Updated research sources in profiles for consistency with Section 2.1. • Removed graphics from hazard definitions for readability. • Updated hazard occurrences since 2008. • Added a statement regarding buyouts. • Added NFIP discussion to flooding profile. • Added the following section to each hazard profile; Introduction, Hazard Identification, History of Events, Hazard Impacts, Past Mitigation Efforts, Mapping.
Appendix 2: Calculation Methodologies	• Added to supplement the methodology discussions in the sections above.
Appendix 3: Glossary	• Added for usability.
Appendix 4: Evidence of Public Involvement	• Appropriate information from updating process added. • Re-numbered to Appendix 4.
Appendix 5: Adopting Resolutions	• Re-numbered as “Appendix 5”. • Original resolutions replaced with resolutions adopting the current update.

Table 1.8 Continued

2.0 RISK ASSESSMENT

2.1 IDENTIFYING HAZARDS

§201.6(c)(2)(i)	[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction.

The first step in the Hazard Risk Assessment (HRA) process was to identify each of the hazards that can occur within Jefferson County and or its incorporated municipalities. This hazard identification process began with a review of previous hazard events based on historical data provided by Jefferson County Homeland Security and Emergency Management (JCHSEM), the Core Planning Committee (CPC), and the National Weather Service (NWS). A consultant also conducted reviews of existing resources, plans, local media archives, reports provided by the Federal Emergency Management Agency (FEMA), Jefferson County, and other sources, as well as conducting interviews with local officials in order to ensure accurate data and understand the nature and extent of natural and man-made hazards in the county. The findings from these steps were utilized to determine the priority hazards for Jefferson County and its municipalities, which will become the focus of the mitigation strategies developed in the Action Plan (AP) of the *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*.

The hazards listed below have been updated utilizing an extensive research process with input from the sources listed below. As a result of this research, Dam Failure has been added as an identified hazard for Jefferson County and its municipalities; updated information has been integrated into all other existing hazard descriptions.

- Local media archives ranging in date from 1970 to 2012,
- Interviews conducted with local officials/experts:
  - Mr. Dale Manuel, Jefferson County Commission
  - Ms. Patsy Noland, Jefferson County Commission
  - Ms. Barbara Miller, JCHSEM Director
  - Ms. Terri Mehling, JCHSEM Deputy Director
  - Mr. Jeffrey Polczynski, ENP, Jefferson County Emergency Communications Center
  - Ms. Jessica Gormont, Jefferson County GIS/Addressing Office
  - Mr. R.E. Shirley, Former Jefferson County Sheriff
  - Ms. Jennie Brockman, Jefferson County Planning Department

- Mr. Mason Carter, Jefferson County Dept. of Zoning & Engineering
- Ms. Debbi Palmer, Eastern Panhandle Chapter – American Red Cross
- Mr. Joe Cosentini, City of Charles Town, City Manager
- Mr. Tim Keaton, former WVDHSEM-SHMO – Mitigation & Recovery Section
- Ms. Tess Grubb, FEMA Region III
- Representatives of the Core Planning Committee (CPC)
- Representatives of the general public.

- Existing plans:
  - *Bolivar Comprehensive Plan, 2010*
  - *Charles Town Comprehensive Plan, 2010*
  - *Harpers Ferry Baseline Report, 2012*
  - *Harpers Ferry Comprehensive Plan, 2007*
  - *Jefferson County Continuity of Operations Plan, 2012*
  - *Jefferson County Hazardous Materials Commodity Flow Study, 2012*
  - *Jefferson County Agricultural Statistics, 2011*
  - *Jefferson County Emergency Operations Plan, 2012*
  - *Jefferson County Property Safety Ordinance, 2010*
  - *Jefferson County LEPC Tier II Assessment, 2010*
  - *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan, 2008*
  - *Jefferson County Comprehensive Plan, 2004*
  - *Ranson Comprehensive Plan, 2012*
  - *Ranson Ordinances, 2012*
  - *Shepherdstown Planning & Zoning Ordinances, 2011*
  - *Shepherdstown Comprehensive Plan, 2001*

- Reviews of Flood Insurance Rate Map (FIRM) information for Jefferson County and municipalities.
- Searches of multiple Internet sites concerning hazard mitigation and planning (The following sites are general listings that were searched at the onset of the project. Sites that were searched regarding specific hazards are listed with those hazards below.):
  - American Red Cross – Local Chapters

    http://www.redcross.org

- Disaster Center
  http://www.disastercenter.com
- FEMA Map Service Center
  http://msc.fema.gov
- ESRI
  http://www.esri.com
- Federal Emergency Management Agency
  http://www.fema.gov
- HAZUS Instruction and Technical Information
  http://www.fema.gov/hazus
- Socio-Economic Data Resources
- USDA Natural Resources Conservation Service
  http://www.nrcs.usda.gov
- National Oceanic Atmospheric Administration
  http://www.noaa.gov/cgi-win
- U.S. Fire Administration
  http://www.usfa.fema.gov

The following Table (Table 2.1) illustrates the hazards to which the county and its municipalities are susceptible. The intent of this chart is to justify the inclusion of these hazards in the plan; more detailed information about how they affect the areas within the county can be found in the hazard profiles in Appendix 1.

Hazard	*How Identified*	*Why Identified*
Dam Failure	• Local media research • WVDEP – Dam Safety • National Dam Inventory • Internet research	• The Core Planning Committee (CPC) decided to include dam failure as a hazard to identify the potential risk associated with the Shannondale Lake Dam, the Jennings Randolph Lake Dam, and the Millville Hydro Dam. • The potential downstream hazard associated with Class I dams includes probable loss of life, serious hazard to health, and structural damage to high value property.

Table 2.1

Hazard	*How Identified*	*Why Identified*
Drought	• Local media research • Jefferson County EOP • Palmer Drought Severity Index (PDSI) • NCDC Event Record Database • USGS website	• The NCDC reported two (2) significant drought events in Jefferson County between 1997 and 2012. • The county's population is rapidly increasing placing a growing demand on the water supply.
Earthquake	• Public input • ESRI GIS information for West Virginia • USGS National Seismic Hazard Mapping Project	• According to the USGS National Seismic Hazard Mapping Project Jefferson County's Peak Ground Acceleration is 2.0 – 3.0, and is located in an area rated as MMI IV with regard to earthquakes. • Two (2) small scale, short duration earthquakes were felt in Jefferson County on July 16, 2010 and August 23, 2011.
Flooding	• Public input • FIRM Information • Jefferson County EOP • Past media research • Past disaster declarations • NCDC Event Record Database	• There are 1,149 building footprints which include 679 address points located within the 100-year floodplain in Jefferson County. • According to the NCDC Event Record Database there have been 32 flooding events reported in Jefferson County over the past 60 years resulting in over $20 million in property damage.
Hazardous Materials	• Jefferson County EOP • Jefferson County Commodity Flow Study (CFS) • Jefferson County Tier II Assessment • US DOT – Hazardous Materials Safety • US EPA – Envirofacts Warehouse	• Hazardous materials in various forms have the potential to result in death, serious injury, produce long-lasting health effects, and damage buildings, homes, and other property. • There are 122 EPA Regulated Facilities located in Jefferson County.
Landslide	• Public input • FEMA website • USGS website	• According to the USGS, the eastern half of Jefferson County is listed as a high susceptibility area for landslides.
Land Subsidence	• Public input • WVDNR website • FEMA website • USGS website	• Approximately 86% of Jefferson County lies on a geologic formation known as karst from carbonate rock which is prone to land subsidence and sink holes.

Table 2.1 continued

Hazard	*How Identified*	*Why Identified*
Severe Thunderstorm/ Hail	• Interviews with local representatives • Jefferson County EOP • Local media research • NCDC Event Record Database • NWS website • Climatology reports	• There have been 111 thunderstorms recorded in Jefferson County over the past 60 years according to the NCDC Event Record Database, several have resulted in property damage. • NCDC Event Record Database indicates that 33 hailstorms have occurred in Jefferson County over a 60 year period.
Severe Wind/Tornado	• Public input • Local media research • NCDC Event Record Database • FEMA "Mitigation Planning How-To Series" • NWS website	• From a period of 1950-2011, four (4) tornadoes were reported in Jefferson County, one of which was an EF2 which is classified as a considerable tornado with winds in excess of 150 miles per hour. • A severe Derecho event occurred on June, 29, 2012 resulting in significant power outages and property damage throughout Jefferson County.
Severe Winter Storm	• Public input • Local media research • NCDC Event Record Database • Past disaster declarations	• Jefferson County is situated in the midst of the Blue Ridge and Appalachian Mountains and receives approximately 25-30 inches of snowfall per year. • Jefferson County has endured 72 severe winter storms over the past 60 years according to the NCDC Event Record Database. The most recent being the Blizzard of 2010.
Terrorism	• Jefferson County EOP • FEMA website • West Virginia State Police • Federal Bureau of Investigation • Department of Homeland Security	• Jefferson County is located within 58 miles of Washington D.C. • Local officials and the Core Planning Committee (CPC) requested terrorism to be included as a hazard.
Wildfires	• WVDNR website • West Virginia Division of Forestry • West Virginia State Fire Marshal's Office	• The majority of Jefferson County's land cover is wooded or forested; nearly half of the total land cover is forested. • According to the Jefferson County Emergency Services Agency (JCESA), natural vegetation fires result in losses 34% of the time.

Table 2.1 continued

Several hazards were not identified in Jefferson County. The following are hazards that were not discovered to be significant risks in Jefferson County.

- Avalanche – Although Jefferson County does contain mountainous terrain, and receives significant amounts of snowfall annually, the general elevation is not high enough to cause snow to cap mountains year-round. Therefore, avalanches do not appear to be a significant hazard. Sliding rock and/or earth is considered a landslide for the purpose of this plan (see *Landslide*).
- Coastal Erosion – Jefferson County is located inland from the Atlantic Ocean and does not have any coastal boundaries.
- Coastal Storm – Jefferson County is positioned inland from large bodies of water.
- Epidemic – Historical research indicates that the probability of an epidemic outbreak occurring in Jefferson County is extremely low. This hazard is also covered in detail in the Jefferson County Pandemic Influenza Plan maintained by the Jefferson County Health Department (JCHD).
- Hurricane – While Jefferson County sometimes receives precipitation as hurricanes hit the eastern and southern coastal states, the county does not experience intense hurricane conditions. The precipitation that is received can be classified as a severe thunderstorm or winter storm (see *Severe Thunderstorm/Hail and Severe Winter Storm).*
- Temperature Extremes – While there is considerable variation in seasonal temperatures, none of the temperatures are considered severe.
- Tsunami – Jefferson County is located inland from the Atlantic Ocean and has no coastal boundaries; historical records indicate that the county has not endured a tsunami.
- Volcano – Research shows no volcanic activity in Jefferson County.

MULTI-JURISDICTIONAL REQUIREMENTS

§201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The development of a Hazard Risk Assessment (HRA) is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural, and/or man-made hazards. The results of this HRA will assist Jefferson County and its incorporated municipalities in identifying and understanding their risks from natural and manmade hazards. This information also serves as the foundation for the development of strategies to help reduce risks from future hazard events, which are outlined in the Action Plan (AP).

The Jefferson County HRA followed the methodology described in the Federal Emergency Management Agency (FEMA) publication 386-2 "*Understanding Your Risks – Identifying Hazards and Estimating Losses*" and was based on a four (4)-step process: 1) Identifying Hazards, 2) Profiling Hazard Events, 3) Inventory of Critical Assets, and 4) Estimating Losses. Using FEMA guidance, as well as Section 322 regulations for developing local multi-jurisdictional hazard mitigation plans, a HRA that identifies the following has been developed for Jefferson County.

- The hazards to which Jefferson County and its communities are susceptible.
- The impact of those hazards on physical, social, and economic assets.
- The areas within Jefferson County most vulnerable to the identified hazards.
- The potential costs of damages or costs avoided through future mitigation projects.

While it is true that the municipalities can be said to be susceptible to the above hazards by virtue of their location in Jefferson County, it is stressed that it may be more or less susceptible to these hazards than each other and the balance of Jefferson County. The following chart (Figure 2.1) determines if they are equally (=), more (>), or less (<) susceptible to these hazards than the balance of the county. (Only those hazards affecting the county are listed below.)

	Town of Bolivar	City of Charles Town	Town of Harpers Ferry	City of Ranson	Corp. of Shepherdstown
Dam Failure	=	=	>	=	>
Drought	=	=	=	=	=
Earthquake	=	=	=	=	=
Flooding	<	<	>	<	>
Hazardous Materials	=	>	=	>	=
Landslide	<	<	>	<	>
Land Subsidence	=	>	=	=	=
Severe Thunderstorm/Hail	=	=	=	=	=
Severe Wind/Tornado	=	=	=	=	=
Severe Winter Storm	=	=	=	=	=
Terrorism	=	>	=	>	=
Wildfire	=	<	=	<	=

Figure 2.1

KEY
= : Municipality affected by hazard same as county.
>: Municipality affected by hazard more than county.
<: Municipality affected by hazard less than county.

For the purpose of this assessment, risk will be assessed separately for each jurisdiction involved where it differs significantly. If the risk affects one (1) jurisdiction and not another, or if the risk affects one (1) jurisdiction in a significantly different manner, it will be so noted in the hazard identification and hazard profile steps. If the risks are determined to impact each jurisdiction equally or in the same manner, it will be so noted. In such cases, please refer to the larger jurisdiction's hazard profile (i.e., Profiling Hazards – Jefferson County for risks affecting Jefferson County and all of its municipalities in the same manner.)

This Hazard Risk Assessment (HRA) and Action Plan (AP) of the *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* will cover the following jurisdictions of Jefferson County:

JURISDICTIONS COVERED BY THIS PLAN		
Town of Bolivar	City of Charles Town	Town of Harpers Ferry
City of Ranson	Corporation of Shepherdstown	

Table 2.2

No municipal jurisdictions have been added or removed from the *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* since it was first approved and adopted in March of 2003. Jefferson County also contains the following designated places and unincorporated communities:

Unincorporated Communities of Jefferson County	
Alderidge	Bakerton
Bardane	Blair
Bloomery	Browns Corner
Duffields	Egypt
Engle	Franklintown
Halltown	Jamestown
Jonhsontown	Kabletown
Kearneysville	Leetown
Mannings	Mechanicstown
Meyerstown	Middleway
Millville	Moler Crossroads
Mountain Mission	Mount Pleasant
Rippon	Riverside
Shannondale	Shenandoah Junction
Silver Grove	Skeetersville
Summit Point	Uvilla
Walpers Cross Roads	Wheatland

Table 2.2 continued

2.2 PROFILING HAZARDS

§201.6(c)(2)(i)	[The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

2.2.a Section Overview

The second step in the Hazard Risk Assessment (HRA) process is to create a profile for each of the priority hazards identified in Jefferson County. Several hazards affect Jefferson County, as noted in the Section 2.1: Identifying Hazards. Those hazards, however, may not affect the county in ways that residents and planners may typically think. Additionally, while a hazard may occur frequently, it may cause little damage or disruption; conversely, a hazard that rarely occurs may cause significant damage and disruption. Consequently, this section discusses the probability and severity of the hazards identified by Section 2.1.

Further, this section references detailed descriptions of how the identified hazards affect Jefferson County and the municipalities therein. As such, refer to Appendix 1 of this plan for detailed hazard profiles (including scholarly discussions of the hazards, historical occurrences and impacts), extensive asset inventory and loss estimate data, and Geographic Information System (GIS)-based mapping that predicts low, moderate, and high susceptibility areas.

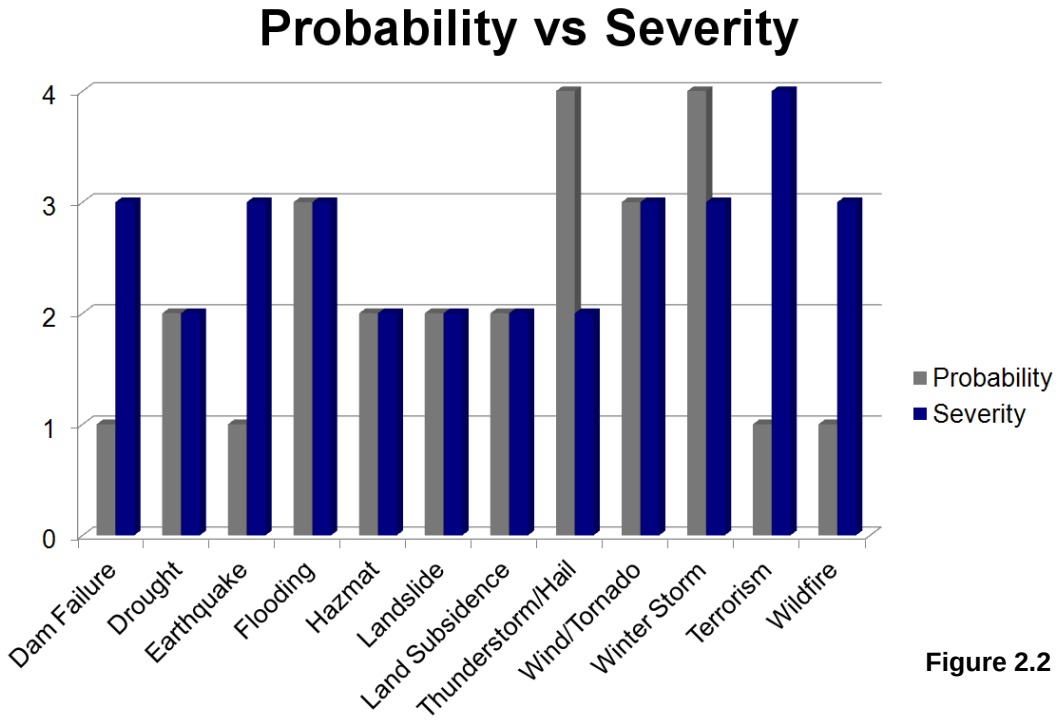


Figure 2.2

2.2.b Probability vs. Severity Explanation

In the case of many hazards, it is not possible to eliminate risks; they can only be reduced. When many risks exist at once, or when resources are limited, mitigation and preparedness require the setting of priorities. For example, local officials may want to invest mitigation and preparedness dollars in projects that lessen losses from higher probability hazards. The classification of "probability" and "severity" for hazard risks in Jefferson County is quantified by the *Risk Assessment Decision Matrix* in Figure 2.3 at the end of this section.

Figure 2.2 on page 48 was created to enhance the usability of the plan. It provides a more holistic snapshot of risk in terms of probability and severity in a format that is more familiar to most readers of this plan. To create the bar graph, the approximations in Table 2.3 were used.

PROBABILITY		SEVERITY	
Frequent	= 4	Catastrophic	= 4
Probable	= 3	Critical	= 3
Occasional	= 2	Marginal	= 2
Remote	= 1	Negligible	= 1
Improbable	= 0		

Table 2.3

2.2.c. Probability vs. Severity Methodology

The first task that was undertaken was to determine the frequency of hazard occurrences. For instance, how many floods occur in a year? How many tornadoes has Jefferson County experienced in the past 60 years? To answer these questions, the *NCDC Event Records* database was used. The National Climatic Data Center (NCDC) keeps records of significant storm events back to 1950. The number of hazard events (i.e., floods, hailstorms, thunderstorms, tornados, winter storms, etc.) was counted.

Based on records for only Jefferson County, probability was determined. As such, probability for hazards in Jefferson County is a comparison between the hazards that have actually occurred in Jefferson County as opposed to a comparison with data from another location. For example, a total of ten (10) occurrences of Event "X" may be significant in Jefferson County, but could be a very low number of occurrences in a neighboring or other county.

If the information contained in the NCDC database was insufficient, other historical data, such as local media archives and interviews with local officials, were gathered. If repeated coverage was given to a particular hazard event, that event was considered highly probable to occur. Also, local officials were able to verify or identify

those hazards occurring frequently. Table 2.4 lists the classifications considered for hazard probability.

HAZARD PROBABILITY CLASSIFICATIONS

Label	Specific Hazard Event	Frequency
Frequent	Likely to occur frequently.	Continuously experienced.
Probable	Will occur several times in the life of an item.	Experienced several times.
Occasional	Likely to occur sometime in the life of an item.	Experienced.
Remote	Unlikely but possible to occur in the life of an item.	Unlikely that it has been experienced.
Improbable	So unlikely it can be assumed occurrence may not be experienced.	Not experienced.

Table 2.4

The second and final task was to determine the severity of identified hazard events. Again, *NCDC Event Records* were used. These documents record the atmospheric conditions of the event and other details, such as wind speeds, damage incurred, and the number of deaths/injuries. If it appeared that thunderstorms frequently occurred but did not result in significant monetary losses or deaths, then thunderstorms were said to have a high probability and low severity. If winter storms, for example, appeared to occur frequently and also cause significant damage and deaths/injuries, winter storms were said to have a high probability *and* high severity. As with probability, if the NCDC database was insufficient, local media archives and interviews with local officials were used. Table 2.5 lists the severity classifications that were considered.

HAZARD SEVERITY CLASSIFICATIONS

Description	Mishap Definition
Catastrophic	Death or major structural loss.
Critical	Severe injury, severe illness, or marginal structural damage.
Marginal	Minor injury, minor illness, or structural damage.
Negligible	Less than minor injury, illness, or structural damage.

Table 2.5

Figure 2.3 combines the probability and severity information into a "Risk Assessment Decision Matrix" that generalizes the potential impact of each hazard included in the plan. This is the figure that was re-formatted into a bar graph as described in Section 2.2.b.

RISK ASSESSMENT DECISION MATRIX

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent	Probable	Occasional	Remote	Improbable
Catastrophic				**11**	
Critical	**10**	**4, 9**		**1, 3, 12**	
Marginal	**8**		**2, 5, 6, 7**		
Negligible					

Figure 2.3

Risk reduction required.

Risk reduction suggested.

Risk reduction not required.

1 – Dam Failure
2 – Drought
3 – Earthquake
4 – Flooding
5 – Hazardous Materials
6 – Landslide
7 – Land Subsidence
8 – Severe Thunderstorm/Hail
9 – Severe Wind/Tornado
10 – Severe Winter Storm
11 – Terrorism
12 – Wildfire

2.3 ASSET INVENTORY

§201.6(c)(2)(ii)	[The risk assessment shall include a] description of the jurisdiction's vulnerability of the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
§201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

This Hazard Risk Assessment (HRA) identifies "at-risk" community assets such as critical facilities, critical infrastructure, historical properties, commercial/industrial facilities, etc. "Assets" contribute directly to the quality of life in the community as well as ensure its continued operation. As such, government facilities are often listed, as are water/wastewater and transportation infrastructure. "Assets" can also be irreplaceable items within the community, such as historical structures or even vulnerable populations (including the elderly or youths).

METHODOLOGY

Several resources were used to inventory and update the assets in Jefferson County, both for the county as a whole and within designated hazard risk areas. For example, HAZUS, and Census data were used, as was information provided by the Jefferson County GIS/Addressing Office, in addition to extensive correspondence with local representatives and members of the Core Planning Committee (CPC). Inventorying assets first involves determining what in the community can be affected by a hazard event. The hazard profiles contained in Appendix 1 each contain a "Worksheet #3a" that lists, in broad terms, the types of assets that are susceptible to the hazards identified in 2.1: Identifying Hazards. Worksheet #3a (SOURCE: FEMA 386-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*) lists the total number and value of all structures and people in identified hazard zones by the following types: residential, commercial, industrial, agricultural, religious/non-profit, government, education, and utilities.

The CPC maintains a specific list of community assets as part of this plan. These assets are grouped into the following categories.

- *Critical Facilities*: Governmental facilities, water/wastewater facilities, dams, emergency services facilities, medical facilities (hospitals/clinics), military facilities, and the transportation infrastructure.
- *Vulnerable Populations*: Schools, nursing homes, and senior centers.
- *Economic Assets*: Large commercial/industrial facilities or large employers (not covered in other categories).
- *Special Considerations*: Residences, community outreach facilities, post offices, and libraries.
- *Historical Considerations*: Areas/structures listed on the National Register of Historic Places.

While inventorying assets, much information can be gathered that will assist in the upcoming loss estimations. Each specific asset is listed with its replacement value (structure only), contents value, function use or value (annual operating budget), displacement cost ($ per day), and occupancy. These values are utilized to compute loss estimates, which is why it is critical to carefully consider all the facilities that are listed in the asset inventory. Following is a brief description of how the above numbers are derived.

- *Replacement Value*: County assessor data from the 2008 plan with an updated value based on inflation and/or depreciation, or by directly contacting the facility.
- *Contents Value*: Directly contacting the facility in 2008 with an updated value based on inflation and/or depreciation.
- *Function Use or Value*: Directly contacting the facility in 2008 with an updated value to include cost of living adjustments.
- *Displacement Cost*: Function Use or Value divided by 365.

In addition to critical facilities, an analysis of 2010 Census data indicates that the county contains at-risk populations that should be factored into this Hazard Risk Assessment (HRA). Jefferson County and all of its municipalities contain elderly and youth populations with limited mobility; in fact, approximately 12 percent (12%) or 6,500 persons of the total population are over the age of 65. Limited health care facilities are located throughout the county and are primarily within municipal areas. This population

is adversely affected during hazard events because of a lack of accessibility to these emergency and other services. The county also contains youth populations that may be affected by certain hazard events. Hazards, such as floods, winter storms, hail, etc., pose health and safety threats during events.

ASSET INVENTORY

The above information for the complete asset inventory is listed on Table 2.6 on the following pages. Table 2.6 is a replica of Worksheet #3b from the *State and Local Mitigation Planning How-To Guide: Understanding Your Risks* (FEMA 386-2). Following is a key for the acronyms found on Table 2.6.

- *ARC*: American Red Cross
- *EMS*: Emergency Medical Services
- *ES*: Elementary School
- *FD*: Fire Department
- *HS*: High School
- *MS*: Middle School
- *PD*: Police Department
- *PO*: Post Office
- *PSD*: Public Service District
- *VFD*: Volunteer Fire Department
- *WTP*: Water Treatment Plant

Table 2.6

Jefferson County Asset Inventory

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
GOVERNMENTAL FACILITIES														
Bolivar Town Hall	FEMA	X					$2,115,000		$225,000		$6,000		$750	
	Hazard		L	L	L	L	L	M	M	H	M	H	M	L
Charles Town City Hall	FEMA	X					$3,025,700		$450,000		$4,800		$1,200	
	Hazard		L	L	L	L	M	L	H	H	M	H	M	L
Harpers Ferry Town Hall	FEMA	X					$2,534,000		$225,000		$6,600		$825	
	Hazard		L	L	L	L	L	M	M	H	M	H	M	L
Jefferson County Courthouse	FEMA	X					$4,232,887		$875,000		$10,000		$2,500	
	Hazard		L	L	L	M	M	L	H	H	M	H	M	L
Ranson City Hall	FEMA	X					$2,850,645		$375,000		$3,600		$900	
	Hazard		L	L	L	M	M	L	L	H	M	H	M	L
Shepherdstown Town Hall	FEMA	X					$2,225,000		$225,000		$7,000		$875	
	Hazard		L	L	L	M	L	M	M	H	M	H	M	L
TRANSPORTATION INFRASTRUCTURE														
Bridges	FEMA	X					$235,000,000		$0		$0		$0	
	Hazard		L	L	L	H	L	L	L	H	M	H	L	L
Railroads	FEMA	X					$195,000,000		$0		$0		$0	
	Hazard		M	L	L	M	L	M	M	H	M	H	L	L
Roads	FEMA	X					$1,215,000,000		$0		$0		$0	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
PUBLIC UTILITIES														
Potomac Edison	FEMA	X					$1,005,000		$159,000		$53,100		$1,700	
	Hazard		M	L	L	M	M	L	L	H	M	H	L	L
Charles Town City Water System	FEMA	X					$6,213,000		$13,750,000		$3,840		$480	
	Hazard		M	M	L	M	M	L	H	H	M	H	M	L
Frontier Communications	FEMA	X					$1,425,000		$425,000		$48,000		$12,000	
	Hazard		L	L	L	L	M	L	L	H	M	H	L	M
Harpers Ferry Job Corps	FEMA	X					$5,725,000		$9,000,000		$2,800		$350	
	Hazard		L	M	L	L	M	M	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
HAZARDS			Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Jefferson County PSD	FEMA	X					$6,520,000		$10,550,000		$6,120		$765	
	Hazard		L	M	L	M	M	L	L	H	M	H	M	L
Jefferson County Solid Waste Authority	FEMA	X					$4,000,000		$8,750,225		$4,480		$560	
	Hazard		L	L	L	L	M	L	L	H	M	H	M	L
Meadowbrook Water System	FEMA	X					$1,750,000		$5,225,000		$2,400		$300	
	Hazard		L	M	L	M	M	L	L	H	M	H	L	L
Shepherdstown Water System	FEMA	X					$2,225,000		$5,450,000		$3,600		$450	
	Hazard		M	M	L	H	M	M	M	H	M	H	M	L
Shenandoah Junction Water System	FEMA	X					$1,000,000		$2,850,000		$3,400		$425	
	Hazard		L	M	L	L	M	M	L	H	M	H	L	L
Tuscawilla Utilities	FEMA	X					$750,000		$1,850,000		$2,400		$300	
	Hazard		L	M	L	L	M	L	L	H	M	H	L	L
Walnut Grove Utilities	FEMA	X					$825,000		$1,425,000		$2,400		$300	
	Hazard		L	M	L	L	M	L	L	H	M	H	L	L
Hydroelectric Power Plant (Potomac Power Plant)	FEMA					X	$10,000,000		$6,000,000		$0		$0	
	Hazard		H	L	L	M	M	L	L	H	M	H	L	L
Hollywood Casino WTP	FEMA	X					$125,000		$60,000		$2,560		$320	
	Hazard		L	M	L	L	M	L	M	H	M	H	M	L
EMERGENCY SERVICES														
Bakerton FD	FEMA	X					$715,000		$1,115,000		$2,600		$650	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
Blue Ridge Mtn. VFD	FEMA	X					$950,000		$845,000		$0		$0	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Charles Town PD	FEMA	X					$725,000		$325,000		$5,120		$1,280	
	Hazard		L	L	L	L	M	L	H	H	M	H	L	L
Citizens VFD	FEMA	X					$1,250,000		$1,025,000		$4,000		$1,000	
	Hazard		L	L	L	M	M	L	H	H	M	H	L	L
Friendship VFD	FEMA	X					$1,150,000		$725,000		$0		$0	
	Hazard		L	L	L	M	L	L	M	H	M	H	L	L
Harpers Ferry National Park Service Police	FEMA	X					$315,000		$75,000		$3,600		$450	
	Hazard		M	L	L	H	L	M	L	H	M	H	L	L
Harpers Ferry PD	FEMA	X					$210,000		$105,000		$7,000		$875	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Independent VFD	FEMA	X					$975,000		$890,000		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Jefferson County Emergency Communications	FEMA	X					$7,500,000		$600,000		$2,880		$720	
	Hazard		L	L	L	L	M	L	M	H	M	H	M	L
Jefferson County Emergency Operations Center	FEMA	X					$0		$0		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	M	L
Jefferson County Homeland Security & Emergency Mgmt.	FEMA	X					$725,000		$200,000		$2,200		$550	
	Hazard		L	L	L	M	M	L	H	H	M	H	M	L
Jefferson County Sheriff's Dept.	FEMA	X					$850,000		$100,000		$14,400		$3,600	
	Hazard		L	L	L	M	M	L	H	H	M	H	M	L
Ryneal Ambulance Service	FEMA	X					$95,000		$75,000		$3,200		$560	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Eastern Panhandle Chapter American Red Cross	FEMA	X					$505,000		$125,000		$2,600		$650	
	Hazard		L	L	L	M	M	L	H	H	M	H	L	L
Ranson PD	FEMA	X					$612,000		$189,000		$3,000		$750	
	Hazard		L	L	L	L	M	L	L	H	M	H	L	L
Shepherdstown PD	FEMA	X					$425,000		$198,000		$4,000		$500	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
Shepherdstown University PD	FEMA	X					$395,000		$65,000		$1,800		$225	
	Hazard		L	L	L	H	L	M	M	H	M	H	L	L
Shepherdstown VFD	FEMA	X					$845,000		$115,000		$0		$0	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
West Virginia State Police	FEMA	X					$900,000		$80,000		$6,000		$1,500	
	Hazard		L	L	L	L	M	L	H	H	M	H	M	L
Middleway FD	FEMA	X					$130,000		$200,000		$4,800		$600	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Blue Ridge Mtn. EMS	FEMA	X					$110,000		$65,000		$5,600		$2,800	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Canterbury of Shepherdstown	FEMA	X					$305,000		$75,000		$5,200		$650	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
Eastern Panhandle Free Clinic	FEMA	X					$1,560,000		$145,000		$12,800		$3,200	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Friendship Fire EMS	FEMA	X					$85,000		$55,000		$2,400		$600	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Independent EMS	FEMA	X					$90,000		$65,000		$3,400		$850	

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Independent EMS	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Shepherdstown Fire EMS	FEMA	X					$225,000		$65,000		$12,800		$1,600	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
Jefferson County Emergency Services Agency	FEMA	X					$805,000		$105,000		$6,000		$1,500	
	Hazard		L	L	L	L	M	L	H	H	M	H	L	L
HOSPITALS AND NURSING HOMES														
Jefferson Memorial Hospital	FEMA	X	X				$48,225,000		$15,150,000		$416,000		$104,000	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Jefferson Urgent Care	FEMA	X	X				$1,550,000		$325,000		$16,800		$4,200	
	Hazard		L	L	L	M	M	L	H	H	M	H	L	L
Willow Tree Manor Nursing Home	FEMA		X				$220,000		$50,000		$9,600		$1,200	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Allegheny Optical Medical Bldg.	FEMA	X					$310,000		$80,000		$5,760		$720	
	Hazard		L	L	L	L	M	L	L	H	M	H	L	L
Jefferson County Health Dept.	FEMA	X					$500,000		$110,000		$20,480		$2,680	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Women's Imaging Center	FEMA	X					$375,000		$85,000		$11,520		$1,440	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
WVU Urgent Care	FEMA	X					$575,000		$250,000		$20,480		$2,560	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
SCHOOLS AND EDUCATIONAL FACILITIES														
American Public University	FEMA	X					$20,725,000		$895,000		$53,000		$26,500	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Blue Ridge ES	FEMA	X					$3,850,000		$225,000		$5,600		$2,800	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Charles Town MS	FEMA	X					$6,850,000		$315,000		$22,000		$5,500	
	Hazard		L	L	L	M	M	L	H	H	M	H	L	L
Claymont Children's School	FEMA	X					$2,150,000		$65,000		$8,800		$2,200	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Country Day School of Jefferson County	FEMA	X					$2,000,000		$70,000		$10,800		$2,700	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
CW Shipley ES	FEMA	X					$3,075,000		$105,000		$12,400		$3,100	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Harpers Ferry MS	FEMA	X					$7,500,000		$225,000		$34,400		$4,300	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Jefferson HS	FEMA	X					$16,850,000		$450,000		$38,000		$9,500	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Kingsway Christian Academy	FEMA	X					$2,150,000		$95,000		$12,000		$3,000	
	Hazard		L	L	L	M	L	L	M	H	M	H	L	L
Morgan Academy	FEMA	X					$1,965,000		$75,000		$11,600		$2,900	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
North Jefferson ES	FEMA	X					$2,985,000		$135,000		$16,200		$2,700	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Opportunity Learning Center	FEMA	X					$1,855,000		$68,000		$13,200		$2,200	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
Page Jackson ES	FEMA	X					$2,865,000		$120,000		$12,400		$3,100	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Blue Ridge Primary	FEMA	X					$3,000,000		$200,000		$13,440		$1,680	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Ranson ES	FEMA	X					$4,000,000		$210,000		$14,000		$3,500	
	Hazard		L	L	L	L	M	L	L	H	M	H	L	L
Shepherdstown ES	FEMA	X					$3,995,000		$235,000		$27,600		$3,450	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Shepherdstown MS	FEMA	X					$8,650,000		$295,000		$36,000		$4,500	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Shepherd University	FEMA	X					$55,550,000		$950,000		$280,000		$35,000	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	L
T.A. Lowery ES	FEMA	X					$2,650,000		$135,000		$12,400		$3,100	
	Hazard		L	L	L	L	M	L	H	H	M	H	L	L
Washington HS	FEMA	X					$17,995,000		$305,000		$44,000		$11,000	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Wildwood MS	FEMA	X					$6,555,000		$210,000		$16,000		$4,000	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	M
Wright Denny ES	FEMA	X					$3,225,000		$145,000		$14,400		$3,600	
	Hazard		L	L	L	M	L	L	M	H	M	H	L	L
Jefferson County Board of Education	FEMA	X					$5,350,000		$165,000		$19,460		$4,865	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
The Joy of Learning Montessori	FEMA	X					$1,500,000		$175,000		$11,520		$1,440	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
South Jefferson ES	FEMA	X					$2,750,000		$215,000		$11,500		$1,437	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Rock Spring Child Learning Center	FEMA	X				X	$220,000		$0		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Wee Disciples Christian Enrichment Program	FEMA	X				X	$0		$0		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Driswood ES	FEMA	X					$2,250,000		$195,000		$10,000		$1,250	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
COMMERCIAL AND INDUSTRIAL														
Aggregate Industries/Millville Quarry	FEMA			X			$1,850,000		$355,000		$38,000		$9,500	
	Hazard		L	L	L	M	L	L	M	H	M	H	L	L
Arcadia Building Company	FEMA			X			$985,000		$425,000		$44,800		$11,200	
	Hazard		L	L	L	L	L	L	H	H	M	H	L	L
Automated Merchandising System	FEMA			X			$550,000		$95,000		$42,000		$10,500	
	Hazard		L	L	L	L	M	L	L	H	M	H	L	L
Bavarian Inn	FEMA			X			$1,795,000		$250,000		$38,000		$9,500	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Bolivar Community Center	FEMA			X			$1,850,000		$40,000		$7,800		$1,300	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Burch Wood Products	FEMA			X			$895,000		$350,000		$93,600		$15,600	
	Hazard		L	L	L	M	L	M	M	H	M	H	L	M
Business Technology Source	FEMA			X			$1,500,000		$225,000		$74,000		$18,500	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Hollywood Casino at Charles Town Races	FEMA			X			$15,650,000		$1,250,000		$200,000		$50,000	
	Hazard		L	L	L	L	M	L	M	H	M	H	M	L
Clarion Hotel & Conference Center	FEMA			X			$10,855,000		$315,000		$60,000		$15,000	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Comcast	FEMA			X			$1,250,000		$220,000		$55,000		$13,750	
	Hazard		L	L	L	M	M	L	H	H	M	H	L	L
Concert Technology	FEMA			X			$650,000		$110,000		$59,400		$14,850	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
DALB, Inc.	FEMA			X			$455,000		$215,000		$100,000		$25,000	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
Dr. Pepper	FEMA			X			$1,785,000		$310,000		$140,000		$35,000	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
Halltown Paperboard Company	FEMA			X			$1,276,000		$650,000		$105,000		$17,500	
	Hazard	L	L	L	M		M	L	M	H	M	H	L	M
Harpers Ferry Family Medicine Center	FEMA			X			$1,115,000		$675,000		$96,000		$16,000	
	Hazard	L	L	L	L		L	M	L	H	M	H	L	L
Hilldale Shopping Center	FEMA			X			$12,560,000		$4,555,000		$113,600		$28,400	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
Home Depot	FEMA			X			$2,550,000		$450,000		$50,000		$12,500	
	Hazard	L	L	L	L		M	L	L	H	M	H	L	L
Jefferson Asphalt Products	FEMA			X			$1,450,000		$225,000		$40,000		$10,000	
	Hazard	L	L	L	M		M	L	L	H	M	H	L	L
Jefferson County Chamber of Commerce	FEMA			X			$1,225,000		$150,000		$22,800		$5,700	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
Jefferson County Fairgrounds	FEMA			X	X		$625,000		$65,000		$0		$0	
	Hazard	L	L	L	M		L	L	M	H	M	H	L	L
Jefferson Rental	FEMA			X			$1,850,000		$2,400,000		$62,000		$15,500	
	Hazard	L	L	L	L		M	L	L	H	M	H	L	L
Jefferson County Council on Aging	FEMA			X			$995,000		$65,000		$17,000		$4,250	
	Hazard	L	L	L	L		L	L	M	H	M	H	L	L
KOA Campgrounds	FEMA			X	X		$850,000		$1,500,000		$62,800		$7,850	
	Hazard	L	L	L	M		L	L	L	H	M	H	L	M
KRM Associates, Inc.	FEMA			X			$950,000		$325,000		$44,000		$11,000	
	Hazard	L	L	L	L		M	L	L	H	M	H	L	L
Lowe Products	FEMA			X			$425,000		$298,000		$52,000		$13,000	
	Hazard	L	L	L	M		L	L	L	H	M	H	L	L
McDaniel Hardwood Products	FEMA			X			$1,750,000		$355,000		$168,000		$28,000	
	Hazard	L	L	L	M		L	L	M	H	M	H	L	M
Mountain State Machine Tool	FEMA			X			$2,865,000		$665,000		$42,000		$10,500	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
PROSystems, Inc.	FEMA			X			$3,895,000		$645,000		$67,200		$16,800	
	Hazard	L	L	L	L		M	L	L	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
R.A.I.	FEMA			X			$1,225,000		$450,000		$61,600		$15,400	
	Hazard	L	L	L	L		M	L	L	H	M	H	L	L
Royal Vendors, Inc.	FEMA			X			$5,650,000		$956,000		$128,000		$32,000	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
Schonstedt Instruments	FEMA			X			$1,350,000		$745,000		$58,000		$14,500	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
Specialized Engineering	FEMA			X			$3,005,000		$425,000		$51,000		$12,750	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
Summit Point Motor Sports Park	FEMA			X			$650,000		$115,000		$4,000		$2,000	
	Hazard	L	L	L	M		L	L	L	H	M	H	L	M
Universal Forest Products	FEMA			X			$2,250,000		$4,000,000		$60,000		$30,000	
	Hazard	L	L	L	M		L	L	L	H	M	H	L	M
U.S. Customs & Border Protection	FEMA	X		X			$965,000		$98,000		$38,000		$9,500	
	Hazard	L	L	L	L		L	L	M	H	M	H	L	L
U.S. Department of Agriculture	FEMA			X			$2,450,000		$225,000		$22,000		$5,500	
	Hazard	L	L	L	L		L	L	M	H	M	H	L	L
U.S. Fish & Wildlife Service	FEMA			X			$2,875,000		$1,000,000		$180,000		$45,000	
	Hazard	L	M	L	L		L	L	L	H	M	H	L	L
United States Geological Survey	FEMA			X			$3,675,000		$250,000		$26,000		$6,500	
	Hazard	L	L	L	L		L	L	M	H	M	H	L	L
Wal-mart	FEMA			X			$3,850,000		$1,650,000		$109,600		$27,400	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
WVU Tree Fruit Research & Ed. Center	FEMA			X			$2,525,000		$3,000,000		$80,000		$40,000	
	Hazard	L	M	L	L		L	L	L	H	M	H	L	M
Hampton Inn	FEMA			X			$8,850,000		$1,250,000		$65,000		$10,000	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
Holiday Inn Express	FEMA			X			$13,550,000		$1,500,000		$80,000		$12,000	
	Hazard	L	L	L	L		M	L	M	H	M	H	L	L
Inn at Charles Town	FEMA			X			$7,650,000		$900,000		$55,000		$8,000	
	Hazard	L	L	L	L		L	L	M	H	M	H	L	L
Windmill Crossing Shopping Center	FEMA			X			$30,000,000		$3,550,000		$500,000		$150,000	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L
Southern States	FEMA			X			$2,210,000		$1,922,345		$13,000		$1,200	
	Hazard	L	L	L	L		L	L	L	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Stasis Engineering	FEMA			X			$450,000		$95,000		$12,288		$1,536	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
POST OFFICES														
Bakerton PO	FEMA				X		$575,000		$75,000		$3,800		$950	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	L	
Charles Town PO	FEMA				X		$850,000		$125,000		$4,800		$1,200	
	Hazard	L	L	L	L	M	L	H	H	M	H	M	L	
Halltown PO	FEMA				X		$425,000		$80,000		$1,800		$900	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	L	
Harpers Ferry PO	FEMA				X		$485,000		$100,000		$2,000		$1,000	
	Hazard	L	L	L	L	L	M	L	H	M	H	M	L	
Kearneysville PO	FEMA				X		$525,000		$110,000		$3,820		$955	
	Hazard	L	L	L	L	M	L	M	H	M	H	M	L	
Ranson PO	FEMA				X		$575,000		$150,000		$3,000		$1,500	
	Hazard	L	L	L	L	M	L	L	H	M	H	M	L	
Rippon PO	FEMA				X		$215,000		$56,000		$2,100		$525	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Shenandoah Junction PO	FEMA				X		$225,000		$65,000		$3,600		$600	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Shepherdstown PO	FEMA				X		$250,000		$60,000		$6,000		$750	
	Hazard	L	L	L	M	L	M	M	H	M	H	M	L	
Summit Point PO	FEMA				X		$175,000		$65,000		$710		$355	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	L	
LIBRARIES														
Bolivar/Harpers Ferry Public Library	FEMA					X	$580,000		$200,000		$3,840		$480	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	M	
Old Charles Town Library	FEMA					X	$450,000		$220,000		$1,600		$800	
	Hazard	L	L	L	L	M	L	M	H	M	H	L	L	
Shepherdstown Public Library	FEMA				X		$790,000		$255,000		$8,000		$1,000	
	Hazard	L	L	L	L	L	M	M	H	M	H	L	L	
South Jefferson Public Library	FEMA				X		$615,000		$220,000		$4,470		$745	
	Hazard	L	L	L	M	L	M	H	H	M	H	L	L	

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Scarborough Library at Shepherd University	FEMA				X		$550,000		$250,000		$6,800		$850	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
HISTORICAL FACILITIES														
Allemong Christian House	FEMA					X	$95,000		$25,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	L
Allstadt House and Ordinary	FEMA					X	$110,000		$50,000		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Altona Farm	FEMA					X	$255,000		$35,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Aspen Hill	FEMA					X	$195,000		$60,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
B&O Railroad Potomac River Crossing	FEMA					X	$1,650,000		$0		$0		$0	
	Hazard		M	L	L	M	L	L	L	H	M	H	L	L
Beall-Air Building	FEMA					X	$450,000		$100,000		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Belvedere Building	FEMA					X	$500,000		$95,000		$0		$0	
	Hazard		L	L	L	H	L	L	L	H	M	H	L	L
Brook Manor	FEMA					X	$425,000		$65,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Bower Building	FEMA					X	$365,000		$75,000		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Burr, Peter House	FEMA					X	$125,000		$40,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Barleywood	FEMA					X	$135,000		$35,000		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	L
Cedar Lawn Building	FEMA					X	$165,000		$60,000		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Charles Town Historic District	FEMA					X	$2,000,000		$0		$0		$0	
	Hazard		L	L	L	M	M	L	M	H	M	H	L	L
Charles Town Mining, Manufacturing, and Improvement Company Building	FEMA					X	$1,000,000		$225,000		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Claymont Court	FEMA					X	$350,000		$110,000		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Cold Spring Building	FEMA					X	$90,000		$20,000		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Duffields Depot	FEMA					X	$310,000		$65,000		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	L	
Entler Hotel	FEMA					X	$415,000		$125,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Elmwood Building	FEMA					X	$275,000		$85,000		$0		$0	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	M	
Falling Spring Complex	FEMA					X	$965,000		$225,000		$0		$0	
	Hazard	M	L	L	M	L	L	M	H	M	H	L	L	
Fruit Hill	FEMA					X	$220,000		$0		$0		$0	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	M	
Bellevue	FEMA					X	$355,000		$150,000		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
Gap View Farm District	FEMA					X	$2,000,000		$0		$0		$0	
	Hazard	L	L	L	M	L	M	L	H	M	H	L	M	
Gibson-Todd House	FEMA					X	$165,000		$30,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Glenburnie Building	FEMA					X	$320,000		$135,000		$0		$0	
	Hazard	L	L	L	L	M	L	M	H	M	H	L	L	
Grand View School Building	FEMA					X	$215,000		$50,000		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Beverly	FEMA					X	$195,000		$65,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Halltown Colored Free School	FEMA					X	$590,000		$50,000		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Halltown Memorial Chapel	FEMA					X	$115,000		$40,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Harewood Building	FEMA					X	$295,000		$112,000		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	M	
Harpers Ferry Historic District	FEMA					X	$4,000,000		$0		$0		$0	
	Hazard	M	L	L	M	L	M	L	H	M	H	L	L	
Harpers Ferry National Historic Park	FEMA					X	$2,455,000		$0		$0		$0	
	Hazard	M	L	L	H	L	M	L	H	M	H	L	M	

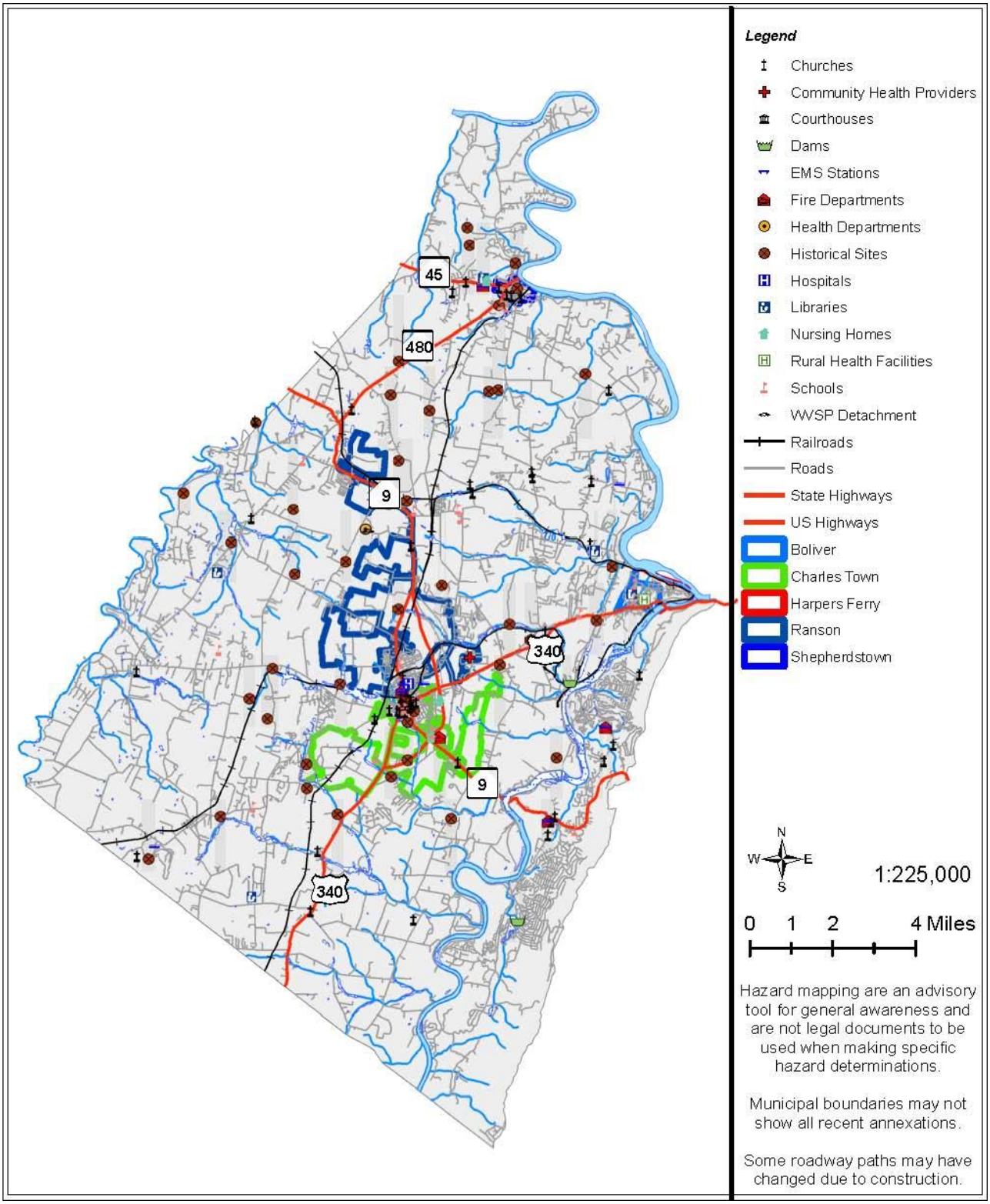
Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Happy Retreat	FEMA					X	$265,000		$110,000		$0		$0	
	Hazard	L	L	L	L	M	L	L	H	M	H	L	L	
Hazefield Building	FEMA					X	$430,000		$90,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Blakeley	FEMA					X	$265,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
Hopewell Building	FEMA					X	$685,000		$125,000		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Boisestone's Place	FEMA					X	$145,000		$30,000		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
Jefferson County Alms House	FEMA					X	$400,000		$135,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Lee-Longsworth House	FEMA					X	$265,000		$95,000		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Linden Spring	FEMA					X	$15,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	L	
Bolivar Heights - Schoolhouse Ridge	FEMA					X	$95,000		$0		$0		$0	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	M	
Cool Spring	FEMA					X	$15,000		$0		$0		$0	
	Hazard	L	M	L	L	L	L	M	H	M	H	L	L	
Media Farm	FEMA					X	$350,000		$0		$0		$0	
	Hazard	L	L	L	M	L	M	L	H	M	H	L	M	
Middleway Historic District	FEMA					X	$1,500,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Miller's Tavern	FEMA					X	$115,000		$15,000		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	L	
Morgan's Grove District	FEMA					X	$550,000		$0		$0		$0	
	Hazard	L	L	L	H	L	L	L	H	M	H	L	L	
Nash-Bradley Farm	FEMA					X	$265,000		$50,000		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	M	
New Opera House	FEMA					X	$295,000		$100,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Richwood Hall	FEMA					X	$465,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Ripon Lodge	FEMA					X	$395,000		$65,000		$0		$0	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	L	
Scrabble Historic District	FEMA					X	$675,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	L	
Shepherd's Mill	FEMA					X	$65,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
Shepherdstown Boundary Increase	FEMA					X	$95,000		$0		$0		$0	
	Hazard	L	L	L	L	L	M	M	H	M	H	L	M	
Shepherdstown Historic District	FEMA					X	$3,750,000		$0		$0		$0	
	Hazard	M	L	L	M	L	L	L	H	M	H	L	M	
Shipley School	FEMA					X	$245,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
St. George's Chapel	FEMA					X	$110,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
St. Peter's Roman Catholic Church	FEMA					X	$350,000		$95,000		$0		$0	
	Hazard	L	L	L	L	L	L	M	H	M	H	L	L	
Storer College	FEMA					X	$395,000		$110,000		$0		$0	
	Hazard	L	L	L	L	L	M	M	H	M	H	L	L	
Strider Farm	FEMA					X	$165,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	M	
Tattersall Property	FEMA					X	$110,000		$0		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
Elmwood-on-the-Opequon	FEMA					X	$95,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	M	H	M	H	L	L	
York Hill	FEMA					X	$875,000		$0		$0		$0	
	Hazard	L	L	L	L	L	M	L	H	M	H	L	M	
Grubb Farm	FEMA					X	$225,000		$0		$0		$0	
	Hazard	L	L	L	M	L	L	L	H	M	H	L	L	
The Hermitage	FEMA					X	$195,000		$50,000		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	
Little Elmington	FEMA					X	$85,000		$20,000		$0		$0	
	Hazard	L	L	L	L	M	M	L	H	M	H	L	L	
Piedmont	FEMA					X	$155,000		$35,000		$0		$0	
	Hazard	L	L	L	L	L	L	L	H	M	H	L	L	

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Potomac Mills/Boteler's Cement Mill	FEMA					X	$165,000		$0		$0		$0	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Prato Rio	FEMA					X	$115,000		$65,000		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Rellim	FEMA					X	$85,000		$0		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Rion Hall	FEMA					X	$265,000		$45,000		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Rockland	FEMA					X	$140,000		$0		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M
Rock Spring	FEMA					X	$15,000		$0		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Rosebrake	FEMA					X	$30,000		$0		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Rose Hill	FEMA					X	$60,000		$0		$0		$0	
	Hazard		L	L	L	L	L	M	M	H	M	H	L	M
Shannondale Springs	FEMA					X	$8,000		$0		$0		$0	
	Hazard		H	M	L	L	L	L	L	H	M	H	L	L
Sunnyside Farm	FEMA					X	$75,000		$0		$0		$0	
	Hazard		L	L	L	M	L	L	M	H	M	H	L	M
Tackley Farm	FEMA					X	$60,000		$0		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	M
Traveler's Rest - National Historic Landmark	FEMA					X	$165,000		$35,000		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Vinton	FEMA					X	$0		$0		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
White House	FEMA					X	$195,000		$33,000		$0		$0	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L
Winward	FEMA					X	$98,000		$20,000		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Woodbury	FEMA					X	$140,000		$15,000		$0		$0	
	Hazard		L	L	L	L	L	L	L	H	M	H	L	L
Woodlawn	FEMA					X	$0		$0		$0		$0	
	Hazard		L	L	L	L	L	L	M	H	M	H	L	L

Name or Description of Asset		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)	
		X	X	X	X	X								
	HAZARDS		Dam Failure	Drought	Earthquake	Flooding	Hazmat	Landslide	Land Subsidence	Thunderstorm /Hail	Wind/Tornado	Winter Storm	Terrorism	Wildfire
Downtown Charles Town Historic District	FEMA					X	$650,000		$0		$0		$0	
	Hazard		L	L	L	L	M	L	M	H	M	H	L	L
Bollman Bridge, Wernwag or Latrobe Bridge	FEMA					X	$450,000		$0		$0		$0	
	Hazard		L	L	L	M	L	L	L	H	M	H	L	L
Niswarner Tract	FEMA					X	$67,500		$0		$0		$0	
	Hazard		L	L	L	L	L	M	L	H	M	H	L	M

2.3 ASSET INVENTORY: ASSETS MAP



2.4 ESTIMATE LOSSES

§201.6(c)(2)(ii)(B)	[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.

Estimating the losses that may arise from a hazard event both educates local officials as to how to prioritize mitigation projects and speeds up the recovery process. Those community assets at risk of sustaining significant hazard-related losses will likely be higher priorities to protect with mitigation projects. Also, when disaster strikes, loss estimation data can be provided to recovery and damage assessment teams to help in categorizing the losses sustained and assistance needed.

The following figures are *loss **estimates*** and are only intended to guide the development and prioritization of mitigation strategies. These figures should not replace official damage assessments. Further, the figures are subject to change based on inflation, facility upgrades/additions, staff increases/reductions, etc.

METHODOLOGY

Jefferson County used GIS-based mapping overlaid with hazard areas, HAZUS Data, interviews with local representatives and critical facility owners, assigned values based on data collected from the Jefferson County Tax Assessor during original plan development, as well as Worksheet #4 from the Federal Emergency Management Agency's (FEMA) *State and Local Mitigation Planning How-to Guide: Understanding Your Risks,* and adjusted the figures for inflation to estimate the potential dollar losses if the county was to experience the hazard events that are profiled.

Appendix 1 contains loss estimates on a "per-hazard" basis. Loss estimates are depicted in Worksheet #4 from FEMA 386-2. The data from which loss estimates are derived are taken from the specific asset inventory listing. For instance, structural loss is a function of the total replacement value of a structure, contents loss a function of the total contents value within a structure, and so on. Loss estimates are calculated on an asset-by-asset basis and totaled for each hazard identified in 2.1: Identifying Hazards.

Structural loss is determined by multiplying the structural replacement value of each community asset by an estimated percent damage. The percent damage estimate is based on historical hazard events that have occurred (e.g., damage actually sustained

by a facility or damage sustained by nearby facilities). The summation of the resulting loss to each structure represents the "worst-case scenario" total structural loss potential for that hazard on a countywide basis.

Contents loss is determined in much the same way as structural loss. For example, the contents value figure for each asset is multiplied by an estimated damage percentage depicting the damage to the contents within a structure that could occur. Again, the resulting losses are totaled for a countywide loss estimate.

Structure use and function loss is the most detailed calculation completed during the loss estimate phase. The average daily operating costs are multiplied by the estimated number of days the facility could be inoperable and added to any costs incurred for relocation, etc. Again, loss figures for each of the community assets are totaled for a countywide, "worst-case" scenario structure use and function loss for each hazard.

The total hazard-related loss for each individual hazard is calculated by simply adding the structural, contents, and structure use/function losses. Worksheet #4 in Appendix 1 provides total hazard-related loss estimates for the entire county (and, if applicable, municipalities) as well as asset-by-asset.

ESTIMATED LOSSES

Figure 2.4 is a summary of the potential, "worst-case" scenario, hazard-related losses countywide.

Summary of Estimated Losses

Hazard	*Structural Loss*	*Contents Loss*	*Functional Loss*	*Total Loss*
Dam Failure	$6,748,345	$9,820,924	$847,560	**$17,416,829**
Drought	$0	$900,000	$780,000	**$1,680,000**
Earthquake	$0	$1,573,694	$0	**$1,573,694**
Flooding	$6,200,501	$2,924,001	$3,195,140	**$12,319,642**
Hazardous Materials	$0	$235,999	$2,269,740	**$2,505,739**
Landslide	$3,159,807	$617,535	$1,394,290	**$5,171,632**
Land Subsidence	$6,545,446	$1,671,947	$3,126,070	**$11,343,463**
Severe Thunderstorm/Hail	$793,292	$0	$1,105,802	**$1,899,094**
Severe Wind/Tornado	$2,089,031	$0	$4,538,408	**$6,627,439**
Severe Winter Storm	$2,617,287	$0	$13,653,624	**$16,270,911**
Terrorism	$5,072,223	$4,806,023	$3,813,335	**$13,691,581**
Wildfire	$7,444,522	$3,421,768	$3,290,870	**$14,157,160**

Figure 2.4

2.5 ANALYZING DEVELOPMENT TRENDS

§201.6(c)(2)(ii)(C)	[The plan should describe vulnerability in terms of] providing a general discussion of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Careful consideration of land uses and development trends in a whole-of-community approach will assure, as much as possible, that all new development in Jefferson County is properly located, and properly designed with regards to the presence of identified hazards.

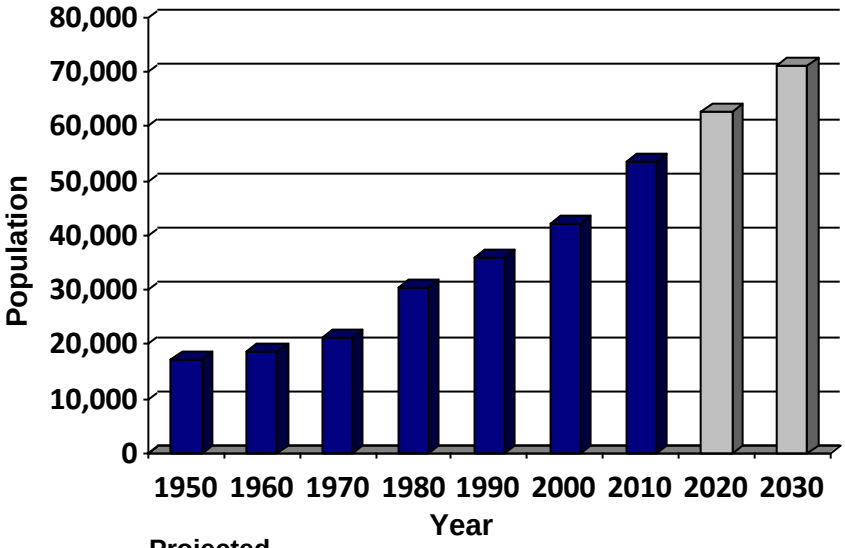
Jefferson County is located in the eastern most point of the eastern-panhandle of West Virginia and is largely rural. The incorporated communities in the county include the Towns of Bolivar and Harpers Ferry, Corporation of Shepherdstown, and the Cities of Charles Town and Ranson. Jefferson County is in transition. For most of its history, the county has been an agricultural community; although numerous farms still operate in the county, the industry has faded somewhat in prominence throughout the county. Other land uses in the county consist of the following:

- ***Industrial and commercial areas –*** The majority of the commercial and industrial areas can be found in the central portion of the county near the incorporated areas, primarily in the Cities of Charles Town and Ranson, as well as along US Route 340 and WV State Route 9.
- ***Residential areas*** – Located primarily in the municipalities, and sparsely throughout the rural areas of the county. “While there has been significant growth within the incorporated communities, it is important to note that Jefferson County is still a rural county. There is slightly more than a four (4) to one (1) ratio of the number of residents who live in the County versus the incorporated municipalities.” (Jefferson County Comprehensive Plan, 2012)
- ***Farmland*** – Agricultural land makes up a large portion of the total land cover in Jefferson County. Small to medium size farms are prominent in the northern and western portion of the county. ‘‘The number of farms in the county has increased in addition to the average value per farm. Total land acreage in farm in the county has decreased, as has the percent of land in farms. This data suggests a trend of smaller, more valuable farms emerging in Jefferson County.” (Jefferson County Comprehensive Plan, 2012)

Specialized land use designations – "Jefferson County has a total of approximately 5,610 acres of park land. The majority of park land in the county is covered by Harpers Ferry National Historical Park and multiple segments of the Appalachian Trail." (Jefferson County Comprehensive Plan, 2012) Jefferson County is home to 34 county, state, federal, municipal and private parks, including: the Appalachian Trail, Bane-Harris Park, Bolivar Children's Park, Bolivar Nature Park, Cullison Park, Evitt's Run Park, Flowing Springs Park, Harpers Ferry National Historical Park, Harvest Hills Park, Hite Road Park, Jefferson Memorial Park, Jefferson County Fairgrounds, Lance/Slusher Park, Leetown Park, Mission Ridge Park, Morgan's Grove Park, Moulton Park, Mt. Mission Park, Ranson Civic Center, Rumsey Monument Park, Sam Michael's Park, Shannondale Springs Wildlife Management Area (WMA), South Jefferson Park, Viola Devonshire Park, Willingham Knolls Park, and well as several historical districts.

"As all communities exist within a larger network of influences, Jefferson County is noticeably affected by regional influences. Although it has been decades since Jefferson County was relatively independent from the effects of the larger Washington D.C. metropolitan influences, with each decade that passes, the County becomes more intertwined into the ever growing Washington D.C. cosmopolitan environment. The easier it becomes to travel into the urban core and the more quality pay careers come to Jefferson County and surrounding communities, the more the physical and psychological distances to opportunities decreases. As a result, Jefferson County is now more closely linked than ever before to the employment centers and housing markets of the Washington metropolitan region. With Jefferson's location 65 miles from downtown Washington D.C., the employment and population growth occurring within the region has, and will continue to directly influence growth and development within the County." (Jefferson County Comprehensive Plan, 2012)

"As can be seen in Figure 2.5, in 2010, the population of Jefferson County was 53,498 which represented a growth of 11,308 or 26.8 percent (26.8%) from 2000. This growth exceeds the 16.4% witnessed by the Washington DC Metropolitan Statistical Area (MSA) and is more than 10 times that of the State of West Virginia's growth rate of 2.5%." (Jefferson County Comprehensive Plan, 2012)



Projected	
2020	62,691
2030	71,208

Figure 2.5

According to the West Virginia University (WVU) – College of Business and Economics, Bureau of Business and Economic Research, this is a trend that is expected to continue. As can be seen above, the projected population for the year 2030 is 71,208. Focusing on the future, this increase in growth requires careful analysis of where these residents will work, shop, live and recreate in relationship to where high and moderate hazard areas have been identified. This increase in population will have a profound impact on infrastructure, the landscape of the county, and county government resources.

The majority of the employment sector in 2010 was comprised of service and government. Residential development is expected to mirror trends in this service sector. According to the U.S. Census, trends between 2006 and 2010 indicate that new home construction in the county is approximately 379 new buildings per year at an average cost of $209,280. Residential construction in the county has slowed somewhat as illustrated in Table 2.7 at right. Local officials should however; remain vigilant in enforcing existing building codes to reduce the number of residential properties located within known flood zones and other hazard areas.

Residential Construction	
Year	**Total Units**
2006	511
2007	402
2008	309
2009	167
2010	96

Table 2.7

The land development trend in Jefferson County over the last 50 years has been suburban style developments with large lots and curved subdivision road designs in the unincorporated portion of the county. This is due largely in part to the proximity of Jefferson County to the Baltimore-Washington Metropolitan Area. Suburbanization from this area has fueled dramatic changes in the county as well as increased pressures for more intense forms of residential and commercial development. The area wide economy has mostly benefited from the associated growth; however, many of the municipalities have become bedroom communities placing strains on the infrastructure and available community services. Several commercial and industrial developments are occurring along WV State Route 9 and US Route 340. These roadways are four-lane, divided highways and are the most heavily traveled within and through Jefferson County, making them attractive to developers and entrepreneurs.

The major employers of the county include: PNGI Charles Town Gaming, Jefferson County Board of Education, Shepherd University, American Public University System, Royal Vendors, Inc., Jefferson Memorial Hospital, Wal-Mart Stores Inc., Department of the Interior (National Park Service), Jefferson County Commission, and the Department of Agriculture.

Future developers should take into consideration the hazards affecting Jefferson County before designing and constructing their sites. Jefferson County contains several areas that are located in identified floodways and floodplains. As such, local officials should consider encouraging/requiring residents to safeguard their structures against the potential damage from flooding. Such safeguards could include the participation in acquisition relocation projects (i.e., buyouts), structural elevation projects, or dry-flood-proofing their homes. As is often the case, widespread mitigation can be enhanced through public education. The public should be given advice on how to safe-proof their properties, as well as what actions they can take to avoid “forcing” another hazard onto their neighbors by developing their property. Such actions have the potential to significantly reduce loss.

The Jefferson County Planning Department is extensively involved in comprehensive land use planning throughout Jefferson County. All of the municipalities in the county also develop zoning ordinances and comprehensive land use plans. These documents generally outline how these communities will continue to develop into the future. Many communities are working on zoning issues that will both benefit development, and serve a mitigative purpose. According to these plans, and the

Jefferson County Development Authority (JCDA) there is a great deal of new development, and limited re-development planned for the future in Jefferson County.

Table 2.8 below is a quick reference summary of some of the major development that has taken place within Jefferson County since the adoption of the 2008 *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*.

Recent Jefferson County Development	
Completion of the 4-lane of Route 9 through Jefferson County to VA border.	Construction of Custom and Border Protection facility.
Harpers Ferry National Historic Park acquires additional property.	Construction of new volunteer fire stations.
Jefferson County Farmland Protection Board acquisition of additional farmland.	Burr Business Park constructed.
Jefferson County adopts new Subdivision Regulations in 2008.	Construction of new high school and elementary schools.
Significant annexations by the Cities of Charles Town and Ranson.	

Source: Jefferson County Comprehensive Plan **Table 2.8**

Annexation has been one (1) response to the rapid growth in Jefferson County. As most of the municipalities in the county are at, or very near build-out, there are not many undeveloped lots available for new development. This coupled with the desire for large lot subdivisions has increased the amount of development on the fringes of the municipalities and in the unincorporated portions of the county. The response by some municipalities in the county, particularly Charles Town and Ranson, to this issue has been to annex the fringe developments and expand their municipal boundaries. This increases the city tax base but also increases the burdens on the cities to provide services and infrastructure. Both Charles Town and Ranson have conducted further annexations since the original plan was adopted in 2008.

Annexation of unincorporated land by the municipalities is having a profound effect on land use planning at the county level. In 2001, West Virginia approved changes to the West Virginia Code (WVC) as it pertains to municipal annexation. Under these new regulations, if a municipality desires to annex property with the cooperation of the property owner, the county cannot prevent the annexation from occurring. According to county planners the issue of annexation and the county's inability to affect decision on this topic has significantly damaged the county's ability to bring "Smart Growth" principles to the unincorporated areas.

Shepherdstown, Bolivar, and Harpers Ferry are also impacted by the same growth challenges as Charles Town and Ranson, however these municipalities are taking different approaches to managing future growth. This is partly due to the fact that they are each constrained by the Potomac or the Shenandoah Rivers as well as having substantial historic areas, which greatly limit the area available for new development. Each of these communities express concern over the rapid development within the county and are all actively seeking to implement land use controls which will retain the small town character of their communities.

Planned Future Development by Municipality

Town of Bolivar

The town of Bolivar is currently at a crossroads, the town is vulnerable to the explosive growth which now threatens the whole of Jefferson County. One (1) of the goals stated in the Bolivar Comprehensive Plan was to limit new construction and preserve or enhance green or open space, and to encourage land use that kept the quiet, small-town character of Bolivar.

The corporate limits of Bolivar include a segment of US Route 340, the town's only access/egress route. While limited access to Bolivar enhances its security, it does leave the town susceptible to massive traffic delays should an accident occur on US Route 340. The ever-increasing traffic on US Route 340 due to growth in other areas of Jefferson County will exacerbate congestion in the future.

Future development planned for the Town of Bolivar includes; trying to restore its previous jail, as well as engineering projects to construct new sidewalks and create rain gardens to assist with storm water projects.

City of Charles Town

The following are future goals of the City of Charles Town as they relate to development and mitigation:

- Provide for the protection of historic sites in all applicable ordinances and regulations.
- Preserve perennial streams by establishing wide buffers at least 25 feet from the stream bank (as measured from the high water mark). Use the buffer area as a receiving location for tree reforestation programs.

- Encourage the use of natural drainage swales over engineered storm water management channels where practical.
- Work with Jefferson County to promote the preservation of critical open spaces within the City, such as steep slopes, wetlands, springheads, stream channels, and the access to the Shenandoah River.
- Require new development to mitigate transportation problems that are the result of its presence.
- Maintain and enhance emergency service response times.
- Encourage the creation of a paid fire department to supplement the efforts of the local volunteer fire departments.
- All new development should have all utilities located underground.
- Subdivision and land development site plans should consider and where appropriate mitigate karst topography features to reduce the impacts of storm water infiltration on groundwater resources.
- There has also been a proposal made to extend US Route 340 as a four (4)-lane highway to Berryville, VA.

Since the beginning of the new millennium, significant changes have occurred in and around the City of Charles Town related to planning and zoning. The most significant of these changes are as follows:

- Construction of the US Route 340 Bypass.
- The annexation of large areas of land by both the City of Charles Town and the City of Ranson.
- The adoption of local annexation policies and growth boundary policies.
- The adoption of updated zoning ordinances.
- The relocation of the Citizens and Independent Fire Companies to new locations.
- Completion of phase one (1) of the Gateway Revitalization Project for the downtown streetscape and utilities to include moving all utilities underground.
- Upgrade of the sewage treatment plant and expansion of its capacity.
- Planned construction of a new County Judicial Center in the downtown area.

Future Land Use Map – City of Charles Town, West Virginia

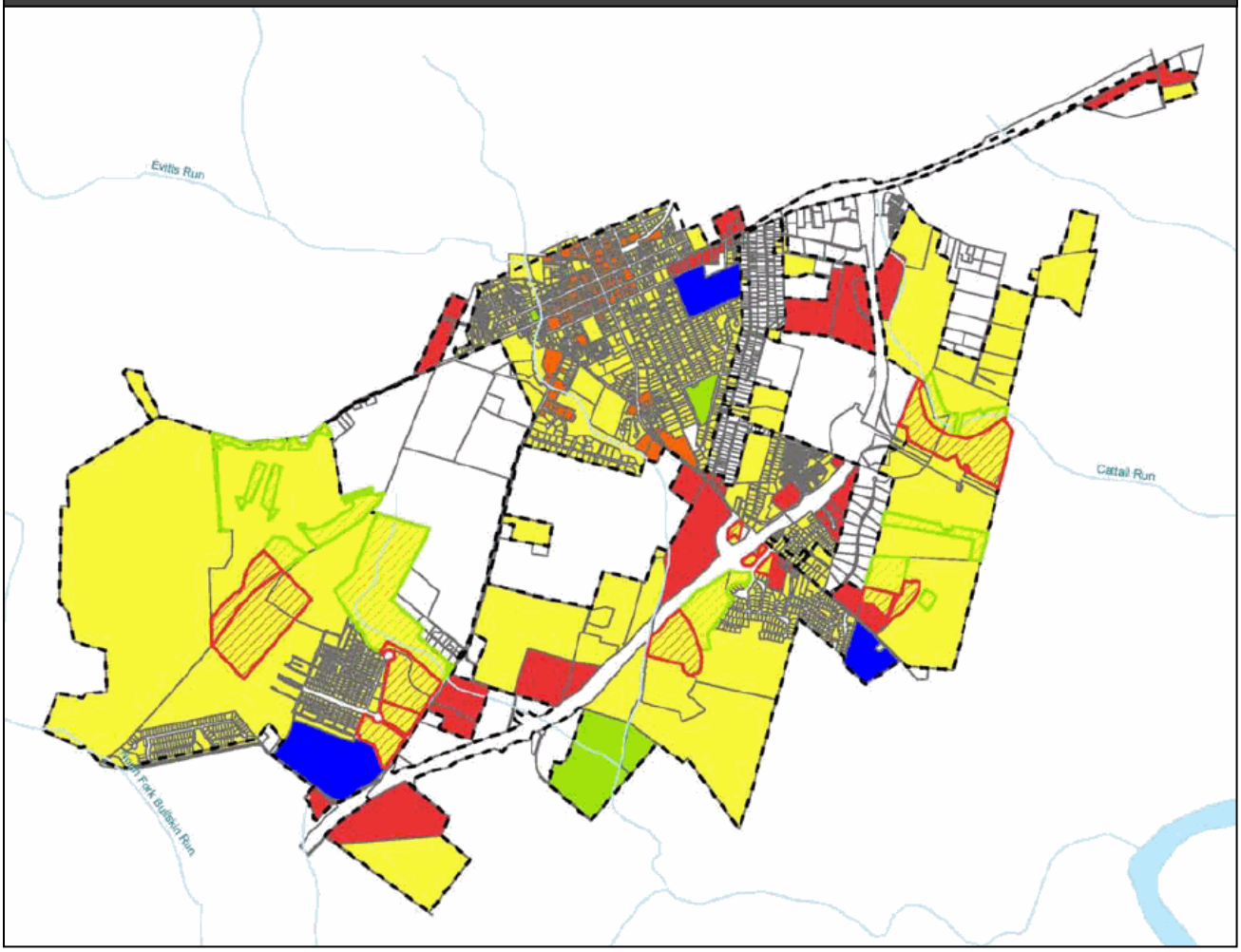


Figure 2.6

Town of Harpers Ferry

Harpers Ferry National Park has acquired additional land as well as the train station in Harpers Ferry. The town is working to reroute a water supply line that goes through Elk Run. The following are future goals of the Town of Harpers Ferry as they relate to development and mitigation:

- To have 40 percent (40%) of the land area in the town under tree canopy within 20 years, as recommended by *American Forests.*
- To preserve and protect the towns historically diverse character and historic integrity for present and future generations.
- To have safe and pleasant access for pedestrians throughout the community.
- To have a street system that is safe to use and provides appropriate access to adjoining land uses with a minimum of adverse impact.
- To ensure a sufficient supply of potable water to the town's current and future residents, including during drought conditions, natural disaster, or public emergencies.
- To control storm water run-off in a manner that protects the natural and built environment, and minimizes peak run-off.
- To provide effective response capability for emergency and non-emergency incidents to ensure the safety of residents, workers, and visitors in the Harpers Ferry-Bolivar service area.

City of Ranson

"Generally, the City has the majority of its private land in residential use with industrial uses located along its southern border with Charles Town and along the abandoned CSX/Norfolk Southern Railroad right-of-way west of Fairfax Boulevard. Commercial operations exist east and west of Mildred Street (WV Route 115) and the Norfolk Southern Railroad on the north edge of the City. There are also commercial uses east of Lancaster Circle between Third and Fifth Avenues. Mixed-use properties exist in different areas throughout the City." (City of Ranson Comprehensive Plan, 2012)

Hollywood Casino at Charles Town Races is the largest employer within the Urban Growth Boundary and Jefferson County. The owners have not requested annexation. Ranson has adopted annexation policies with a stated "urban growth boundary" which includes a significant amount of the County's designed growth corridor.

As part of its annexation policy, the city has stated that it will not entertain annexation requests outside of that designated boundary.

The following are future goals, or projects that are currently underway in the City of Ranson as they relate to development and mitigation:

- Installation of a generator for City Hall and Police Department that will power all computer systems.
- Upgrades have been conducted to the sewage pump stations and emergency power supplying generators have been installed.
- The city now owns 40 acres near the Home Depot to protect Flowing Springs and its floodplain, which will be maintained as open space.
- Developed a revitalization program between Charles Town and Ranson.
- Development of an updated comprehensive plan and zoning ordinances for the city.
- Planned demolition of the foundry off of Mildred Street in 2013 to create more green or open space.
- Upgraded to an EPA Municipal Separate Storm Sewer System (MS-4) designation for storm water regulations.
- Proposed brownfield project will begin at Kidde Plant.
- Charles Town and Ranson are jointly working on a storm water management plan project for Evitts Run Park.
- Creating a new linear park off W. Congress Street planned for completion in 2014.

Corporation of Shepherdstown

The land uses and land use patterns of Shepherdstown are well established. Much of Shepherdstown was developed over 100 years ago. Almost all commercial activity is concentrated in just two (2) areas and many of the civic and semi-public (community, civic, churches) uses also located in proximity to these two (2) areas. The residential areas are relatively uniform and dominated by single family houses. A variety of houses exist ranging from grand old homes to modest log cabins and bungalows and a few mobile homes. The size and nature of the downtown business district prohibits any major commercial retail or industrial developments. The newly-annexed area on the southwestern edge of town may offer some opportunity for land use planning but the long-term institutional nature of the property's ownership (Catholic Church) seems to

make it more likely that this property will not be developed or will be developed as institutional use sometime in the future. Other land use changes may occur by infill development on vacant lots, replacement of existing structures with new structures and mix of uses, conversions of use under zoning regulations and conversion of property to higher density use.

The presence of the Shepherd University is a major force in Shepherdstown. Shepherdstown has come to be known as a college town, the university's enrollment is greater than the population of Shepherdstown. It is an economic presence which stimulates and sustains businesses, and at the same time puts a strain on parking resources in the downtown and residential areas.

The following are future goals, or projects that are currently underway in the Corporation of Shepherdstown as they relate to development and mitigation:

- Shepherdstown has added a new Town Hall/Police Department.
- Shepherdstown has conducted annexations.
- Constructing two (2) new water tanks (700,000 gallons each).
- Installation of new high service pumps at the new tanks.
- New wastewater treatment plant is now in use and has two (2) earthquake proof buildings.
- New sewage pump station at Maddex Farm and at the main with a backup generator system.
- Underground section of electric now running to sewage plant.
- In the process of designing a new water plant with generator backup power.
- Planning to expand the sewage collection system.
- Emergency notification system for water system customers is in place.
- Shepherd University completed construction of a pedestrian tunnel under Duke Street in 2012.

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3.0 LOCAL HAZARD MITIGATION GOALS

3.0 LOCAL HAZARD MITIGATION GOALS

§201.6(c)(3)(i)	[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

STAKEHOLDERS (Core Planning Committee)

Jefferson County Homeland Security and Emergency Management (JCHSEM) in coordination with the County Commission of Jefferson County compiled a representative group of stakeholders to be known as the Core Planning Committee (CPC) for the implementation and updating of the county's Multi-Jurisdictional All Hazards Mitigation Plan. A listing of these stakeholders can be viewed in the *Description of the Planning Process* which is contained in Section 1 of this plan.

METHODOLOGY

In January of 2008, JCHSEM in conjunction with members of the CPC, and with the assistance of a consultant, updated the Jefferson County Hazard Risk Assessment (HRA). The updated HRA includes not only an updated listing of the hazards to which the county is susceptible, but also an analysis of the county's vulnerability to these hazards. Vulnerability was examined on several levels, including economic, environmental, and social. The updated HRA includes an inventory of the county's assets, including critical facilities, economic assets, vulnerable populations, etc., and indicates the potential loss each of the assets could incur as a result of the identified hazards. The updated HRA also includes a brief analysis of development trends in the county. In short, the updated HRA provides a factual, numerical foundation on which to base the Action Plan update.

Using the findings from the updated HRA as a guide, the CPC was able to update existing, and identify new goals, objectives and strategies to mitigate the hazard risks identified in the Jefferson County HRA. Goals and objectives were updated and/or developed in a working session with the CPC with a period provided for comment and revision. Once the final goals and objectives were determined, the CPC met again to update and/or develop the mitigation strategies that would aid the county in meeting the goals and objectives identified in the plan. Strategies were selected using the information obtained from the updated HRA, which identified existing programs and shortfalls related to mitigation activities.

These meetings were made known to the general public, neighboring communities, businesses, academia and other relevant private and non-profit organizations via articles in local newspapers. As a result of these meetings and comments received from FEMA Region III on the original mitigation plan, JCHSEM, and several of the stakeholders listed in the planning process section determined the areas of the plan that needed to be updated, and those that did not.

GOALS, OBJECTIVES, AND STRATEGIES

Jefferson County Homeland Security and Emergency Management (JCHSEM) in coordination with the Core Planning Committee (CPC) determined several goals, objectives, and strategies to mitigate the hazard risks identified in the county's updated HRA. These mitigation actions were developed based on projects thought to be most feasible and beneficial to hazard reduction.

These projects are hereby listed with the jurisdictions they will benefit, as well as a timeframe for completion, funding source and cost estimate, and coordinating agency to oversee their implementation. Many of these strategies (such as the development of information displays) also address multiple hazards. For the purposes of this document, each project is listed with the hazard it *primarily* addresses. It is important to note that not all hazards appearing in the updated HRA have a significant number of mitigation strategies suggested. For many hazards, public awareness is the most feasible, cost effective and beneficial strategy.

Goals, objectives, and strategies are only listed in this section as a "quick reference guide" for users of the plan. Strategies – which are the mitigation projects under consideration – are organized both by hazard and jurisdiction. A simple update status statement is also listed for each project. Projects can be classified as: Completed, Deleted, Deferred, Unchanged, or On-Going. Detailed discussions on the implementation and prioritization of mitigation projects, including an explanation of each status indicator, can be found in Section 4.0.

Mitigation strategies fall into several categories. Following, each strategy is listed with the category to which it belongs. The categories of mitigation strategies are:

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

Goal 1: Reduce the potential for significant damages as a result of dam failures in Jefferson County.

Objective 1.1: Reduce the probability of significant flood damage and loss of life as a result of a dam failure.

Strategy 1.1.1: During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of West Virginia.

Status: NEW STRATEGY

Strategy 1.1.2: Coordinate with the WVDEP – Dam Safety Division, to conduct regular safety inspections of existing dams in Jefferson County.

Status: NEW STRATEGY

Strategy 1.1.3: Develop a notification system that can be utilized to notify residents downstream of large dams, of actions to take before a dam failure, if lead time exists.

Status: NEW STRATEGY

Goal 2: Protect Jefferson County's agricultural assets and local water supply from the negative effects of drought.

Objective 2.1: Increase the stability of the public drinking water supply in Jefferson County.

Strategy 2.1.1: Provide for an emergency backup power supply at all water treatment facilities in Jefferson County.

Status: **ON-GOING** Generators have been installed at some of the water and wastewater treatment facilities. A Prime Power Survey was completed for all facilities within Jefferson County PSD, Charles Town Utilities, and the Corporation of Shepherdstown. A Prime Power survey still needs to be completed for the Town of Harpers Ferry, and Jefferson Utilities.

Objective 2.2: Increase public awareness as to the agricultural effects of drought, as well as the ramifications to the public water supply.

Strategy 2.2.1: Develop an informational brochure to distribute to local farmers and residents, encouraging citizens to take water saving measures.

Status: **COMPLETED & ON-GOING** NRCS, Farm Services and USDA distribute information regularly. Public service announcements are also made regularly on local radio stations.

Strategy 2.2.2: Consider passing ordinances to prioritize or control water use, particularly for emergency situations such as firefighting.

Status: **ON-GOING** A copy of the Extension Service's Drought Management Handbook was obtained. The Jefferson County EOP now has a drought annex.

Objective 2.3: Increase water supply potential across the county by encouraging water utilities to undertake partnerships.

Strategy 2.3.1: Develop interoperability and system interconnects between the water systems to ensure continuity of water distribution capabilities.

Status: **NEW STRATEGY**

Goal 3: Increase preparedness throughout Jefferson County regarding the potential effects of earthquakes.

Objective 3.1: Educate the public as to the potential for earthquakes in West Virginia, specifically Jefferson County.

Strategy 3.1.1: Develop a section of the website explaining the potential for earthquakes, as well as the potential damages from those earthquakes. This information should include measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

Status: **COMPLETED & ON-GOING** Informational brochures have been developed and displayed at various civic events. A link to FEMA's earthquake information has been added to the JCHSEM website.

Strategy 3.1.2: Encourage the implementation of structural mitigation techniques such as wall bracing, reinforcing walls with fiber materials, the installation of dampers or vibration isolation bearings in new construction.

Status: **DELETED** The CPC has elected to remove this strategy.

Objective 3.2: Lessen the potential for secondary effects, such as a large fire, after an earthquake event in Jefferson County.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas to critical infrastructure throughout the county as soon as earth movements are felt.

Status: **NEW STRATEGY**

Strategy 3.2.2: Coordinate with WVDEP – Dam Safety to inspect all dams following an earthquake.

Status: **NEW STRATEGY**

Goal 4: Reduce the negative effects of flooding in Jefferson County.

Objective 4.1: Target owners of properties within identified hazard areas for additional outreach regarding mitigation and disaster preparedness.

Strategy 4.1.1: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).

Status: **COMPLETED & ON-GOING** Completed yearly, the JCHSEM, as a part of their requirements for the CRS of the NFIP, mails letters of notice to residents within the floodplain on repetitive loss areas about property protection and flood insurance. Since FEMA flood maps changed, there are new addresses that are in the floodplain.

Strategy 4.1.2: Continue to hold local courses on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.

Status: **COMPLETED & ON-GOING** Held yearly, Insurance Services Office (ISO) comes to the community, as requested and paid for by the County to teach courses about the NFIP to Insurance Agencies, Real Estate Agents and Banking institutions. The JCHSEM Director reported that a class was taught in September of 2011 for insurance agents.

Objective 4.2: Evaluate and update existing floodplain ordinances to meet or exceed the NFIP standards.

Strategy 4.2.1: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.

Status: **COMPLETED** The county's new ordinance is being used as the model ordinance for the state. It was reported that new ordinances were adopted December 18, 2009 by the Jefferson County Commission, as well as all municipalities.

Objective 4.3: Improve the enforcement of existing floodplain regulations.

Strategy 4.3.1: Provide additional training to county and municipal development officials on NFIP requirements.

Status: **COMPLETED & ON-GOING** A workshop for local officials was held in January, 2011, all county and municipalities in Jefferson and the Eastern Panhandle were invited. A meeting was also held in January of 2010 regarding new digital maps on FEMA's website. A Risk Map Meeting was held in June, 2012, attended by JCHSEM, Engineering Department, Planning Department, municipal representatives, as well as FEMA.

Strategy 4.3.2: Initiate storm water management projects that tie into the Chesapeake Bay Watershed initiatives.

Status: NEW STRATEGY

Objective 4.4: Ensure that flood Insurance Policies remain affordable through county and municipal government programs.

Strategy 4.4.1: Support Jefferson County's efforts to continue the CRS program.

Status: **COMPLETED & ON-GOING** Jefferson County submitted an application to enter the CRS Program in 2005. A letter was received, stating the County was being recommended to FEMA for entry into the program in 2006. County has been named a CRS Community as a Class 9. The Governor presented County Commission with an award as the first County in West Virginia to become a CRS Community in August, 2007. Jefferson County received a plaque in the Spring of 2012 as a Class 8 CRS Community.

Strategy 4.4.2: Provide training to municipalities on the CRS program and encourage them to participate.

Status: **COMPLETED & ON-GOING** Jefferson County has been upgraded to a Class 8 Community, for a 10% reduction to flood insurance premiums. CRS was covered in a workshop that was held in January, 2011.

Strategy 4.4.3: Obtain updated information on the number of NFIP policyholders in Jefferson County and its municipalities.

Status: **ON-GOING** This information is received yearly from the WVDHSEM Mitigation and Recovery Branch. The report (AW-242 Form) is generated by the WVDHSEM.

Strategy 4.4.4: Coordinate with the USGS on the installation of river gauges in the Potomac River near Shepherdstown.

Status: NEW STRATEGY

Objective 4.5: Identify all repetitive loss structures throughout the county.

Strategy 4.5.1: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.

Status: **COMPLETED & ON-GOING** Conducted yearly. An updated list (January 31, 2003) of repetitive loss properties was obtained from ISO (Insurance Services Office) for properties located in the unincorporated areas of the County: ISO operates the National Flood Insurance Program for FEMA. There are 20 properties identified as repetitive loss properties. Of these, two properties cannot be identified by their descriptions, one no longer has a structure on the property as it was destroyed in the last flood, four owners were offered mitigation, but were not interested, three are not primary residences, three were acquired under HMGP #DR-1168 and

are now managed as open space, one was elevated to the Base Flood Elevation (BFE) under HMGP #DR-1168, one owner has shown no interest in mitigation efforts, another was elevated to the BFE, paid for by the property owner. The remaining properties are prime candidates for mitigation if the property owners are interested. Staff of JCHSEM visits each repetitive loss property to map them, take pictures, and gather additional information. Additionally, staff confirms open space compliance during these visits. The last visit was completed in the summer of 2012.

Strategy 4.5.2: Develop a database of information on all repetitive loss properties including maps.

Status: **COMPLETED** This project has been completed by the Jefferson County GIS/Addressing Office.

Strategy 4.5.3: Identify owners of repetitive loss properties who are interested in participating in future property acquisition and relocation projects.

Status: **UNCHANGED** HMGP funds could become available statewide for mitigation projects after each Federally declared disaster. Properties would need to meet FEMA Cost/Benefit Ratio, and the owner would need to request mitigation. All considered projects must be approved by WVDHSEM, FEMA, and the local jurisdiction. New projects will need to be considered through the Engineering Department. One (1) additional property was mitigated in 2011, the property was returned to its natural condition, and will be managed as open space.

Objective 4.6: Update flood hazard mapping.

Strategy 4.6.1: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.

Status: **COMPLETED & ON-GOING** FEMA mapping has been completed. The Map Modernization Program has been replaced with the RiskMAP program at FEMA. This program provides communities with flood information and tools they can use to enhance their mitigation plans and better protect their citizens.

Objective 4.7: Assess vulnerability of transportation systems and assets located in hazard areas.

Strategy 4.7.1: Work with WV Division of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.

Status: **UNCHANGED** JCHSEM has identified all roads that are regularly submerged by flooding.

Goal 5: Take measures to lessen the probability and severity of hazardous materials incidents in Jefferson County.

Objective 5.1: Conduct a Hazardous Materials Survey or Commodity Flow Study to better understand the nature and extent of hazardous materials risks throughout the county.

Strategy 5.1.1: Apply for Hazardous Materials Emergency Preparedness (HMEP) grant from WVDHSEM to finance the development of a Commodity Flow Study to determine what hazardous materials are used, stored, and shipped through the county.

Status: **COMPLETED** The Jefferson County LEPC conducted a countywide Commodity Flow Study in 2007 to identify all hazardous materials that are either stored or traveling through the county and its municipalities. That plan was updated in 2012 and shared with the emergency responder community.

Strategy 5.1.2: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Jefferson County and the City of Ranson.

Status: **COMPLETED** The Jefferson County LEPC conducted a commodity flow study in 2007. Using the results of the study, the LEPC decided to develop a Propane (LP Gas) Risk Assessment, which was completed in 2009. The Commodity Flow Study was updated in 2012.

Objective 5.2: Increase public safety and awareness with regards to hazardous materials incidents.

Strategy 5.2.1: Increase education and awareness about shelter-in-place opportunities. Jefferson County LEPC to develop and deliver information to all county residents through community groups, publications on website, information on how to shelter in place and when it is appropriate to do so.

Status: **COMPLETED & ON-GOING** The Jefferson County Board of Education has developed a School Crisis Plan for man-made or acts of God disaster events. Two new sections have been added to the Plan- Terrorism and Sheltering in Place. Additionally, they are training school personnel about sheltering in place and have ordered supplies to keep in the schools for such emergencies. An exercise for shelter in place is being held when the teachers and students get back to school in August. Exercises will be held in the fall of 2004 at the schools.

Strategy 5.2.2: Consider the installation of a Dynamic Message Board on the new section of Route 9.

Status: **NEW STRATEGY**

Strategy 5.2.3: Install Uninterruptible Power Supply (UPS) systems on traffic signals.

Status: **NEW STRATEGY**

Objective 5.3: Ensure adequate training and resources for emergency organizations and personnel.

Strategy 5.3.1: Teach Community Emergency Response Team (CERT) classes in Jefferson County.

Status: **COMPLETED & ON-GOING** The CERT Program Coordinator reported that this is an on-going strategy, with a class to be taught in the Spring of 2013. Approximately 200 people have started the training; about 175 have finished it; and about 50-60 of those are NIMS trained.

Goal 6: Protect Jefferson County's population and critical assets from Landslides.

Objective 6.1: Enact ordinances to limit development in areas prone to landslide.

Strategy 6.1.1: Develop ordinances requiring logging companies to clean and replant areas that they log. The ordinance should include the amount of replanting that is expected.

Status: **ON-GOING** The Director of Planning and Zoning reported that there is a buffer requirement. This issue is also covered in Subdivision Ordinances.

Objective 6.2: Provide information to the public on best methods to protect mountainous properties from landslides.

Strategy 6.2.1: Develop and distribute educational materials concerning erosion and sediment control and slope stabilization to assets located in landslide prone areas, including the proper installation of erosion control blankets, turf reinforcement mats, silt fences, filter bags, channel dikes and dams and turbidity barriers.

Status: **ON-GOING** The Blue Ridge Watershed Coalition and the Elk Run Watershed Group have initiated this strategy. The issue is also covered in the county's sub-division ordinance.

Objective 6.3: Restrict future development in landslide prone areas.

Strategy 6.3.1: Consider implementing open space designations in landslide prone areas, to keep those areas undeveloped.

Status: **NEW STRATEGY**

Objective 6.4: Consider developing vegetation placement and management plans.

Strategy 6.4.1: Consider planting various types of vegetation in landslide prone areas to increase soil stability through root length and strength and by absorbing precipitation.

Status: **NEW STRATEGY**

Goal 7: Reduce the potential for damages as a result of Land Subsidence.

Objective 7.1: Protect critical infrastructure.

Strategy 7.1.1: Conduct a detailed vulnerability analysis on the county's infrastructure to see what losses could be incurred during a land subsidence event (in pertinent areas).

Status: **UNCHANGED** This strategy has not yet been initiated, as a funding source has yet to be identified.

Strategy 7.1.2: Establish a long-term monitoring program to track the occurrence and distribution of subsidence. Even if groundwater withdrawals were reduced to the level of estimated annual recharge in the near future, primary and residual subsidence would continue for 5 to 10 years.

Status: **DELETED** The CPC has decided to delete this strategy.

Objective 7.2: Restrict future development in land subsidence prone areas.

Strategy 7.2.1: Consider implementing open space designations in land subsidence prone areas, to keep those areas undeveloped.

Status: **NEW STRATEGY**

Objective 7.3: Conduct Hydrological monitoring in land subsidence prone areas.

Strategy 7.3.1: Develop a system to monitor groundwater levels in subsidence-prone areas, as groundwater levels directly influence karst topography, which may lead to sinkholes and subsidence issues.

Status: **NEW STRATEGY**

Goal 8: Reduce damages from severe thunderstorms and hail in Jefferson County.

Objective 8.1: Increase public awareness that a severe thunderstorm and/or hailstorm are imminent.

Strategy 8.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm and hailstorm conditions.

Status: **COMPLETED & ON-GOING** Jefferson County utilizes a new program of the NWS called Weather Ready Nation. Weather radios and local media are used to warn residents. JCECC is in the process of installing Computer Aided Dispatch (CAD). JCHSEM has begun utilizing NIXLE as a service where residents can sign up to receive emergency alerts via email and/or text message.

Strategy 8.1.2: Encourage the use of NOAA Weather Radios that continuously broadcast NWS forecasts and provide direct warnings to the public.

Status: **COMPLETED & ON-GOING** Utilization of Weather Ready Nation and local media outlets. JCECC is in the process of installing a CAD system, and JCHSEM is utilizing NIXLE.

Strategy 8.1.3: Continue to conduct National Weather Service Storm Spotter classes.

Status: **COMPLETED & ON-GOING** JCHSEM continues to sponsor storm spotter classes as often as the NWS can provide them. A Flood Storm Spotter Class was held in March of 2012. A Basic Storm Spotter Class was held in March of 2011, and a Winter Storm Spotter Class was held in November of 2010.

Strategy 8.1.4: Ensure that surge protection, such as surge protectors and grounding, has been installed on all critical electronic equipment owned by county government.

Status: **COMPLETED** Surge protection has been installed.

Objective 8.2: Decrease the probability of utility failures as a direct result of severe thunderstorms.

Strategy 8.2.1: Coordinate with the power company to periodically trim trees near power lines to prevent limb breakage and power failures.

Status: **ON-GOING** The power company continues to make efforts to clear right of ways.

Objective 8.3: Minimize damage to public and private structures as a result of hailstorms.

Strategy 8.3.1: Encourage the use of laminated glass in window panes during all new construction.

Status: **ON-GOING** During new construction.

Goal 9: Reduce damage from severe wind and tornadoes in Jefferson County.

Objective: 9.1: Increase public awareness that severe wind and tornadoes are imminent.

Strategy 9.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

Status: **COMPLETED & ON-GOING** Jefferson County utilizes the NWS, NOAA, and the EAS to warn local residents.

Strategy 9.1.2: Conduct upgrades on the Sheriff's Mobile Command Center vehicle.

Status: **COMPLETED & ON-GOING** Radio consoles and other equipment have been installed.

Objective 9.2: Minimize future damage from severe wind or tornadoes throughout Jefferson County by increasing control over construction activities.

Strategy 9.2.1: Reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.

Status: **COMPLETED & ON-GOING** Current building codes require tie downs for mobile homes.

Objective 9.3: Evaluate existing shelters to determine adequacy for current and future populations.

Strategy 9.3.1: Ensure that all shelters have adequate emergency power resources. Churches and other facilities that maybe used as shelters should consider installing backup generators.

Status: **ON-GOING** The local chapter of the ARC reported that MOUs are in place with schools, the JCHD, and JCHSEM. The ARC will be using churches as shelters as much as possible. The Chapter's Go book was updated in 2010 and is now a living document. The ARC needs to complete Prime Power Surveys for all ARC shelter facilities. It was reported that Prime Power Surveys have been completed on county schools. The Jefferson County Health Department has Point of Dispensing (POD) sites located throughout the county.

Strategy 9.3.2: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and JCHSEM.

Status: **ON-GOING** The Eastern Panhandle Chapter of the American Red Cross maintains information on the site of each approved shelter. They also have information on how many people can be housed or fed at the site and availability of back-up power resources/available there. They are prepared to meet with the JCHSEM on an annual basis if requested.

Goal 10: Reduce the effects of severe winter storms in Jefferson County.

Objective 10.1: Minimize future damage from severe winter storms throughout Jefferson County by increasing response capabilities.

Strategy 10.1.1: Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal, also develop a Debris Management Plan that can be implemented following a disaster occurrence.

Status: **COMPLETED & ON-GOING** During the December 2010 snowstorm, the EOC was able to gather a good list of private local contracts that were willing to move snow, no official MOUs are in place. These resources have also been added to the Jefferson County Resource Database.

Objective 10.2: Educate the general public on proper procedures to take to prepare for a winter storm.

Strategy 10.2.1: Develop a part of the website that describes the proper procedures to take to safeguard against and prepare for winter storms.

Status: **COMPLETED & ON-GOING** Jefferson County included weather related preparedness brochures as well as Business Continuity Planning information in their display at the 2003-2012 Jefferson County Fairs and other public events. Information included the FEMA Business Disaster Planning Guide, a booklet that was prepared for the Business Continuity Planning Workshops locally and information from the Institute for Business and Home Safety.

Strategy 10.2.2: Work with WVDHSEM and FEMA to develop a long term recovery plan.

Status: **NEW STRATEGY**

Objective 10.3: Ensure a backup power supply for major agricultural producers and dairies.

Strategy 10.3.1: Encourage agricultural producers and dairies to plan for power outages and install backup power supplies. Conduct an assessment of the applicability of renewable energy sources as a potential backup power supply.

Status: **NEW STRATEGY**

Strategy 10.3.2: Pre-wire critical facilities for generators, and provide backup generators for fire departments that do not yet have them.

Status: **NEW STRATEGY**

Strategy 10.3.3: Conduct prime power surveys for all critical infrastructure.

Status: **NEW STRATEGY**

Goal 11: Protect the general public in Jefferson County from potential terrorist events.

Objective 11.1: Increase countywide preparedness for terrorist attacks.

Strategy 11.1.1: Develop and/or enhance terrorist incident response annexes in the county Emergency Operations Plan (EOP).

Status: **COMPLETED** This strategy has been completed.

Strategy 11.1.2: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.

Status: **COMPLETED & ON-GOING** Informational brochures are distributed at fairs, festivals, public speaking engagements, and during National Preparedness Month in September.

Strategy 11.1.3: Coordinate with local media to alert the public as to the current hazard level.

Status: **DELETED** The CPC decided to delete this strategy.

Objective 11.2: Enact response programs to cope with terrorist attacks should they occur.

Strategy 11.2.1: Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.

Status: **COMPLETED** Jefferson Memorial Hospital (JMH) has a level 4 trauma center, which can be utilized to stablize patients and divert. The hospital can keep 25 people daily, and a surge plan has been developed by JMH.

Strategy 11.2.2: Continue education and training efforts of first responders and emergency personnel.

Status: **ON-GOING** This is conducted countywide on an ongoing schedule through RESA.

Strategy 11.2.3: Consider providing heightened security at public gatherings, special events, hazardous materials facilities and critical community facilities and industries.

Status: **UNCHANGED** A discussion about the PCII-Protected Critical Information on Schools was had amongst CPC members, and how information becomes PCII and is protected.

Strategy 11.2.4: Make arrangements or otherwise establish mass morgue facilities to be used following potential mass casualty events.

Status: **ON-GOING** The county is currently in the process of developing a mass fatality plan and GAP analysis. A Mass Fatality Planning Committee has also been established, spearheaded by the JCHD. JMH is currently looking into MOUs for additional morgue space.

Goal 12: Protect Jefferson County's population, critical infrastructure and forests from wildfires.

Objective 12.1: Educate the public on how to avoid starting wildfires.

Strategy 12.1.1: Create displays for children's programs that teach fire safety. Examples of information to be used would be similar to that on the FEMA for kids CD and/or the Sparky Fire Safety Program.

Status: **COMPLETED & ON-GOING** The JCHSEM booth at the 2003-2012 Jefferson County Fairs has included information on Fire Safety (NFPA Sparky the Fire Dog Coloring and Activity Books). Disaster Preparedness Coloring Books, Robbie and Julia-The Disaster Twins, and Herman, PIC Storybooks, Exit and Hydro Activity Books, and Coloring Books from the Home Safety Council.

Strategy 12.1.2: Encourage residents in rural areas to inspect and clean their chimneys at least once a year.

Status: **UNCHANGED**

Strategy 12.1.3: Encourage residents and businesses to maintain their property in or near forested areas (including short grass; thinned trees and removal of low hanging branches, cleaning of dead or dry leaves, needles, twigs, etc.), and to create a buffer zone (defensible space) between structures and adjacent forests.

Status: **COMPLETED & ON-GOING** A Property Safety Ordinance was adopted on January 7, 1999 and amended on May 20, 2010.

GOAL 13: Reduce or eliminate the negative effects of various other hazards in Jefferson County, and improve upon the protection of the citizens of Jefferson County from all natural and man-made hazards.

Objective 13.1: Develop and distribute public awareness materials about natural hazard risks, preparedness, and mitigation.

Strategy 13.1.1: Create displays for use at public events (health fair, public awareness day, and county fair). This display would include pictures and information, such as that contained in FEMA's Retrofitting for Homeowners Guide, Elevating Your Flood Prone Home, Elevating Residential Structures, and information on the NFIP.

Status: **COMPLETED & ON-GOING** The JCHSEM's display at the Jefferson County Fair includes mitigation information. The display highlights the Jefferson County Risk Assessment and Mitigation Plan, flood homeowner's and business mitigation information, information about elevating homes, retrofitting information, and NFIP. They also provide Flooding handouts. The JCHSEM has a 10'X10' display and two tabletop display boards that are used for events. Flood Mitigation materials are available any time that the display is up, as well as from the Homeland Security Office.

An Animals in Disaster Display was developed and is used at the Jefferson County Fair and Bark in the Park events. It includes information about domestic pets, agricultural animals and horses. The new table top display was used at the Jefferson County Fair and at Furry Fun Fest at Briggs Animal Adoption Center in 2004.

In addition to the information booth at the fairs and festivals, the JCHSEM also conducts lunch and learn sessions during national preparedness month. The county won the "United We Stand" award from FEMA Region III in 2010.

Strategy 13.1.2: Create materials that are targeted towards tourist populations. Work with the Jefferson County Convention and Visitors Bureau, the US Park Service and others to alert tourists to potential natural hazard areas and what to do if a natural or man-made hazard occurs during their visit to Jefferson County.

Status: **ON-GOING** This strategy has been initiated, however; is still a work in progress.

Strategy 13.1.3: Send news releases to local newspapers, radio, TV stations, and social media outlets about pre-disaster information. Our media strategies are designed to reach all areas of Jefferson County.

Status: **COMPLETED & ON-GOING** The following media is used for distribution of information:

- Jefferson County Government (Channel 17), Charles Town,
- JCS Television (Channel 18), Charles Town,
- Comcast Cable, Ranson, WV
- NBC-25 Television, Hagerstown, MD
- WEPM 1340 AM, Martinsburg, WV (EAS)
- WKMZ 95.9 FM, Martinsburg, WV
- WLTF 97.5 FM, Martinsburg, WV (EAS)
- WXVA 1550 AM, Winchester, VA
- WZFM 98.3 FM, Winchester, VA
- WSHC 89.7 FM, Shepherd University
- WRNR 740 AM, Martinsburg, WV
- WUSQ 102.5 FM, Winchester, VA
- WVEP 88.9 FM, WV Public Radio, Shepherdstown, WV
- The Spirit of Jefferson Newspaper, Charles Town, WV
- The Journal Newspaper, Martinsburg, WV
- The Herald-Mail Newspaper, Hagerstown, MD
- The Shepherdstown Chronicle, Shepherdstown, WV
- The Shepherdstown Observer, Shepherdstown, WV
- The Frederick News-Post Newspaper, Frederick, MD
- The Morgan Messenger, Berkeley Springs, WV
- The Quad State Business Journal, Hagerstown, MD
- The Buyers Guide, Martinsburg, WV
- The Gazette, Martinsburg, WV
- JCHSEM facebook page
- Twitter
- Nixle

Strategy 13.1.4: Create a public speaking series to include topics such as types of natural disaster and risk, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple type of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, Boy and Girl Scouts, etc.

Status: **COMPLETED & ON-GOING** The following program topics are available to groups:

- General Information about the JCHSEM Programs.
- Citizen Corps.
- CERT (Community Emergency Response Teams).
- Lunch N Learn Sessions (one hour or less on topic of choice).
- The National Flood Insurance Program.
- Risk Assessment/All Hazards Plan.
- Business Continuity Planning.
- Family Disaster Plans.
- Family Disaster Supply Kits.

- Animals in Disaster.
- NOAA Weather Radios (Do you know the difference between a Watch and a Warning?).
- Flood Safety, Tornado Safety, Winter Storm Safety, Fire Safety, Lightening & thunderstorm Safety.

Kids Programs (Fire Safety with Sparky the Fire Dog or Danger Ranger, Thunderstorm Safety, Tornado Safety, Hurricane Safety, Flood Safety, Winter Storm Safety, Earthquake Safety, How to make a Family Disaster Kit, Family Disaster Plans, Animals in Disaster).

Strategy 13.1.5: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.

Status: **COMPLETED & ON-GOING** The American Red Cross will hold a variety of courses, including: Adult, Infant and Child CPR, AED, Basic First Aid, and basic disaster classes at the Red Cross Office and at other locations throughout the county. All classes will be available on-line in the near future.

Strategy 13.1.6: Update the county website to provide hazard related information that is easily accessible. The JCHSEM website has information about disaster preparedness and related activities. The plan is to expand and update the website as needed and as appropriate in a timely manner to benefit all County residents.

Status: **COMPLETED & ON-GOING** The county's Website at www.jeffersoncountywv.org is maintained by the County Commission administrative staff. The Homeland Security portion of the website is updated as necessary.

Strategy 13.1.7: Continue to work with the Jefferson County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.

Status: **COMPLETED & ON-GOING** This strategy is ongoing through the Fire Prevention Month program in October. JCHSEM hands out a wide variety of fire safety materials from the National Fire Protection Association (NFPA).

Strategy 13.1.8: Continue to work with non-governmental organizations (youth services, professional, religious) to promote mitigation education and awareness.

Status: **COMPLETED & ON-GOING** These programs and workshops have been held repeatedly over the past 9 years in a variety of settings (i.e., Resilient Neighbors Network). Most recently they have focused on Whole of Community; Whole of National initiative that DHS/FEMA is promoting. Jefferson County was just named as a Pilot Community of the Resilient Neighbors Network.

Strategy 13.1.9: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.

Status: **COMPLETED & ON-GOING** These resource centers have been established in the local libraries as a requirement for the Community Rating System activities. Additionally there is a media center within the Office of Homeland Security that contains a section on Flooding, with additional sections on Disaster Preparedness, Fire and Fire Safety, Weather, a Children's section, Counter Terrorism and other mitigation.

Objective 13.2: Provide protection for domestic pets, livestock and wildlife during and following disasters in Jefferson County.

Strategy 13.2.1: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife). Establish a committee representative of all areas of the county that will include veterinarians, pet store owners, the Humane Society, animal shelters, the WVU Extension Service and other interested parties to work on animal - specific evacuation and sheltering needs.

Status: **COMPLETED & ON-GOING** The county purchased an Animals in Disaster Trailer with supplies for the Region as a Rapid Response Trailer for pets in 2012. A funding source has not yet been identified for training volunteers. A regional "Eastern Panhandle Animals in Disaster Plan" has also been developed.

Objective 13.3: Ensure adequate training and resources for emergency organizations and personnel.

Strategy 13.3.1: Meet with groups of potential volunteers to attempt to increase the number of trained responders. Groups will include all county fire departments, doctors, nurses and EMS personnel who may become first responders in a bio-terrorism event.

Status: **COMPLETED & ON-GOING** JCHSEM has encouraged volunteers to take training from the ARC and MRC. CERT classes are being given by JCHSEM to local residents.

Strategy 13.3.2: Incorporate Light Detection and Ranging (LIDAR) mapping into current GIS mapping.

Status: **NEW STRATEGY**

Objective 13.4: Provide training for local first responders.

Strategy 13.4.1: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.

Status: **COMPLETED & ON-GOING** JCHSEM has been involved with numerous exercises over the past five (5) years. The most recent include; VIPER exercise, Volunteer Mobilization Center and Propane TTXs, EOC exercise, Operation Troubled Waters TTX and Functional Exercise (FE), Operation Improvise FE, an EOC FE, Operation Crazy Train TTX, Operation Vigilent Resolve, Jennings Randolph Highwater Full Scale.

Strategy 13.4.2: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.

Status: **COMPLETED & ON-GOING** A list of all known training was developed and is listed in the JCHSEM Public Awareness, Education and Training Strategies as well as the county website. Training for first responders is available through RESA.

Objective 13.5: Direct new development away from high hazard areas.

Strategy 13.5.1: Review existing regulations to ensure adequacy in reducing the amount of future development in identified hazard areas.

Status: **ON-GOING** Ordinances continue to be reviewed and revised.

Strategy 13.5.2: Review all comprehensive plans to ensure that designated growth areas are not in hazard areas.

Status: **ON-GOING** A new Comprehensive Plan for the county has been underway since the fall of 2012, and will take approximately two (2) years to complete.

Strategy 13.5.3: Review all capital improvement plans to ensure that infrastructure improvements are not directed towards hazardous areas.

Status: **ON-GOING** Ordinances continue to be reviewed and revised.

Objective 13.6: Improve emergency preparedness in Jefferson County and its incorporated municipalities.

Strategy 13.6.1: Review the existing Jefferson County Emergency Operations Plan (EOP) and update where necessary based on the recommendations of the Jefferson County Hazard Mitigation Plan.

Status: **COMPLETED & ON-GOING** New annexes are reviewed and updated each year. In 2011, a Drought Annex was developed, the Engineering Annex was updated, a Training and Exercise Annex was developed, a new Transportation annex was developed, the Damage Assessment

Annex was reviewed, and a new Regional Animals Annex was integrated.

Strategy 13.6.2: Coordinate with the Eastern Panhandle Homeowners Association (HOAs) for their inclusion into the 911 addressing compliance program.

Status: NEW STRATEGY

Objective 13.7: Improve coordination and communication among disaster response organizations, local, and county governments.

Strategy 13.7.1: Expand the mission and membership of the Jefferson County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.

Status: DELETED The CPC decided to delete this strategy.

Objective 13.8: Update equipment at the Emergency 911 Communications Center.

Strategy 13.8.1: Develop a plan to implement the Needs Assessment recommendations developed by the Public Safety System Consultant.

Status: ON-GOING Jefferson County recently constructed a new Emergency Operations Center and Emergency Communications Center. CAD and Reverse 911 to be established over 9 month period and be completed in 2013. The 911 center is still in need of Mobile Data and public alert capabilities.

Objective 13.9: Develop public/private partnerships toward the protection of private properties.

Strategy 13.9.1: Continue to support initiatives established under Jefferson County Project Impact, and continue as a part of the RNN and participate in its activities.

Status: COMPLETED & ON-GOING Jefferson County was recently named as one of the pilot communities for the Resilient Neighbors Network, which works well with the concept of Project Impact Program and the Whole of Community efforts.

Strategy 13.9.2: Evaluate the feasibility of the continuation of a funded Project Impact Coordinator position in Jefferson County.

Status: DELETED The CPC has decided to delete this strategy.

Objective 13.10: Improve coordination of mitigation efforts between the National Park Service and the Town of Harpers Ferry.

Strategy 13.10.1: Establish a formal process for the Town of Harpers Ferry and the Park Service to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.

Status: **ON-GOING** The town and park service worked well together during the recovery of the June, 2012 Derecho event.

Strategy 13.10.2: Conduct training exercises that include representatives from the Town of Harpers Ferry and the Park Service to facilitate increased coordination.

Status: **COMPLETED** CSX Railroad held training and exercise in early part of 2007; the park service has participated in several exercises over the past 10 years.

Objective 13.11: Identify and protect historic structures throughout the county that are at risk from hazards.

Strategy 13.11.1: Conduct a survey of all historic sites that are located in hazard areas and develop mitigation strategies to protect any at-risk historic properties.

Status: **COMPLETED** This strategy was completed in 2010 by the Jefferson County GIS/Addressing Office.

Objective 13.12: Ensure measures are being taken to address hazard risks with regards to commercial and commuter rail lines.

Strategy 13.12.1: Contact representatives of rail lines to collect information about emergency planning and risks associated with rail services in the county.

Status: **COMPLETED & ON-GOING** The JCHSEM Director indicated that this strategy has been completed and is considered to be on-going.

Objective 13.13: Educate local government officials on the benefits of planning for all hazards.

Strategy 13.13.1: Educate and inform local government and elected officials of the need to consider hazard mitigation in policy and budgetary planning and decision-making processes.

Status: **NEW STRATEGY**

MUNICIPALITIES OF JEFFERSON COUNTY

TOWN OF BOLIVAR

Goal A1: Reduce the amount of potential damage from flash flooding in and around the Town of Bolivar.

Objective A1.1: Increase storm water capabilities in and around the Town of Bolivar.

Strategy A1.1.1: Create new sidewalks and rain gardens to assist with storm water runoff as part of the Chesapeake Bay Watershed Initiative.

Status: NEW STRATEGY

CITY OF CHARLES TOWN

Goal B1: Reduce the overall flooding potential in the City of Charles Town.

Objective B1.1: Reduce the potential for flooding and flash flooding in the City of Charles Town.

Strategy B1.1.1: Target areas for recreation that is interconnected with trails and parkland, beyond the required floodplain and wetland areas, and layout a strategy for green space protection.

Status: NEW STRATEGY

Strategy B1.1.2: Encourage the use of natural drainage swales over engineered storm water management channels where practical.

Status: NEW STRATEGY

Strategy B1.1.3: Work jointly with the City of Ranson on a storm water management project for Evitts Run Park.

Status: NEW STRATEGY

Strategy B1.1.4: Place utilities underground as part of a street-scaping project.

Status: NEW STRATEGY

Goal B2: Reduce the potential for losses as a result of land subsidence and sinkholes.

Objective B2.1: Identify land subsidence prone areas in the City of Charles Town.

Strategy B2.1.1: Require special geotechnical exploration when locating large facilities such as schools, hospitals, community buildings, and other institutions. Ground penetrating radar, seismic and, electrical resistance surveys, and exploratory drilling are a few of the techniques currently used.

Status: NEW STRATEGY

Strategy B2.1.2: Establish a sinkhole management plan.

Status: NEW STRATEGY

Goal B3: Reduce the potential for environmental issues resulting from hazardous waste.

Objective B3.1: Cleanup sites where hazardous waste is currently present.

Strategy B3.1.1: Cleanup SuperFund site located in or near the City of Charles Town.

Status: NEW STRATEGY

TOWN OF HARPERS FERRY

Goal C1: Reduce the negative effects of flooding in the Town of Harpers Ferry.

Objective C1.1: Ensure a public drinking water supply following flooding events in the Town of Harpers Ferry.

Strategy C1.1.1: Reroute an eight inch (8”) water main near Elk Run, as the line is currently exposed in two (2) locations where it crosses Elk Run. The line is in danger of being broken by large debris in Elk Run in a flooding situation.

Status: NEW STRATEGY

CITY OF RANSON

Goal D1: Reduce damage as a result of flooding throughout the City of Ranson.

Objective D1.1: Reduce the potential for flooding and flash flooding in the City of Ranson.

Strategy D1.1.1: Maintain green space to protect Flowing Springs and its floodplain.

Status: NEW STRATEGY

Strategy D1.1.2: Work jointly with the City of Charles Town on a storm water management project for Evitts Run Park.

Status: NEW STRATEGY

Goal D2: Decrease the impact of drought in the City of Ranson.

Objective D2.1: Ensure a public drinking water supply during times of drought.

Strategy D2.1.1: Replace and upgrade water lines along Fairfax Boulevard as part of its upgrade and extension to Fairfax Crossing.

Status: NEW STRATEGY

Strategy D2.1.2: Review the need for additional water towers.

Status: NEW STRATEGY

Goal D3: Ensure an uninterrupted power supply during times of severe storms.

Objective D3.1: Ensure that all emergency response agencies in the city have a backup power supply.

Strategy D3.1.1: Install fixed in place generators at City Hall and the police department that will power all computer systems.

Status: NEW STRATEGY

Goal D4: Reduce the potential for environmental issues resulting from hazardous waste.

Objective D4.1: Cleanup sites where hazardous waste is currently present.

Strategy D4.1.1: Cleanup Brownfield site at the Kidde Plant.

Status: NEW STRATEGY

CORPORATION OF SHEPHERDSTOWN

Goal E1: Decrease the impact of drought in the Corporation of Shepherdstown.

Objective E1.1: Ensure a public drinking water supply during times of drought.

Strategy E1.1.1: Construct water tanks to increase water storage capabilities.

Status: NEW STRATEGY

Strategy E1.1.2: Consider installing high service pumps at new water storage tanks.

Status: NEW STRATEGY

Strategy E1.1.3: Design and construct a new water plant with generator back-up power supply.

Status: NEW STRATEGY

Strategy E1.1.4: Expand sewage collection system.

Status: NEW STRATEGY

4.0 PROJECT IMPLEMENTATION

4.1 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

§201.6(c)(3)(ii)	[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

This portion of the plan builds on the strategies list presented in Section 3.0. Whereas Section 3.0 simply lists Jefferson County's mitigation goals, objectives, and strategies, this section analyzes those strategies as projects and discusses how they should be implemented. Each strategy is listed along with a timeframe, primary coordinator, support agencies, potential funding source (and cost estimate), and its current status. Strategies are also categorized by six (6) different types of mitigation projects. (*NOTE: "Strategies" are considered mitigation "projects".)

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

It is important to note that the cost estimates are tentative and meant as a starting point for research on project feasibility. More specifically, these cost estimates are only ranges of probable project costs; all figures are approximations. At the time the implementation of any strategy is considered, a full cost estimate should be sought prior to securing funding. The Benefit-Cost Review was emphasized in the prioritization process. Mitigation actions were evaluated by their pros and cons, which are represented as costs and benefits.

Finally, as a navigational note, this section only contains *current* mitigation projects (organized by jurisdiction). If the status indicator in Section 3.0 classified as project as "Completed", "Deleted", or "Deferred", it will *not* be listed below (unless the Hazard Mitigation Core Planning Committee chose to re-list the project because of a future benefit). As a result, the strategy numbers may not run consecutively (e.g., Strategy X.1.5 may follow Strategy X.1.3).

JEFFERSON COUNTY

Strategy 1.1.1: During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of West Virginia.

Timeframe: During new dam construction.

Funding (*Cost Estimate*)**:** WVDEP quite possibly has items such as this budgeted as this project would fall under the responsibilities of WVDEP personnel. (*N/A*)

Primary Coordinator: WVDEP – Dam Safety

Support Agency: Dam Owner

Mitigation Type: Prevention

Status: This is a new strategy.

Strategy 1.1.2: Coordinate with the WVDEP – Dam Safety Division, to conduct regular safety inspections of existing dams in Jefferson County.

Timeframe: Annually.

Funding (*Cost Estimate*)**:** WVDEP quite possibly has items such as this budgeted as this project would fall under the responsibilities of WVDEP personnel. (*N/A*)

Primary Coordinator: Dam Owner

Support Agency: WVDEP – Dam Safety Division

Mitigation Type: Prevention

Status: This is a new strategy.

Strategy 1.1.3: Develop a notification system that can be utilized to notify residents downstream of large dams, of actions to take before a dam failure, if lead time exists.

Timeframe: 5 years

Funding (*Cost Estimate*)**:** Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), WVDEP ($25,000 to $100,000 depending on the sophistication of the notification system.)

Primary Coordinator: Dam Owner, WVDEP – Dam Safety Division

Support Agency: Notification System Designer

Mitigation Type: Public Education & Awareness

Status: This is a new strategy.

Strategy 2.1.1: Provide for an emergency backup power supply at all water treatment facilities in Jefferson County.

Timeframe: 5 years

Funding (*Cost Estimate*)**:** Infrastructure & Job Development Council (IJDC), Small Cities Block Grant (SCBG), United State Department of Agriculture (USDA), Rural Development (RD) (Up to $120,000).

Primary Coordinator: Local water providers

Support Agency: County Commission, private water providers

Mitigation Type: Prevention, Structural Project

Status: On-going.

Strategy 2.2.1: Develop an informational brochure to distribute to local farmers and residents, encouraging citizens to take water saving measures.

Timeframe: 5 years

Funding (*Cost Estimate*)**:** USDA, if necessary. ($3,000)

Primary Coordinator: WVDA, NRCS, Farm Bureau

Mitigation Type: Public education and awareness.

Status: Completed and on-going.

Strategy 2.2.2: Consider passing ordinances to prioritize or control water use, particularly for emergency situations such as firefighting.

Timeframe: 3 years

Funding (*Cost Estimate*)**:** No additional funding should be needed.

Primary Coordinator: County Commission

Mitigation Type: Natural Resource Protection

Status: On-going.

Strategy 2.3.1: Develop interoperability and system interconnects between the water systems to ensure continuity of water distribution capabilities.

Timeframe: 5 years

Funding *(Cost Estimate)***:** CDBG, HMGP, PDM, Local Funding (Up to $250,000 depending on number of interconnects).

Primary Coordinator: Water Distribution Systems

Mitigation Type: Prevention, Structural Project

Status: This is a new strategy.

Strategy 3.1.1: Develop a section of the website explaining the potential for earthquake, as well as the potential damages from those earthquakes. This should include measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

Timeframe: Annually
Funding (*Cost Estimate*): PDM, Local Funding.
Primary Coordinator: JCHSEM
Mitigation Type: Public Education and Awareness
Status: Completed and on-going.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas to critical infrastructure throughout the county as soon as earth movements are felt.

Timeframe: 5 years
Funding (*Cost Estimate*): HMGP, PDM, Local Funding (Up to $10,000 per sensory).
Primary Coordinator: Critical Infrastructure Owner
Support Agency: Jefferson County or Municipal Engineering Departments
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 3.2.2: Coordinate with WVDEP – Dam Safety to inspect all dams following an earthquake.

Timeframe: As needed.
Funding (*Cost Estimate*): No additional funding necessary.
Primary Coordinator: WVDEP – Dam Safety
Support Agency: Dam owners
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 4.1.1: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).

Timeframe: Annually
Funding (*Cost Estimate*): Local Funding, ($3,000)
Primary Coordinator: JCHSEM
Mitigation Type: Public Education and Awareness
Status: Completed and on-going.

Strategy 4.1.2: Continue to hold local courses on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.

Timeframe: 5 years
Funding (*Cost Estimate*): Local funding (Up to $200).
Primary Coordinator: JCHSEM, ISO
Mitigation Type: Public Education and Awareness, Prevention
Status: Completed and on-going.

Strategy 4.3.1: Provide additional training to county and municipal development officials on NFIP requirements.

Timeframe: Annually
Funding (*Cost Estimate*): Participating in these programs should not require additional funding.
Primary Coordinator: JCHSEM
Support Agency: WVDHSEM/FEMA
Mitigation Type: Public Education and Awareness
Status: Completed and on-going.

Strategy 4.3.2: Initiate storm water management projects that tie into the Chesapeake Bay Watershed initiatives.

Timeframe: 3 years
Funding (*Cost Estimate*): CDBG, PDM, Local funding (Up to $250,000).
Primary Coordinator: Jefferson County Engineering Department
Support Agency: Jefferson County Commission, Chesapeake Bay Watershed
Mitigation Type: Structural Project, Property Protection
Status: This is a new strategy.

Strategy 4.4.1: Support Jefferson County's efforts to continue the CRS program.

Timeframe: 2 years
Funding (*Cost Estimate*): No additional funding required. (N/A)
Primary Coordinator: County Floodplain Administrator
Support Agency: JCHSEM, Jefferson County Commission
Mitigation Type: Property Protection
Status: Completed and On-going.

Strategy 4.4.2: Provide training to municipalities on the CRS program and encourage them to participate.

Timeframe: 2 Years
Funding (*Cost Estimate*): HMGP, PDM, Local funding
Primary Coordinator: State NFIP Coordinator, JCHSEM
Mitigation Type: Property Protection
Status: Completed and On-going.

Strategy 4.4.3: Obtain updated information on the number of NFIP policyholders in Jefferson County and its municipalities.

Timeframe: 1 year
Funding (*Cost Estimate*): Local funding, PDM up to $3,000
Primary Coordinator: FEMA, WVDHSEM, JCHSEM
Mitigation Type: Emergency Services, Property Protection
Status: On-going.

Strategy 4.4.4: Coordinate with the USGS on the installation of river gauges in the Potomac River near Shepherdstown.

Timeframe: 3 years
Funding (*Cost Estimate*): HMGP, PDM, (Up to $10,000)
Primary Coordinator: County Floodplain Administrator
Support Agency: JCHSEM, USGS, National Weather Service (NWS)
Mitigation Type: Emergency Services, Property Protection
Status: This is a new strategy.

Strategy 4.5.1: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.

Timeframe: 2 Years

Funding (*Cost Estimate*): Local Funding.

Primary Coordinator: JCHSEM

Support Agency: FEMA, WVDHSEM, Jefferson County Commission of Jefferson County, Property Owners

Mitigation Type: Emergency Services, Property Protection, Prevention

Status: Completed and On-going.

Strategy 4.5.3: Identify owners of repetitive loss properties who are interested in participating in future acquisition and relocation projects.

Timeframe: 2 years

Funding (*Cost Estimate*): Local funding, PDM up to ($4,500)

Primary Coordinator: JCHSEM

Support Agency: Repetitive loss property owners

Mitigation Type: Prevention, Property Protection

Status: Unchanged.

Strategy 4.6.1: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.

Timeframe: On-going

Funding (*Cost Estimate*): No additional funding necessary.

Primary Coordinator: FEMA, WVDHSEM

Support Agency: JCHSEM

Mitigation Type: Prevention, Property Protection

Status: Completed and On-going

Strategy 4.7.1: Work with WV Division of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.

Timeframe: 3 years

Funding (*Cost Estimate*): Local funding, PDM up to ($10,000 to $15,000)

Primary Coordinator: WVDOH, JCHSEM, WVDHSEM

Mitigation Type: Prevention, Emergency Services, Property Protection

Status: Unchanged

Strategy 5.2.1: Increase education and awareness about shelter-in-place opportunities. Jefferson County LEPC to develop and deliver information to all county residents through community groups, publications on website, information on how to shelter-in-place and when it is appropriate to do so.

Timeframe: 1 year
Funding (*Cost Estimate*): No additional funding necessary. (N/A)
Primary Coordinator: Jefferson County LEPC
Support Agency: JCBOE
Mitigation Type: Emergency Services, Prevention
Status: Completed and on-going.

Strategy 5.2.2: Consider the installation of a Dynamic Message Board on the new section of West Virginia State Route 9.

Timeframe: 3 years
Funding (*Cost Estimate*): USDOT, PDM, (Up to $5,000)
Primary Coordinator: WVDOT
Mitigation Type: Public Education and Awareness
Status: This is a new strategy.

Strategy 5.2.3: Install Uninterruptible Power Supply (UPS) systems on traffic signals.

Timeframe: 3 years
Funding (*Cost Estimate*): USDOT, HMGP, PDM (Up to $10,000)
Primary Coordinator: WVDOT
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 5.3.1: Teach Community Emergency Response Team (CERT) classes in Jefferson County.

Timeframe: 2 years
Funding (*Cost Estimate*): Community Emergency Response Team (CERT) Grant
Primary Coordinator: JCHSEM
Support Agency: Jefferson County Commission,
Mitigation Type: Emergency Services, Public Education & Awareness
Status: Completed and On-going.

Strategy 6.1.1: Develop ordinances requiring logging companies to clean and replant areas that they log. The ordinance should include the amount of replanting that is expected.

Timeframe: 2 years
Funding (*Cost Estimate*): Developing ordinances will require no additional funding. However, code enforcement may require local funding. (N/A)
Primary Coordinator: Jefferson County Planning Department & Engineering Department
Support Agency: Logging companies
Mitigation Type: Natural Resource Protection
Status: On-going

Strategy 6.2.1: Develop and distribute educational materials concerning erosion and sediment control and slope stabilization to assets located in landslide prone areas, including the proper installation of erosion control blankets, turf reinforcement mats, silt fences, filter bags, channel dikes and dams and turbidity barriers.

Timeframe: 2 years
Funding (*Cost Estimate*): Local funding, up to ($3,000 for distribution of materials)
Primary Coordinator: USGS
Mitigation Type: Public Education and Awareness
Status: On-going

Strategy 6.3.1: Consider implementing open space designations in landslide prone areas, to keep those areas undeveloped.

Timeframe: 1 year
Funding (*Cost Estimate*): No additional funding necessary. (N/A)
Primary Coordinator: Local governmental agencies
Support Agency: Jefferson County Planning Department
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 6.4.1: Consider planting various types of vegetation in landslide prone areas to increase soil stability through root length and strength and by absorbing precipitation.

Timeframe: 2 years

Funding (*Cost Estimate*)**:** HMGP, PDM, Local Funding (Up to $2,500, depending on number of trees necessary).

Primary Coordinator: Local governmental agency, property owners

Mitigation Type: Prevention, Property Protection

Status: This is a new strategy.

Strategy 7.1.1: Conduct a detailed vulnerability analysis on the county's infrastructure to see what losses could be incurred during a land subsidence event (in pertinent areas).

Timeframe: 3 years

Funding (*Cost Estimate*)**:** Emergency Management Performance Grant (EMPG), PDM up to ($20,000 depending on size of system.

Primary Coordinator: County IT Department, County Engineer, County Maintenance Department

Mitigation Type: Property Protection

Status: Unchanged.

Strategy 7.2.1: Consider implementing open space designations in land subsidence-prone areas, to keep those areas undeveloped.

Timeframe: 1 year

Funding (*Cost Estimate*)**:** No additional funding necessary. (N/A)

Primary Coordinator: Local governmental agencies, Jefferson County Planning Department, Engineering Department

Mitigation Type: Prevention

Status: This is a new strategy.

Strategy 7.3.1: Develop a system to monitor groundwater levels in subsidence-prone areas, as groundwater levels directly influence karst topography, which may lead to sinkholes and subsidence issues.

Timeframe: 3 years
Funding (*Cost Estimate*)**:** HMGP, PDM, Local funding (Up to $30,000)
Primary Coordinator: Jefferson County Engineering Department
Support Agency: Jeffers County Commission, Water Advisory Groups
Mitigation Type: Emergency Services, Property Protection
Status: This is a new strategy.

Strategy 8.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm and hailstorm conditions.

Timeframe: As needed
Funding (*Cost Estimate*)**:** No additional funding necessary. (N/A)
Primary Coordinator: NWS
Support Agency: JCHSEM
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 8.1.2: Encourage the use of NOAA Weather Radios that continuously broadcast NWS forecasts and provide direct warnings to the public.

Timeframe: 1 year
Funding (*Cost Estimate*)**:** Encouraging use requires no additional funding; however, purchasing weather radios may require funding. (Up to $2,000 to purchase and install approximately 15 radios.
Primary Coordinator: JCHSEM
Support Agency: Jefferson County citizens
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 8.1.3: Continue to conduct National Weather Service Storm Spotter classes.

Timeframe: 1 year
Funding (*Cost Estimate*): No additional funding necessary.
Primary Coordinator: JCHSEM
Support Agency: NWS
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 8.2.1: Coordinate with the power company to periodically trim trees near power lines to prevent limb breakage and power failures.

Timeframe: Bi-Annually
Funding (*Cost Estimate*): Local funding, PDM. (Up to $25,000 to $40,000)
Primary Coordinator: Power Company/Contractors
Support Agency: Local power companies
Mitigation Type: Prevention
Status: On-going.

Strategy 8.3.1: Encourage the use of laminated glass in window panes during all new construction.

Timeframe: During new construction
Funding (*Cost Estimate*): Encouraging use requires no additional funding; however, purchasing materials is contingent upon the size of the facility.
Primary Coordinator: Facility Owner, Jefferson County Planning or Engineering Department
Mitigation Type: Property Protection
Status: On-going

Strategy 9.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

Timeframe: As necessary
Funding (*Cost Estimate*): No additional funding necessary. (N/A)
Primary Coordinator: NWS
Support Agency: JCHSEM
Mitigation Type: Public Education and Awareness
Status: Completed and on-going

Strategy 9.1.2: Conduct upgrades on the Sheriff's Mobile Command Center vehicle.

Timeframe: 2 years
Funding (*Cost Estimate*)**:** HMGP, PDM, Local Funding (Up to $5,000 to $100,000)
Primary Coordinator: JCHSEM, JCECC
Mitigation Type: Emergency Services
Status: Completed and On-going

Strategy 9.2.1: Reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.

Timeframe: 1 year
Funding (*Cost Estimate*)**:** No additional funding to county agencies. (N/A); however, tie down kits cost approximately $150 each and usually include four anchors.)
Primary Coordinator: Home Owner, Jefferson County Engineering and Planning Department
Mitigation Type: Property Protection
Status: Completed and On-going

Strategy 9.3.1: Ensure that all shelters have adequate emergency power resources. Churches and other facilities that maybe used as shelters should consider installing backup generators.

Timeframe: 2 years
Funding *(Cost Estimate):* Local Funding, FEMA ($5,000 to $7,000)
Primary Coordinator: ARC, BOE, Local Churches, other designated shelter owners.
Mitigation Type: Emergency Services
Status: On-going

Strategy 9.3.2: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and JCHSEM.

Timeframe: 3 years
Funding *(Cost Estimate):* No additional funding necessary
Primary Coordinator: JCHSEM, Eastern Panhandle Chapter American Red Cross (EPARC)
Mitigation Type: Emergency Services
Status: On-going.

Strategy 10.1.1: Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal, also develop a Debris Management Plan that can be implemented following a disaster occurrence.

Timeframe: 1 year

Funding *(Cost Estimate):* Developing mutual aid agreements requires no additional funding; Developing Debris Management Plan up to ($5,000).

Primary Coordinator: WVDOH, Contractors

Mitigation Type: Emergency Services, Prevention

Status: Completed and On-going

Strategy 10.2.1: Develop a part of the website that describe the proper procedures to take to safeguard against and prepare for winter storms.

Timeframe: 1 year

Funding *(Cost Estimate):* HMGP, PDM, Local Funding, ($6,000 for publication and distribution of informative materials).

Primary Coordinator: JCHSEM, WVDHSEM, NWS

Mitigation Type: Public Education & Awareness

Status: Completed and On-going

Strategy 10.2.2: Work with WVDHSEM and FEMA to develop a long term recovery plan.

Timeframe: 2 years

Funding *(Cost Estimate):* EMPG, up to $10,000

Primary Coordinator: JCHSEM, WVDHSEM, FEMA

Mitigation Type: Emergency Services

Status: This is a new strategy.

Strategy 10.3.1: Encourage agricultural producers and dairies to plan for power outages and install backup power supplies. Conduct an assessment of the applicability of renewable energy sources as a potential backup power supply.

Timeframe: 3 years
Funding *(Cost Estimate):* PDM, Hazard Mitigation Grant Program (HMGP), Local funding (Up to $8,000 per generator)
Primary Coordinator: Agricultural producers, WVU Extension Service, Farm Service Agency.
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 10.3.2: Pre-wire critical facilities for generators, and provide backup generators for fire departments that do not yet have them.

Timeframe: 4 years
Funding *(Cost Estimate):* HMGP, PDM, Local funding (Up to $5,000 per facility)
Primary Coordinator: JCESA, local fire departments
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy 10.3.3: Conduct prime power surveys for all critical infrastructure.

Timeframe: 5 years
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, Critical Facilities
Mitigation Type: Emergency Services
Status: This is a new strategy.

Strategy 11.1.2: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.

Timeframe: 2 years
Funding *(Cost Estimate):* No additional funding necessary.
Primary Coordinator: JCHSEM
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 11.2.2: Continue education and training efforts of first responders and emergency personnel.

Timeframe: As necessary

Funding *(Cost Estimate):* FEMA, USDHS (Up to $1,500 per training session).

Primary Coordinator: JCESA, Fire Association, RESA 8

Mitigation Type: Emergency Services

Status: On-going

Strategy 11.2.3: Consider providing heightened security at public gatherings, special events, hazardous materials facilities and critical community facilities and industries.

Timeframe: As necessary

Funding *(Cost Estimate):* Local Funding (Up to $1,000 to $2,000 per event, depending on the number of extra security individuals involved.)

Primary Coordinator: Local Law Enforcement, Fusion Center, owners of facilities

Mitigation Type: Prevention, Emergency Services

Status: Unchanged

Strategy 11.2.4: Make arrangements or otherwise establish mass morgue facilities to be used following potential mass casualty events.

Timeframe: 3 years

Funding *(Cost Estimate):* Local Funding PDM, (Up to $30,000 to $50,000)

Primary Coordinator: Health Department, Medical Examiner, JMH

Mitigation Type: Emergency Services

Status: On-going

Strategy 12.1.1: Create displays for children's programs that teach fire safety. Examples of information to be used would be similar to that on the FEMA for kids CD and/or the Sparky Fire Safety Program.

Timeframe: As necessary

Funding *(Cost Estimate):* ($3,000 to $5,000 if state agencies do not already have materials printed.

Primary Coordinator: Fire Department, JCESA, Jefferson County Fire Association

Mitigation Type: Public Education and Awareness

Status: Completed and On-going

Strategy 12.1.2: Encourage residents in rural areas to inspect and clean their chimneys at least once a year.

Timeframe: As necessary
Funding *(Cost Estimate):* No funding necessary. (N/A)
Primary Coordinator: Local Fire Departments, Home Owners, JCESA, Jefferson County Fire Association
Mitigation Type: Prevention, Property Protection
Status: Unchanged

Strategy 12.1.3: Encourage residents and businesses to maintain their property in or near forested areas (including short grass; thinned trees and removal of low hanging branches, cleaning of dead or dry leaves, needles, twigs, etc.), and to create a buffer zone (defensible space) between structures and adjacent forests.

Timeframe: 1 year
Funding *(Cost Estimate):* No funding necessary. (N/A)
Primary Coordinator: Home and Businesses Owners
Mitigation Type: Prevention, Property Protection
Status: Completed and On-going

Strategy 13.1.1: Create displays for use at public events (health fair, public awareness day, and county fair). This display would include pictures and information, such as that contained in FEMA's Retrofitting for Homeowners Guide, Elevating Your Flood Prone Home, Elevating Residential Structures, and information on the NFIP.

Timeframe: 1 year
Funding *(Cost Estimate):* Local Funding, PDM, FEMA (Up to $3,000 to $7,000).
Primary Coordinator: JCHSEM, Local Fire and Police Departments, ARC
Mitigation Type: Emergency Services
Status: Completed and On-going

Strategy 13.1.2: Create materials that are targeted towards tourist populations. Work with the Jefferson County Convention and Visitors Bureau, the US Park Service and others to alert tourists to potential natural hazard areas and what to do if a natural or man-made hazard occurs during their visit to Jefferson County.

Timeframe: 3 years
Funding *(Cost Estimate):* Local Funding, PDM, FEMA (Up to $3,000 per generator)
Primary Coordinator: JCHSEM, Jefferson County Convention and Visitors Bureau, US Park Service
Mitigation Type: Public Education and Awareness
Status: On-going

Strategy 13.1.3: Send news releases to local newspapers, radio, TV stations and social media outlets, about pre-disaster information. Our media strategies are designed to reach all areas of Jefferson County.

Timeframe: As necessary
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, News Media Outlets, ARC.
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.4: Create a public speaking series to include topics such as types of natural disaster and risk, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple type of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, Boy and Girl Scouts, etc.

Timeframe: 1 year
Funding *(Cost Estimate):* Local funding, PDM up to ($1,000 per speaker)
Primary Coordinator: JCHSEM, Civic Groups, Chamber of Commerce
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.5: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.

Timeframe: 3 years
Funding *(Cost Estimate):* Local Funding Flood Mitigation Assistance (FMA), (Up to $1,000 to $5,000 per course
Primary Coordinator: Eastern Panhandle Chapter American Red Cross (EPARC)
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.6: Update the county website to provide hazard related information that is easily accessible. The JCHSEM website has information about disaster preparedness and related activities. The plan is to expand and update the website as needed and as appropriate in a timely manner to benefit all County residents.

Timeframe: As necessary
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, Jefferson County Commission
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.7: Continue to work with the Jefferson County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.

Timeframe: As necessary
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, Jefferson County BOE
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.8: Continue to work with non-governmental organizations (youth services, professional, religious) to promote mitigation education and awareness.

Timeframe: As necessary
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, Non-Governmental organizations
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.1.9: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.

Timeframe: 2 years
Funding *(Cost Estimate):* Local Funding, PDM up to ($4,000)
Primary Coordinator: JCHSEM, Local Libraries, Mayors
Mitigation Type: Public Education and Awareness
Status: Completed and On-going

Strategy 13.2.1: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife). Establish a committee representative of all areas of the county that will include veterinarians, pet store owners, the Humane Society, animal shelters, the WVU Extension Service and other interested parties to work on animal – specific evacuation and sheltering needs.

Timeframe: On-going
Funding *(Cost Estimate):* Local Funding, PDM up to ($5,000)
Primary Coordinator: Local Veterinarians, Pet Store Owners, Humane Society, Animals Shelters, WVU Extension Service
Mitigation Type: Emergency Services, Prevention
Status: Completed and On-going

Strategy 13.3.1: Meet with groups of potential volunteers to attempt to increase the number of trained responders. Groups will include all county fire departments, doctors, nurses and EMS personnel who may become first responders in a bio-terrorism event.

Timeframe: As necessary

Funding *(Cost Estimate):* No additional funding necessary. (N/A)

Primary Coordinator: JCHSEM, Citizens, Fire Departments, Sheriff, Health Department, MRC, Eastern Panhandle ARC

Mitigation Type: Emergency Services

Status: Completed and On-going

Strategy 13.3.2: Incorporate Light Detection and Ranging (LIDAR) mapping into current GIS mapping.

Timeframe: 3 years

Funding *(Cost Estimate):* Local Funding, (Up to $10,000 to $30,000)

Primary Coordinator: Jefferson County GIS/Addressing Office

Mitigation Type: Emergency Services

Status: This is a new strategy.

Strategy 13.4.1: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.

Timeframe: 1 year

Funding *(Cost Estimate):* Local Funding, PDM up to ($10,000 per exercise)

Primary Coordinator: All local and surrounding first response agencies, all appropriate state and federal agencies.

Mitigation Type: Emergency Services

Status: Completed and On-going

Strategy 13.4.2: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.

Timeframe:	Ongoing
Funding *(Cost Estimate):*	Local Funding, PDM up to ($7,000 for training)
Primary Coordinator:	JCHSEM, WVDHSEM, FEMA, NWS
Mitigation Type:	Emergency Services, Prevention
Status:	Completed and On-going

Strategy 13.5.1: Review existing regulations to ensure adequacy in reducing the amount of future development in identified hazard areas.

Timeframe:	As necessary
Funding *(Cost Estimate):*	No additional funding necessary. (N/A)
Primary Coordinator:	Jefferson County Commission, Jefferson County Planning Department, and Municipal Planning Offices
Mitigation Type:	Prevention, Property Protection
Status:	On-going

Strategy 13.5.2: Review all comprehensive plans to ensure that designated growth areas are not in hazard areas.

Timeframe:	As necessary
Funding *(Cost Estimate):*	No additional funding necessary. (N/A)
Primary Coordinator:	Jefferson County Commission, Jefferson County Planning Department and Municipal Planning Offices
Mitigation Type:	Prevention, Property Protection
Status:	On-going

Strategy 13.5.3: Review all capital improvement plans to ensure that infrastructure improvements are not directed towards hazardous areas.

Timeframe: 1 year

Funding *(Cost Estimate):* No additional funding necessary. (N/A)

Primary Coordinator: Jefferson County Commission, Jefferson County Planning Department and Municipal Planning Offices

Mitigation Type: Prevention, Property Protection

Status: On-going

Strategy 13.6.1: Review the existing Jefferson County Emergency Operations Plan (EOP) and update where necessary based on the recommendations of the Jefferson County Hazard Mitigation Plan.

Timeframe: Annually

Funding *(Cost Estimate):* Hazardous Materials Emergency Planning (HMEP) Grant up to ($10,000)

Primary Coordinator: JCHSEM, Jefferson County LEPC, WVDHSEM, appropriate agencies depending on annexes reviewed.

Mitigation Type: Emergency Services

Status: Completed and On-going

Strategy 13.6.2: Coordinate with the Eastern Panhandle Homeowners Association (HOAs) for their inclusion into the 911 addressing compliance program.

Timeframe: 1 year

Funding *(Cost Estimate):* No additional funding necessary.

Primary Coordinator: JCECC, Eastern Panhandle HOAs

Mitigation Type: Emergency Services

Status: This is a new strategy

Strategy 13.8.1: Develop a plan to implement the Needs Assessment recommendations developed by the Public Safety System Consultant.

Timeframe: 3 years
Funding *(Cost Estimate):* Local Funding, PDM (Up to $80,000)
Primary Coordinator: JCECC
Mitigation Type: Emergency Services
Status: On-going

Strategy 13.9.1: Continue to support initiatives established under Jefferson County Project Impact, and continue as a part of the RNN and participate in its activities.

Timeframe: As necessary
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, County Commission
Mitigation Type: Emergency Services
Status: Completed and On-going

Strategy 13.10.1: Establish a formal process for the Town of Harpers Ferry and the Park Service to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.

Timeframe: 2 years
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: Town of Harpers Ferry, National Park Service
Mitigation Type: Emergency Services
Status: On-going

Strategy 13.12.1: Contact representatives of rail lines to collect information about emergency planning and risks associated with rail services in the county.

Timeframe: 1 year
Funding *(Cost Estimate):* No additional funding necessary. (N/A)
Primary Coordinator: JCHSEM, Commercial and Commuter Rail Lines
Mitigation Type: Prevention, Emergency Services
Status: Completed and On-going

Strategy 13.13.1: Educate and inform local government and elected officials of the need to consider hazard mitigation in policy and budgetary planning and decision-making processes.

Timeframe: 2 years

Funding *(Cost Estimate):* No additional funding necessary.

Primary Coordinator: WVDHSEM, Jefferson County Commission, Municipal Governments

Mitigation Type: Public Education and Awareness

Status: This is a new strategy

TOWN OF BOLIVAR

Strategy A1.1.1: Create new sidewalks and rain gardens to assist with storm water runoff as part of the Chesapeake Bay Watershed Initiative.

Timeframe: 3 years

Funding *(Cost Estimate):* HMGP, PDM, Local Funding (Up to $8,000 to $16,000)

Primary Coordinator: Town Council, Town Maintenance Department

Mitigation Type: Prevention, Property Protection

Status: This is a new strategy.

CITY OF CHARLES TOWN

Strategy B1.1.1: Target areas for recreation that is interconnected with trails and parkland, beyond the required floodplain and wetland areas, and layout a strategy for green space protection.

Timeframe: 3 years

Funding *(Cost Estimate):* No additional funding necessary.

Primary Coordinator: Citizens, City Council

Mitigation Type: Prevention, Property Protection

Status: This is a new strategy.

Strategy B1.1.2: Encourage the use of natural drainage swales over engineered storm water management channels where practical.

Timeframe: 4 years
Funding *(Cost Estimate):* No additional funding required. (N/A)
Primary Coordinator: City Council, Municipal Works Department
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy B1.1.3: Work jointly with the City of Ranson on a storm water management project for Evitts Run Park.

Timeframe: 2 years
Funding *(Cost Estimate):* Local Funding, PDM, CDBG, (Up to $400,000)
Primary Coordinator: Municipal Engineering Departments, Contractors
Mitigation Type: Structural Project, Prevention
Status: This is a new strategy

Strategy B1.1.4: Place utilities underground as part of a street-scaping project.

Timeframe: 3 years
Funding *(Cost Estimate):* Local Funding, PDM, CDBG, (Up to $250,000)
Primary Coordinator: Municipal Engineering Department, Contractor, Utility Provider
Mitigation Type: Structural Project, Prevention
Status: This is a new strategy

Strategy B2.1.1: Require special geotechnical exploration when locating large facilities such as schools, hospitals, community buildings, and other institutions. Ground penetrating radar, seismic and, electrical resistance surveys, and exploratory drilling are a few of the techniques currently used.

Timeframe: As necessary
Funding *(Cost Estimate):* HMGP, PDM, Local Funding (Up to $25,000)
Primary Coordinator: Developers, City Council
Mitigation Type: Prevention
Status: This is a new strategy.

Strategy B2.1.2: Establish a sinkhole management plan.

Timeframe: 2 years

Funding (Cost Estimate): HMGP, PDM, Local Funding (Up to $15,000)

Primary Coordinator: City Council, Consultant

Mitigation Type: Emergency Services, Property Protection

Status: This is a new strategy.

Strategy B3.1.1: Cleanup SuperFund site located in or near the City of Charles Town.

Timeframe: 3 years

Funding (Cost Estimate): HMGP, PDM, Local Funding (Up to $200,000 to $500,000)

Primary Coordinator: Municipal Government, Environmental Contractor

Mitigation Type: Property Protection, Prevention

Status: This is a new strategy

TOWN OF HARPERS FERRY

Strategy C1.1.1: Reroute an eight inch (8") water main near Elk Run, as the line is currently exposed in two (2) locations where it crosses Elk Run. The line is in danger of being broken by large debris in Elk Run in a flooding situation.

Timeframe: 5 years

Funding (Cost Estimate): PDM, HMGP, CDBG (Up to $150,000 to $325,000)

Primary Coordinator: Town Council, Contractor

Mitigation Type: Structural Project, Property Protection

Status: This is a new strategy.

CITY OF RANSON

Strategy D1.1.1: Maintain green space to protect Flowing Springs and its floodplain.

Timeframe: 1 year

Funding (Cost Estimate): No additional funding necessary. (N/A)

Primary Coordinator: City Council, Floodplain Coordinator

Mitigation Type: Prevention

Status: This is a new strategy.

Strategy D1.1.2: Work jointly with the City of Charles Town on a storm water management project for Evitts Run Park.

Timeframe: 2 years
Funding *(Cost Estimate):* Local Funding, PDM, CDBG, (Up to $400,000)
Primary Coordinator: Municipal Engineering Departments, Contractors
Mitigation Type: Structural Project, Prevention
Status: This is a new strategy

Strategy D2.1.1: Replace and upgrade water lines along Fairfax Boulevard as part of its upgrade and extension to Fairfax Crossing.

Timeframe: 3 years
Funding *(Cost Estimate):* CDBG, PDM, Local Funding (Up to $30,000 to $125,000)
Primary Coordinator: City Council, City Public Works
Mitigation Type: Structural Project
Status: This is a new strategy.

Strategy D2.1.2: Review the need for additional water towers.

Timeframe: 2 years
Funding *(Cost Estimate):* No additional funding required to determine the need. (N/A)
Primary Coordinator: City Council, local water distribution systems
Mitigation Type: Emergency Services
Status: This is a new strategy.

Strategy D3.1.1: Install fixed in place generators at City Hall and the police department that will power all computer systems.

Timeframe: 2 years
Funding *(Cost Estimate):* HMGP, PDM, Local Funding (Up to $10,000 to $15,000)
Primary Coordinator: City Council, contractor
Mitigation Type: Prevention, Structural Project.
Status: This is a new strategy.

Strategy D4.1.1: Cleanup Brownfield site at the Kidde Plant.

Timeframe: 2 years

Funding *(Cost Estimate):* Local Funding, PDM, HMEG (Up to $300,000)

Primary Coordinator: Municipal Government, Environmental Contractor, WVDEP

Mitigation Type: Property Protection

Status: This is a new strategy

CORPORATION OF SHEPHERDSTOWN

Strategy E1.1.1: Construct water tanks to increase water storage capabilities.

Timeframe: 5 years

Funding *(Cost Estimate):* CDBG, HMGP, PDM, (Up to $50,000 to $245,000)

Primary Coordinator: Local water distribution systems

Mitigation Type: Prevention, Natural Resource Protection

Status: This is a new strategy.

Strategy E1.1.2: Consider installing high service pumps at new water storage tanks.

Timeframe: 2 years

Funding *(Cost Estimate):* Local Funding (Up to $15,000 to $20,000)

Primary Coordinator: Local water distribution systems

Mitigation Type: Structural Project.

Status: This is a new strategy.

Strategy E1.1.3: Design and construct a new water plant with generator back-up power supply.

Timeframe: 3 years

Funding *(Cost Estimate):* CDBG, SCBG (Up to $2,000,000)

Primary Coordinator: Municipal Government, Local water provider

Mitigation Type: Structural Project

Status: This is a new strategy

Strategy E1.1.4: Expand the municipal sewage collection system.

Timeframe: 5 years

Funding *(Cost Estimate):* CDBG, SCBG (Up to $2,000,000)

Primary Coordinator: Municipal Government, Local Utility Provider

Mitigation Type: Structural Project

Status: This is a new strategy

4.2 IMPLEMENTATION OF MITIGATION ACTIONS

§201.6(c)(3)(iii)	[The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This section identifies the priority for implementing the projects identified in Sections 3.0 and 4.1. Each current project is listed with a "primary coordinator" in Section 4.1 that should be responsible for the overall implementation of the project.

Project (i.e., strategy) prioritization occurred in three (3) phases. First, the 12 hazards considered by this plan were ranked, with "1" being the one which the county is most vulnerable and "12" being the hazard to which the county is least vulnerable.

Second, the projects under each hazard were ranked by priority. Projects receiving a rank of "1" were considered to be the highest priority project *for that particular hazard*. The following criteria (roughly corresponding to the STAPLEE method) were used as considerations when prioritizing projects.

- **Social Impacts**: Consider whether the public would support implementation of the project. If so, priority likely rises.
- **Technical Feasibility**: Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.
- **Administrative Requirements**: Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.
- **Political Impacts**: Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.
- **Legal Ramifications**: Consider whether the project can be lawfully implemented. If not, the project cannot be listed.
- **Environmental Impacts**: Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impacted, priority would be likely to fall.
- **Economic Impacts/Cost Benefit**: A brief "benefit cost review" per *FEMA Publication 386-5: Using Benefit Cost Review in Mitigation Planning* was conducted for each project to determine the "pros" and "cons" of each project as

it related to project prioritization. Maximizing the use of available funds would positively affect a project's priority.

Finally, to generate a complete, prioritized project list, the prioritized list of projects corresponding to the highest ranked hazard (i.e., the one the county was most vulnerable) was listed, followed by the prioritized list of projects corresponding to the second-highest ranked hazard, and so on. Organizing the priorities in this manner allows for the greatest flexibility when implementing mitigation projects (yet still maintained compliance with state and federal prioritization requirements). *NOTE: Municipal priorities are not categorized by hazards because of the smaller number of projects under municipal coordination.

JEFFERSON COUNTY

PRIORITY HAZARD 1: FLOODING			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
4.4.1	Support Jefferson County's efforts to continue the CRS program.	**1**	**1**
4.4.2	Provide training to municipalities on the CRS program and encourage them to participate.	**2**	**2**
4.6.1	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	**3**	**3**
4.5.3	Identify owners of repetitive loss properties who are interested in participating in future acquisition and relocation projects.	**4**	**4**
4.4.3	Obtain updated information on the number of NFIP policyholders in Jefferson County and its municipalities.	**5**	**5**
4.5.1	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	**6**	**6**
4.3.1	Provide additional training to county and municipal development officials on NFIP requirements.	**7**	**7**
4.1.2	Continue to hold local courses on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	**8**	**8**
4.1.1	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	**9**	**9**
4.4.4	Coordinate with the USGS on the installation of river gauges in the Potomac River near Shepherdstown.	**10**	**10**
4.3.2	Initiate storm water management projects that tie into the Chesapeake Bay Watershed initiatives.	**11**	**11**

Table 4.1

4.7.1	Work with WV Division of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**12**	**12**
PRIORITY HAZARD 2: SEVERE WINTER STORM			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
10.2.1	Develop a part of the website that describes the proper procedures to take to safeguard against and prepare for winter storms.	**1**	**13**
10.2.2	Work with WVDHSEM and FEMA to develop a long term recovery plan.	**2**	**14**
10.1.1	Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal, also develop a Debris Management Plan that can be implemented following a disaster occurrence.	**3**	**15**
10.3.3	Conduct prime power surveys for all critical infrastructure.	**4**	**16**
10.3.2	Pre-wire critical facilities for generators, and provide backup generators for fire departments that do not yet have them.	**5**	**17**
10.3.1	Encourage agricultural producers and dairies to plan for power outages and install backup power supplies. Conduct an assessment of the applicability of renewable energy sources as a potential backup power supply.	**6**	**18**
PRIORITY HAZARD 3: SEVERE WIND / TORNADO			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
9.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.	**1**	**19**
9.3.1	Ensure that all shelters have adequate emergency power resources. Churches and other facilities that maybe used as shelters should consider installing backup generators.	**2**	**20**
9.3.2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and JCHSEM.	**3**	**21**
9.1.2	Conduct upgrades on the Sheriff's Mobile Command Center vehicle.	**4**	**22**
9.2.1	Reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.	**5**	**23**
PRIORITY HAZARD 4: LAND SUBSIDENCE			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
7.2.1	*Strategy 7.2.1:* Consider implementing open space designations in land subsidence-prone areas, to keep those areas undeveloped.	**1**	**24**

Table 4.1 continued

7.1.1	*Strategy 7.1.1:* Conduct a detailed vulnerability analysis on the county's infrastructure to see what losses could be incurred during a land subsidence event (in pertinent areas).	**2**	**25**
7.3.1	*Strategy 7.3.1:* Develop a system to monitor groundwater levels in subsidence-prone areas, as groundwater levels directly influence karst topography, which may lead to sinkholes and subsidence issues.	**3**	**26**
PRIORITY HAZARD 5: SEVERE THUNDERSTORM / HAIL			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
8.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm and hailstorm conditions.	**1**	**27**
8.1.2	Encourage the use of NOAA Weather Radios that continuously broadcast NWS forecasts and provide direct warnings to the public.	**2**	**28**
8.1.3	Continue to conduct National Weather Service Storm Spotter classes.	**3**	**29**
8.2.1	Coordinate with the power company to periodically trim trees near power lines to prevent limb breakage and power failures.	**4**	**30**
8.3.1	Encourage the use of laminated glass in window panes during all new construction.	**5**	**31**
PRIORITY HAZARD 6: HAZARDOUS MATERIALS			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
5.2.1	Increase education and awareness about shelter-in-place opportunities. Jefferson County LEPC to develop and deliver information to all county residents through community groups, publications on website, information on how to shelter-in-place and when it is appropriate to do so.	**1**	**32**
5.2.3	Install Uninterruptible Power Supply (UPS) systems on traffic signals.	**2**	**33**
5.2.2	Consider the installation of a Dynamic Message Board on the new section of West Virginia State Route 9.	**3**	**34**
5.3.1	Teach Community Emergency Response Team (CERT) classes in Jefferson County.	**4**	**35**
PRIORITY HAZARD 7: DROUGHT			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
2.2.1	Develop an informational brochure to distribute to local farmers and residents, encouraging citizens to take water saving measures.	**1**	**36**
2.2.2	Consider passing ordinances to prioritize or control water use, particularly for emergency situations such as firefighting.	**2**	**37**

Table 4.1 continued

2.1.1	Provide for an emergency backup power supply at all water treatment facilities in Jefferson County.	**3**	**38**
2.3.1	Develop interoperability and system interconnects between the water systems to ensure continuity of water distribution capabilities.	**4**	**39**
PRIORITY HAZARD 8: LANDSLIDE			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
6.2.1	Develop and distribute educational materials concerning erosion and sediment control and slope stabilization to assets located in landslide prone areas, including the proper installation of erosion control blankets, turf reinforcement mats, silt fences, filter bags, channel dikes and dams and turbidity barriers.	**1**	**40**
6.3.1	Consider implementing open space designations in landslide prone areas, to keep those areas undeveloped.	**2**	**41**
6.4.1	Consider planting various types of vegetation in landslide prone areas to increase soil stability through root length and strength and by absorbing precipitation.	**3**	**42**
6.1.1	Develop ordinances requiring logging companies to clean and replant areas that they log. The ordinance should include the amount of replanting that is expected.	**4**	**43**
PRIORITY HAZARD 9: EARTHQUAKE			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
3.1.1	Develop a section of the website explaining the potential for earthquake, as well as the potential damages from those earthquakes. This information should include measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	**1**	**44**
3.2.1	Install sensory systems that immediately shut off the flow of gas to critical infrastructure throughout the county as soon as earth movements are felt.	**2**	**45**
3.2.2	Coordinate with WVDEP – Dam Safety to inspect all dams following an earthquake.	**3**	**46**

Table 4.1 continued

PRIORITY HAZARD 10: DAM FAILURE			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
1.1.1	During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of West Virginia.	**1**	**47**
1.1.2	Coordinate with the WVDEP – Dam Safety Division, to conduct regular safety inspections of existing dams in Jefferson County.	**2**	**48**
1.1.3	Develop a notification system that can be utilized to notify residents downstream of large dams, of actions to take before a dam failure, if lead time exists.	**3**	**49**
PRIORITY HAZARD 11: WILDFIRE			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
12.1.1	Create displays for children's programs that teach fire safety. Examples of information to be used would be similar to that on the FEMA for kids CD and/or the Sparky Fire Safety Program.	**1**	**50**
12.1.3	Encourage residents and businesses to maintain their property in or near forested areas (including short grass; thinned trees and removal of low hanging branches, cleaning of dead or dry leaves, needles, twigs, etc.), and to create a buffer zone (defensible space) between structures and adjacent forests.	**2**	**51**
12.1.2	Encourage residents in rural areas to inspect and clean their chimneys at least once a year.	**3**	**52**
PRIORITY HAZARD 12: TERRORISM			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
11.1.2	Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.	**1**	**53**
11.2.2	Continue education and training efforts of first responders and emergency personnel.	**2**	**54**
11.2.4	Make arrangements or otherwise establish mass morgue facilities to be used following potential mass casualty events.	**3**	**55**
11.2.3	Consider providing heightened security at public gatherings, special events, hazardous materials facilities and critical community facilities and industries.	**4**	**56**

Table 4.1 continued

PRIORITY HAZARD 13: MISCELLANEOUS HAZARDS			
Project Number	*Project Number*	*Hazard Priority*	*Overall Priority*
13.1.1	Create displays for use at public events (health fair, public awareness day, and county fair). This display would include pictures and information, such as that contained in FEMA's Retrofitting for Homeowners Guide, Elevating Your Flood Prone Home, Elevating Residential Structures, and information on the NFIP.	**1**	**57**
13.1.6	Update the county website to provide hazard related information that is easily accessible. The Jefferson County Commission website has information about disaster preparedness and related activities. The plan is to expand and update the website as needed and as appropriate in a timely manner to benefit all County residents.	**2**	**58**
13.1.7	Continue to work with the Jefferson County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	**3**	**59**
13.6.1	Review the existing Jefferson County Emergency Operations Plan (EOP) and update where necessary based on the recommendations of the Jefferson County Hazard Mitigation Plan.	**4**	**60**
13.4.2	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	**5**	**61**
13.5.1	Review existing regulations to ensure adequacy in reducing the amount of future development in identified hazard areas.	**6**	**62**
13.5.2	Review all comprehensive plans to ensure that designated growth areas are not in hazard areas.	**7**	**63**
13.5.3	Review all capital improvement plans to ensure that infrastructure improvements are not directed towards hazardous areas.	**8**	**64**
13.13.1	Educate and inform local government and elected officials of the need to consider hazard mitigation in policy and budgetary planning and decision-making processes.	**9**	**65**
13.1.2	Create materials that are targeted towards tourist populations. Work with the Jefferson County Convention and Visitors Bureau, the US Park Service and others to alert tourists to potential natural hazard areas and what to do if a natural or man-made hazard occurs during their visit to Jefferson County.	**10**	**66**

Table 4.1 continued

13.1.4	Create a public speaking series to include topics such as types of natural disaster and risk, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple type of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups, Boys & Girl Scouts, etc.	**11**	**67**
13.4.1	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	**12**	**68**
13.1.8	Continue to work with non-governmental organizations (youth services, professional, religious) to promote mitigation education and awareness.	**13**	**69**
13.3.1	Meet with groups of potential volunteers to attempt to increase the number of trained responders. Groups will include all county fire departments, doctors, nurses and EMS personnel who may become first responders in a bio-terrorism event.	**14**	**70**
13.1.5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	**15**	**71**
13.6.2	Coordinate with the Eastern Panhandle Homeowners Association (HOAs) for their inclusion into the 911 addressing compliance program.	**16**	**72**
13.2.1	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife). Establish a committee representative of all areas of the county that will include veterinarians, pet store owners, the Humane Society, animal shelters, the WVU Extension Service and other interested parties to work on animal – specific evacuation and sheltering needs.	**17**	**73**
13.1.9	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	**18**	**74**
13.10.1	Establish a formal process for the Town of Harpers Ferry and the Park Service to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	**19**	**75**
13.3.2	Incorporate Light Detection and Ranging (LIDAR) mapping into current GIS mapping.	**20**	**76**
13.1.3	Send news releases to local newspapers, radio, TV stations and social media outlets about pre-disaster information. Our media strategies are designed to reach all areas of Jefferson County.	**21**	**77**

Table 4.1 continued

13.12.1	Contact representatives of rail lines to collect information about emergency planning and risks associated with rail services in the county.	**22**	**78**
13.9.1	Continue to support initiatives established under the Jefferson County Project Impact, and continue as a part of the RNN and participate in its activities.	**23**	**79**
13.8.1	Develop a plan to implement the Needs Assessment recommendations developed by the Public Safety System Consultant.	**24**	**80**

Table 4.1 continued

TOWN OF BOLIVAR

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
A1.1.1	Create new sidewalks and rain gardens to assist with storm water runoff.	**1**

Table 4.2

CITY OF CHARLES TOWN

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
B1.1.1	Target areas for recreation that is interconnected with trails and parkland, beyond the required floodplain and wetland areas, and layout a strategy for green space protection.	**1**
B2.1.2	Establish a sinkhole management plan.	**2**
B1.1.2	Encourage the use of natural drainage swales over engineered storm water management channels where practical.	**3**
B1.1.3	Work jointly with the City of Ranson on a storm water management project for Evitts Run Park.	**4**
B1.1.4	Place utilities underground as part of a street-scaping project.	**5**
B3.1.1	Cleanup SuperFund site located in or near the City of Charles Town.	**6**
B2.1.1	Require special geotechnical exploration when locating large facilities such as schools, hospitals, community buildings, and other institutions. Ground penetrating radar, seismic and, electrical resistance surveys, and exploratory drilling are a few of the techniques currently used.	**7**

Table 4.3

TOWN OF HARPERS FERRY

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
C1.1.1	Reroute an eight inch (8") water main near Elk Run, as the line is currently exposed in two (2) locations where it crosses Elk Run. The line is in danger of being broken by large debris in Elk Run in a flooding situation.	**1**

Table 4.4

CITY OF RANSON

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
D1.1.1	Maintain green space to protect Flowing Springs and its floodplain.	**1**
D3.1.1	Install fixed in place generators at City Hall and the police department that will power all computer systems.	**2**
D2.1.2	Review the need for additional water towers.	**3**
D1.1.2	Work jointly with the City of Charles Town on a storm water management project for Evitts Run Park.	**4**
D2.1.1	Replace and upgrade water lines along Fairfax Boulevard as part of its upgrade and extension to Fairfax Crossing.	**5**
D4.1.1	Cleanup Brownfield site at the Kidde Plant.	**6**

Table 4.5

CORPORATION OF SHEPHERDSTOWN

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
E1.1.1	Construct water tanks to increase water storage capabilities.	**1**
E1.1.2	Consider installing high service pumps at new water storage tanks.	**2**
E1.1.3	Design and construct a new water plant with generator back-up power supply.	**3**
E1.1.4	Expand the municipal sewage collection system.	**4**

Table 4.6

5.0 PLAN MAINTENANCE PROCESS

5.0 PLAN MAINTENANCE PROCESS

§201.6(c)(4)(i)	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
§201.6(c)(4)(ii)	[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
§201.6(c)(4)(iii)	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

5.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

Jefferson County Homeland Security and Emergency Management (JCHSEM), the Core Planning Committee (CPC), and jurisdictions adopting this plan have established a method for the systematic and periodic review of this document. JCHSEM and the CPC will monitor the performance of the plan in several ways, such as analyzing social, technical, administrative, economic, and environmental criteria. Participating jurisdictions will also evaluate mitigation strategies as the chance to implement them arises. As part of the completion of the plan update, copies of the plan will be provided to all adjacent counties.

JCHSEM and the CPC will review the plan following major hazard events or substantial changes in land use planning or regulations that would impact the recommended mitigation projects. Such a meeting will be to determine the plan's effectiveness at determining hazard susceptibility areas. Finally, the team will discuss new mitigation strategies, quite possibly based on the most recent hazard event that could have lessened losses from the event. JCHSEM will be responsible for contacting all committee members prior to the updating process. During the intervals between meetings, JCHSEM will maintain a file of comments, questions, suggestions, etc. concerning the plan. JCHSEM and the CPC have decided to formally update this plan at five (5) year intervals, as a result of this update, the plan will be resubmitted in 2018, 2023, 2028, etc.

JCHSEM shall meet on an annual basis to track the progress of the mitigation plan. The County Commission and JCHSEM will be responsible for tracking the progress of the implementing agencies and ensuring that the plan timeline is adhered to.

JCHSEM will serve as the coordinator of the updates. As such, JCHSEM will contact participating jurisdictions to schedule meetings, facilitate virtual or other discussions, obtain lists of completed projects, collect updated asset inventory data, etc. It is also significant to note that a number of meetings may be held as, and if, mitigation strategies are implemented, but such meetings would only anecdotally discuss this document (to ensure that projects to be implemented are included within). Further, such sections as 2.0: Hazard Risk Assessment (HRA) may be reviewed and utilized for other planning processes, as it contains a comprehensive overview of hazard risks in Jefferson County at a macro level.

As mentioned above, the CPC will monitor the performance of the plan based on several criteria. For instance, the committee should consider revising mitigation strategies if it appears that the plan is failing according to one (1) of the following measures (again, roughly corresponding to the STAPLEE method).

- ***Social:*** Has the public perceived that the project has positively lessened hazard-related losses? Has implementing the project adversely affected any segment of the population?
- ***Technical:*** Are the mitigation strategies proving to be technically feasible? Are the mitigation strategies eliminating problems rather than creating new, different problems?
- ***Administrative/Legal:*** Do the mitigation strategies conform to local, state, and federal policies as they are implemented?
- ***Economic:*** Has the cost/benefit ratio of implementing the project been acceptable? Has implementing a project adversely affected a particular segment of the local economy?
- ***Environmental:*** Does implementing mitigation strategies create any adverse environmental conditions? Do mitigation strategies represent sound environmental practices?

Other measures may be used to guide the discussions on the primary measures listed above. These measures include the following.

- ***Ease of Implementation:*** How smoothly has implementing the project (or similar types of projects) been? Have programs been readily available to assist in funding the implementation of the project (or similar types of projects)?
- ***Cost Effectiveness:*** Have sufficient funding sources been available to implement the project at a cost manageable by the local government? Have the costs of implementing the project been significantly less than the cumulative future costs potentially incurred by an un-corrected situation?
- ***Political Impacts:*** Has implementing a particular project (or type of project) been delayed due to the political consequences of its implementation?
- ***Overall Positive Impacts:*** Have local leaders generally agreed that implementing a particular project was beneficial to the community?

To date, local policies have not hindered hazard mitigation efforts. The jurisdictions participating in this planning process have used a variety of funding mechanisms to complete mitigation projects in the past, including the Hazard Mitigation Grant Program (HMGP), Homeland Security Grant Program (HSGP), Emergency Management Performance Grant (EMPG), Community Development Block Grant (CDBG), and local funding. Local government policies and programs have supported the use of this funding and, thus, the implementation of mitigation projects. Further, all participating government jurisdictions have demonstrated a capability to successfully implement and administer mitigation projects.

The monitoring of this plan also includes methods for ensuring that projects are successfully implemented and contribute to the achievement of the mitigation goals outlined in Section 3.0. All of the individual projects listed in this plan are accompanied by a series of potential funding sources. Many of these funding sources require stringent project administration tasks (including performance measures and close-out procedures), all of which would be followed by the jurisdiction implementing a project. Adherence to these requirements will ensure the successful implementation of projects funded by such programs. For projects funded locally, existing purchasing policies will be followed, including competitive bidding, maintenance of invoice copies, regular departmental budget reviews, etc. All files associated with purchasing at the local level

are maintained. This procedure has been successful while implementing mitigation projects since the original development of this plan and will continue to be followed.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

The members of the Core Planning Committee (CPC) are leaders within the communities and agencies that they represent. They are often involved in the overall community, economic development, and capital improvements planning efforts of their jurisdictions. As members of the mitigation planning team, these individuals will carry mitigation concepts into other planning areas.

Additionally, hazard mitigation is a component of a number of other planning processes undertaken throughout the county. For example, Jefferson County Homeland Security and Emergency Management (JCHSEM) incorporates mitigation principles into its Emergency Operations Plan (EOP) in an effort to predetermine the hazards to which responders may respond. Jefferson County and its municipalities currently use their building regulations, health codes, subdivision regulations, and zoning resolutions, when applicable to help protect life and property and guide development. This plan includes steps to include hazard mitigation strategies into the operations of these existing programs. Of particular significance will be conformance with National Flood Insurance Program (NFIP) regulations, and participation in the Community Rating System (CRS) in developing areas in the county. Conformance with minimum NFIP requirements is expected to minimize future flood risks in these areas.

The emergency response agencies are heavily involved in emergency planning at the local level, to include the identification and implementation of mitigation strategies. Such officials as fire chiefs and police chiefs have become just as involved on the CPC as elected officials. As such, these individuals are integrating, where applicable, the four (4) phases of emergency management – the first of which is mitigation – into the development of their agency-specific Standard Operating Guidelines (SOGs).

Additionally, as county government departments, JCHSEM and the Jefferson County Planning Department maintain frequent contact. Many of the discussions between the agencies focus on the services that can be provided to areas that are targeted for development; however, JCHSEM is consulted as to what hazards could affect an area that is developable. The comprehensive plans for Jefferson County communities that had been completed since the original adoption of this plan were reviewed as part of the updating process; such a practice will be continued in

subsequent updates. As such, local officials can be made aware of the hazards to which targeted development areas may be susceptible.

On an annual basis JCHSEM will coordinate to develop an end-of-year report. The report should detail mitigation activities undertaken over the course of the year as well as any mitigation projects that have been completed. Any mitigation success stories should be highlighted. Copies of the annual report should be made available to each of the implementing agencies, local governments, citizens, and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) Region III. The report should 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 the current resources are adequate for implementing the plan.
- Document any implementation problems such as technical, political, legal, or coordination issues with other agencies.
- Discuss whether the outcomes have occurred as expected.
- Document agency and other partner participation.

5.3 CONTINUED PUBLIC INVOLVEMENT

Jefferson County Homeland Security and Emergency Management (JCHSEM) and the Core Planning Committee (CPC) understand that the general public must be involved in the planning process as well as the update processes scheduled every five (5) years. As such, the CPC will ensure public involvement through invitations to future public and/or CPC meetings, distributing questionnaires, etc. The plan includes activities that will lead to the development of public information sources and opportunities to solicit and react to public comments. In fact, several of the mitigation goals include activities designed to inform and educate the public and garner public comments and ongoing support for plan implementation. Further, as the plan is re-adopted, the public will be given the chance to comment on the document that is to be adopted *prior* to its actual adoption. A copy of the plan will be maintained at the JCHSEM Offices during normal business hours, where the public is free to review the plan, and comment forms will be made available to the public to document their comments on the plan.

JCHSEM, at a minimum, will maintain file copies, and make the plan available on the JCHSEM website for review and perusal at any time. JCHSEM intends to log all

comments received regarding the mitigation plan. Members of the public are invited to contact JCHSEM with comments regarding hazard events, etc. Local officials are also invited to review the plan's effectiveness at determining hazard susceptibility based on data from hazard events as they occur.

6.0 APPENDICES

APPENDIX 1: HAZARD PROFILES, LOSS CALCULATIONS, AND MAPPING

This appendix contains hazard-specific information created as a result of the comprehensive Hazard Risk Assessment (HRA) that was completed as part of this project. The appendix is organized alphabetically by hazard name. Each hazard-labeled tab contains a detailed hazard profile, matrices to calculate loss estimations, and mapping that graphically depicts low, moderate, and high susceptibility areas for the hazard in question.

Loss estimates were calculated for all jurisdictions. In some instances, however, a municipal jurisdiction could be more or less susceptible than the balance of the county to a particular hazard. Where this was the case, a separate map and a summary of losses (Worksheet #3a. from the FEMA guide 386-2) were created for that specific jurisdiction.

As a navigational note for the electronic copy of the plan, Worksheet #3a is listed outside of any hazard folders. It is a single file that contains multiple worksheets organized by hazard name. A master copy of Worksheet #4 is also listed outside of all folders. It contains all assets and values but no damage percentages. Appendix 2 contains detailed information for each hazard's calculation methodology.

2.2 PROFILING HAZARDS

2.2.1. Dam Failure

A dam is a barrier built across a waterway to control the flow or raise the level of water. A dam failure occurs when the barrier constructed across the waterway fails or otherwise does not obstruct or restrain the flow of water, which can rapidly result in a large area of completely inundated land.

INTRODUCTION

Several methods of research identified dam failure as a hazard in Jefferson County, including discussions with local representatives and private dam owners. General information on dam failures was obtained from the following sources:

- West Virginia Department of Environmental Protection-Office of Dam Safety,
- Army Corps of Engineers – Baltimore District,
- Private Dam Owners,
- National Dam Inventory, and
- Internet research.

There are approximately 80,000 dams in the United States, the majority of which are privately owned. State and local authorities, public utilities, and federal agencies own others. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation, and save lives by preventing or reducing floods. Dams are man-made structures designed to obstruct or restrain waters that may cause flooding downstream. These structures are generally made with concrete or earthen materials. The failure of these dams, although a man-made structure, could result in the

Period of Occurrence:	At any time.
Number of Events to Date:	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection.
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	30 days or more.

Figure 2.1a

natural event of flooding.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a low to moderate dam failure risk even though there are no recorded instances of a dam failure historically. The risk of dam failure is site-specific and targeted to particular areas within the county including, the Town of Harpers Ferry, Corporation of Shepherdstown, Millville area, and potentially 12 residential structures located below the Lake Shannondale Dam along Mission Road and Riverside Drive.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.1b

HAZARD IDENTIFICATION

It is estimated that West Virginia has over 494 dams; several of these dams are regulated under the West Virginia Dam Control and Safety Act, which was enacted in 1973 and amended in 1992. Regulations enforced by the West Virginia Department of Environmental Protection (WVDEP), Division of Dam Safety require as part of the process of application for a certificate of approval, the determination of the hazard potential of proposed dam. The hazard classification is determined by the applicant and is based upon the potential loss that would result due to a failure. There are two (2) dams in Jefferson County, according to the WVDEP, Division of Dam Safety. One (1) of the dams is considered a class II, and the other a class IV. Dams are classified under two (2) conditions: height and storage (as illustrated in the height and storage charts, Table 2.1a below).

The height of a dam is defined as the vertical dimension measured from the natural streambed at the downstream toe of a dam to the low point along the top of the dam. The storage volume of a dam is defined as the total volume impounded when the pool level is at the top of the dam immediately before it is overtopped. According to the WVDNR, the damage

HEIGHT OF DAM	
Class I	Greater than 60 ft.
Class II	Greater than 40 ft.
Class III	Greater than 25 ft.
Class IV	Less than or equal to 24 ft.

STORAGE VOLUME	
Class I	Greater than 5,000 ac-ft.
Class II	Greater than 500 ac-ft.
Class III	Greater than 50 ac-ft.
Class IV	Less than or equal to 50 ac-ft.

Table 2.1a

predicted by a dam failure coincides with the class of the dam.

The table below lists the dams that are located within Jefferson County. Also listed in the table are the types (i.e., earthen fill, concrete, etc.) and class of each dam, and the nearest downstream areas that would be affected in the event of a dam failure. Though the Jennings Randolph Lake Dam is located on the state line between Western Maryland and Northeastern West Virginia, with part of the lake located in Mineral County, WV and part in Garrett County, MD, it would have an impact on Jefferson County if it were to fail, thus it is included in the discussion of this profile, and is included in the table.

Dams Affecting Jefferson County			
Name of Dam	**Class**	**Type**	**Stream / Downstream Area**
Jennings Randolph Lake Dam	II	Rolled Earth & Rock Fill	North Branch Potomac River and Potomac River / Shepherdstown and Harpers Ferry.
Millville Hydroelectric-Dam	IV	Concrete	Shenandoah River / Areas along the river in the Millville area and potentially the lower town of Harpers Ferry.
Lake Shannondale Dam	II	Rolled Earth & Rock Fill	Furnace Run / Properties located along Mission Road and Riverside Drive

Table 2.1b

There are three (3) types of failures of earthen dams: overtopping, seepage, and structural failure. Overtopping failures result from the erosive action of water on the embankment. Erosion is due to uncontrolled flow of water over, around, and adjacent to the dam. Earthen embankments are not designed to be overtopped and therefore are particularly susceptible to erosion. Once erosion has begun during overtopping, it is almost impossible to stop.

All earthen dams have seepage resulting from water percolating slowly through the dam and its foundation. Seepage must, however, be controlled in both velocity and quantity. If uncontrolled, it can progressively erode soil from the embankment or its foundation, resulting in the rapid failure of the dam. Erosion of the soil begins at the downstream side of the embankment, either in the dam proper or the foundation, progressively works toward the reservoir, and eventually develops a “pipe” or direct conduit into the reservoir. Seepage can cause slope failure by creating high pressures in the soil pores or by saturating the slope.

Structural failures can occur in either the embankment or the appurtenances. Structural failure of a spillway, lake drain, or other appurtenance may lead to failure of the embankment. Cracking, settlement, and slides are the more common signs of structural failure of embankments. Large cracks in an appurtenance or the embankment, major settlement, and major slides will require emergency measures to ensure safety, especially if the problems occur suddenly.

The three (3) types of failures previously described are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to a structural failure. A structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may result in structural failure, and so on.

Minor defects such as cracks in the embankment may be the first visual sign of a major problem, which could lead to failure of the structure. Someone experienced in dam design and construction should evaluate the seriousness of all deficiencies as soon as they are detected.

HISTORY OF EVENTS

Several research methods were utilized in an attempt to identify any past occurrences of dam failures in Jefferson County. Those research efforts yielded no evidence of any historic or recent dam failures in Jefferson County.

HAZARD IMPACTS

The potential downstream hazards are defined as the resultant downstream damage should the dam fail, including probable future development. The potential downstream hazards are broken into four (4) classes, which coincide with the class of dam defined by height and storage as discussed above.

POTENTIAL DOWNSTREAM HAZARDS	
Class I	Probable loss of life, structural damage to high value property (i.e., homes, industries, major public utilities).
Class II	Flood water damage to structures (no loss of life envisioned), damage to state and interstate highways, railroads, only access to residential areas.
Class III	Damage to low value non-residential structures, blocked roads, damaged crops and livestock.
Class IV	Losses restricted mainly to the dam.

Table 2.1c

Uncontrolled floodwaters are one of the most powerful and destructive forces in nature. Dams that are not designed to withstand major storms or are in a state of disrepair may be destroyed, increasing flood damage downstream. The potential for

damage due to dam failure is increasing along with the increased amount of residential and commercial development within the hydraulic shadow of dams. In many cases, existing dams will need to be modified to keep downstream areas safe from catastrophic flooding.

Jefferson County contains one (1) dam that could present the possibility of significant flood damage to the residents and businesses located near or downstream from the dams. The Lake Shannondale Dam is privately owned by Lakeside Properties, LLC, which impounds a 50.5 acre lake, with a maximum depth of 86 feet. The dam was constructed in 1963. There are approximately 12 residential properties that could incur significant flooding if the dam were to catastrophically fail, all of which are located along Mission Road, and Riverside Drive. According to the Army Corps of Engineers – Baltimore District a catastrophic failure of the Jennings Randolph Lake Dam on the border of Garrett County, Maryland and Mineral County, West Virginia which impounds a 952 acre lake, could create a hazard to life and property and could cause significant downstream river flooding along the Potomac River in small portions of the Corporation of Shepherdstown, and the lower town of Harpers Ferry. The amount of flooding would be dependent upon the level of the Potomac River when the dam fails. Scenarios have been developed for Probable Maximum Flood (PMF) – without dam failure; and PMF – with dam failure, as well as sunny day failure. The worst case scenario was tested during a West Virginia Homeland Security Region 3 – Full Scale Regional Exercise in 2012.

PAST MITIGATION EFFORTS

The owner of the Lake Shannondale Dam indicated that the dam is inspected annually by the West Virginia Department of Environmental Protection – Dam Safety Division, and an Emergency Action Plan (EAP) was developed for the dam, that was updated in July 2011.

An EAP for the Jennings Randolph Lake Dam was completed by the US Army Corps of Engineers – Baltimore District in 2005.

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	44	0.20%	$2,433,090,000	$1,216,545	0.05%	53,498	27	0.05%
Commercial	1,640	0	0%	$492,000,000	$0	0%	6,560	0	0%
Industrial	562	0	0%	$196,700,000	$0	0%	2,810	0	0%
Agricultural	546	3	0.55%	$81,900,000	$40,950	0.05%	182	4	2%
Religious/Non-Profit	30	0	0%	$10,610,000	$0	0%	300	0	0%
Government	80	0	0%	$68,333,360	$0	0%	3,633	0	0%
Education	44	0	0%	$165,000,000	$0	0%	1,701	0	0%
Utilities	41	4	10%	$145,550,000	$7,277,500	5%	62	3	5%
Total	25,062	51	<1%	$3,593,183,360	$8,534,995	<1%	68,746	34	<1%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Dam Failure

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0%	=	$0	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0.20%	=	$390,000	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	20%	=	$201,000	$159,000	X	40%	=	$63,600
Charles Town City Water System	$6,213,000	X	20%	=	$1,242,600	$13,750,000	X	40%	=	$5,500,000
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	20%	=	$445,000	$5,450,000	X	40%	=	$2,180,000
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	40%	=	$126,000	$75,000	X	60%	=	$45,000
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	20%	=	$330,000	$0	X	40%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	40%	=	$386,000	$225,000	X	60%	=	$135,000
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	15%	=	$600,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	10%	=	$245,500	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	10%	=	$1,000,000	$6,000,000	X	30%	=	$1,800,000
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	15%	=	$562,500	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	40%	=	$3,200	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.05%	=	$1,216,545	$486,618,000	X	0.02%	=	$97,324
				Total Loss to Structure	$6,748,345				**Total Loss to Contents**	$9,820,924

Hazard: Dam Failure

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$0
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$0
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$0
Shepherdstown Town	$7,000	X	0	+	$875	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$390,000
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	14	+	$1,700	X	0	=	$743,400	$1,008,000
Charles Town City Water System	$3,840	X	14	+	$480	X	0	=	$53,760	$6,796,360
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$0
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	14	+	$450	X	0	=	$50,400	$2,675,400
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$0
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$0
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$171,000
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$0
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$0
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$0
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$0
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$0
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$0
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$0
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$0
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$0
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$0
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$0
Burch Wood Products	$93,600	X	0	+	$15,600	X	0	=	$0	$0
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$0
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	0	+	$17,500	X	0	=	$0	$0
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$0
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$0
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	0	+	$750	X	0	=	$0	$0
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

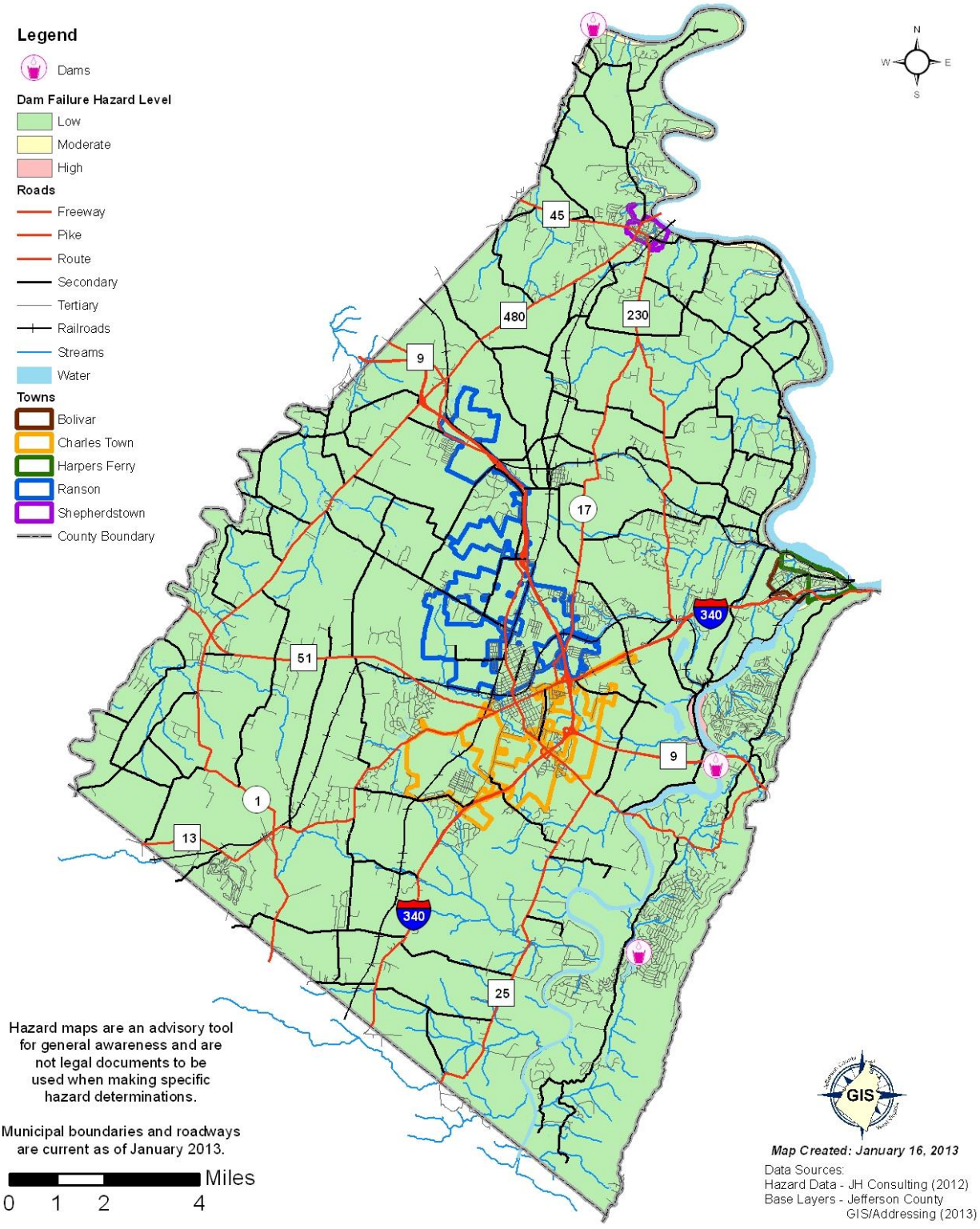
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$0
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$330,000
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$521,000
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$600,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$245,500
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$2,800,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$0
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

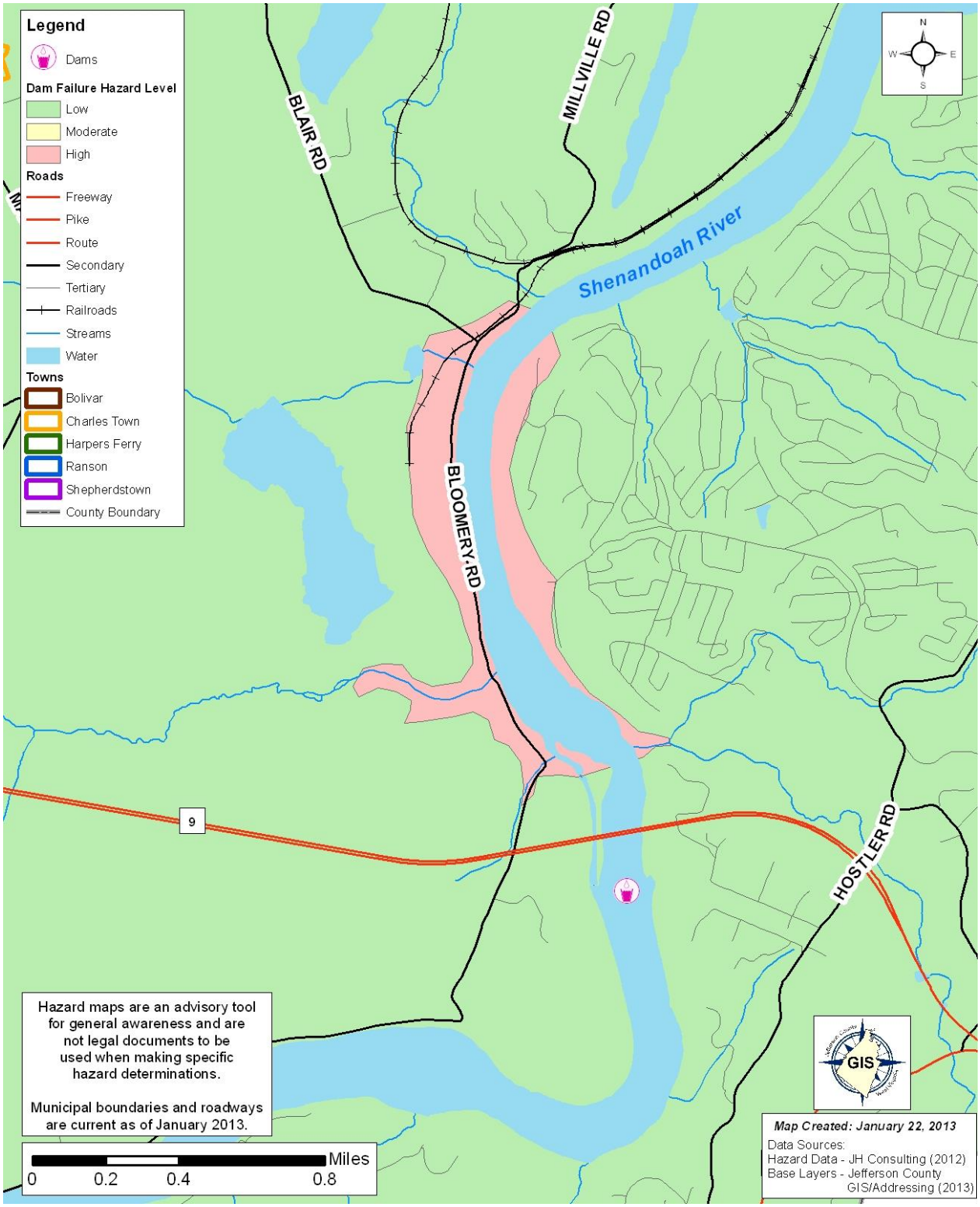
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$562,500
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$3,200

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
Total Loss to Structure Use & Function									$847,560	$17,416,829

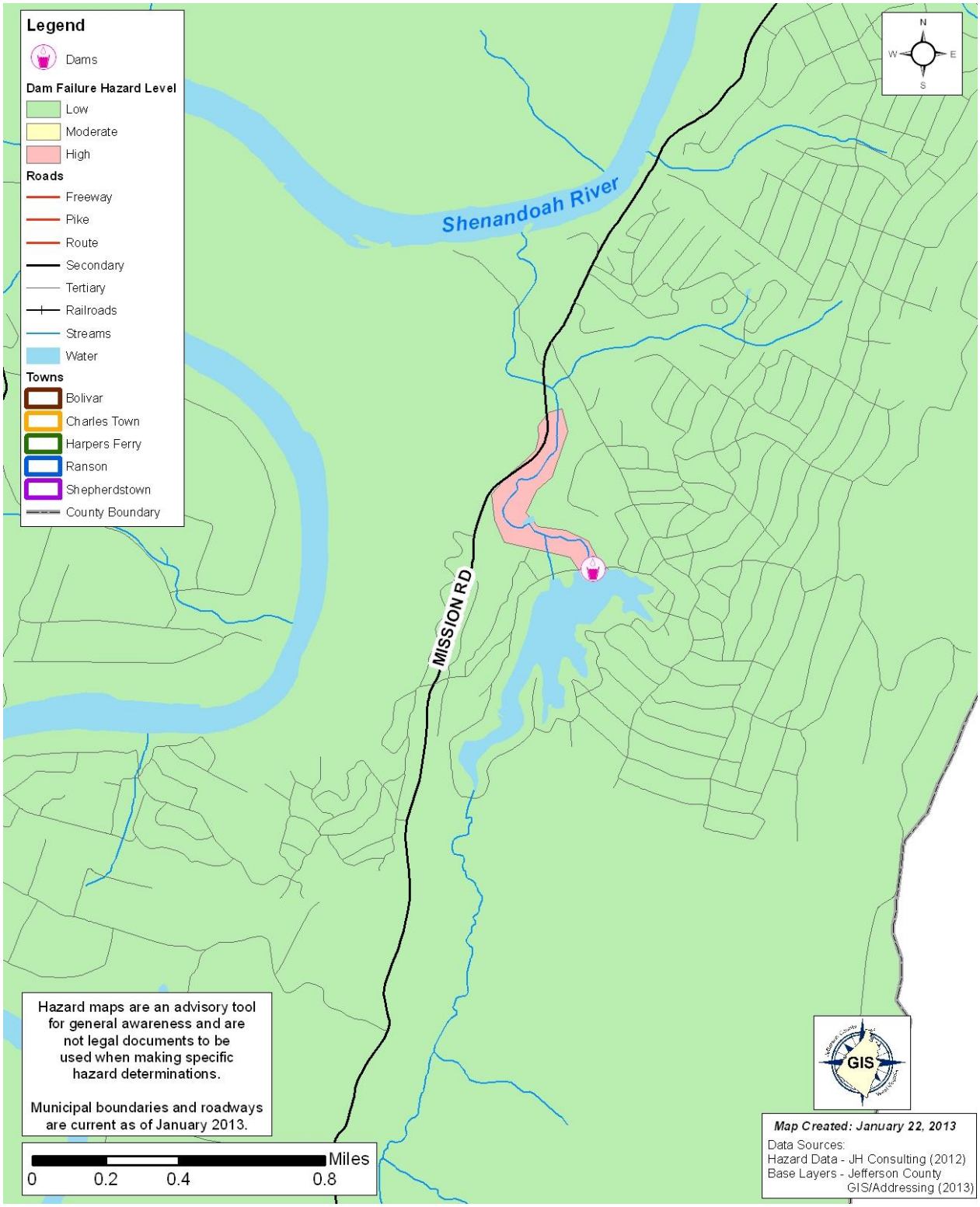
2.2 PROFILING HAZARDS: DAM FAILURE MAP



2.2 PROFILING HAZARDS: DAM FAILURE MAP (MILLVILLE DAM)



2.2 PROFILING HAZARDS: DAM FAILURE MAP (SHANNONDALE LAKE DAM)



2.2 PROFILING HAZARDS

2.2.2. Drought

Drought is an extended period of deficient rainfall relative to the statistical mean for a region.

INTRODUCTION

Several methods of research identified drought as a hazard in Jefferson County, including discussions with local representatives. Drought information was also obtained from the following sources.

- Local media research,
- Jefferson County Emergency Operations Plan (EOP), Annex U – Drought,
- West Virginia Department of Agriculture,
- Palmer Drought Severity Index (PDSI),
- National Climatic Data Center (NCDC) Event Records,
- United States Geological Survey (USGS), and
- National Drought Mitigation Center.

Drought is defined as a period of abnormally dry weather, which persists long enough to produce a serious hydrological imbalance. Drought is a relative term and is used in relation to who or what is being affected by the lack of moisture. Drought can be a result of multiple causes including global weather patterns that produce persistent, upper-level high-pressure systems with warm dry air resulting in less precipitation

Period of Occurrence:	Summer months or extended periods with no precipitation.
Number of Events to Date (1995 – 2012):	2
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent.
Warning Time:	Weeks.
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, (i.e., agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration). Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses.
Cause Injury or Death:	None.
Potential Facility Shutdown:	Days

Figure 2.2a

Droughts can be categorized into three (3) types, each one affecting the other.

- ***Agricultural Drought*** – Moisture deficiency is seriously injurious to crops, livestock, or other agricultural commodities. Parched crops may wither and die. Pastures may become insufficient to support livestock. Effects of agricultural droughts are difficult to measure because there are many other variables that may impact production during the same growing season.
- ***Hydrological Drought*** – Reduction in stream flow, lake and reservoir levels, depletion of soil moisture, and a lowering of the ground water table. Consequently, there is a decrease in groundwater discharge to streams and lakes. A prolonged hydrological drought will affect the water supply.
- ***Mathematical Drought*** – Computation in which rainfall deficiencies are expressed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a low to moderate drought risk even though there are limited recorded instances of drought historically. The risk of drought is not targeted to any particular areas within the county; however, it is less likely to have an impact on the central portion of the county due to the abundance of groundwater in that area of the county.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.2b

HAZARD IDENTIFICATION

Drought is clearly a hazard for which occurrence cannot be reliably predicted in the long term. Extended, widespread droughts are fairly infrequent; however, brief local droughts are common and can be severe. An average of approximately 37 inches of precipitation falls on Jefferson County annually. However, there can be extreme variations in some years and in certain months within a year. Such seasonal and yearly extremes may have serious consequences.

Providing adequate water supplies for a rapidly growing population can be a real challenge especially when faced with drought conditions. According to the USGS Water

Resources Division, mild droughts are common in West Virginia, but severe droughts are infrequent and generally of short duration.

The Palmer Drought Severity Index (PDSI) is a widely used measure of drought in the United States to track moisture conditions. The PDSI is defined as "an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically expected or climatically appropriate moisture supply". The range of PDSI is from –4.0 (extremely dry) to +4.0 (excessively wet), with the central half (-2.0 to +2.0) representing the normal or near normal conditions. As of December 8, 2012, Jefferson County's precipitation levels were near normal, according to the Palmer Drought Severity Index (as shown in the figure above).

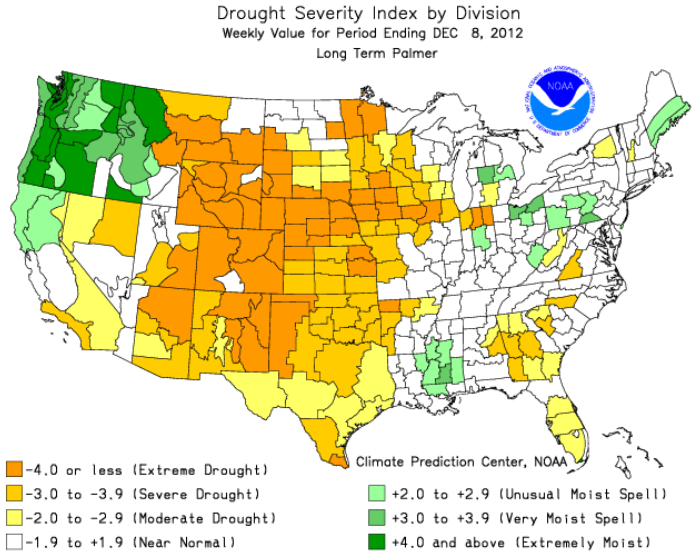


Figure 2.2c

A County-Wide Groundwater Assessment conducted in 2012 for Jefferson County has identified a theoretical surplus of available groundwater resources across Jefferson County. The availability of groundwater is controlled by the county's underlying hydrogeology, which is variable in character. Three (3) areas deemed to have unique hydrogeologic properties were identified during this study. High yield wells have been documented from all three (3) areas; however, the central area of the county identified as the "folded carbonates of the central valley" possesses the greatest number of higher yielding wells. See Figure 2.2d and 2.2e below for an illustration of the surface water features and well locations in Jefferson County.

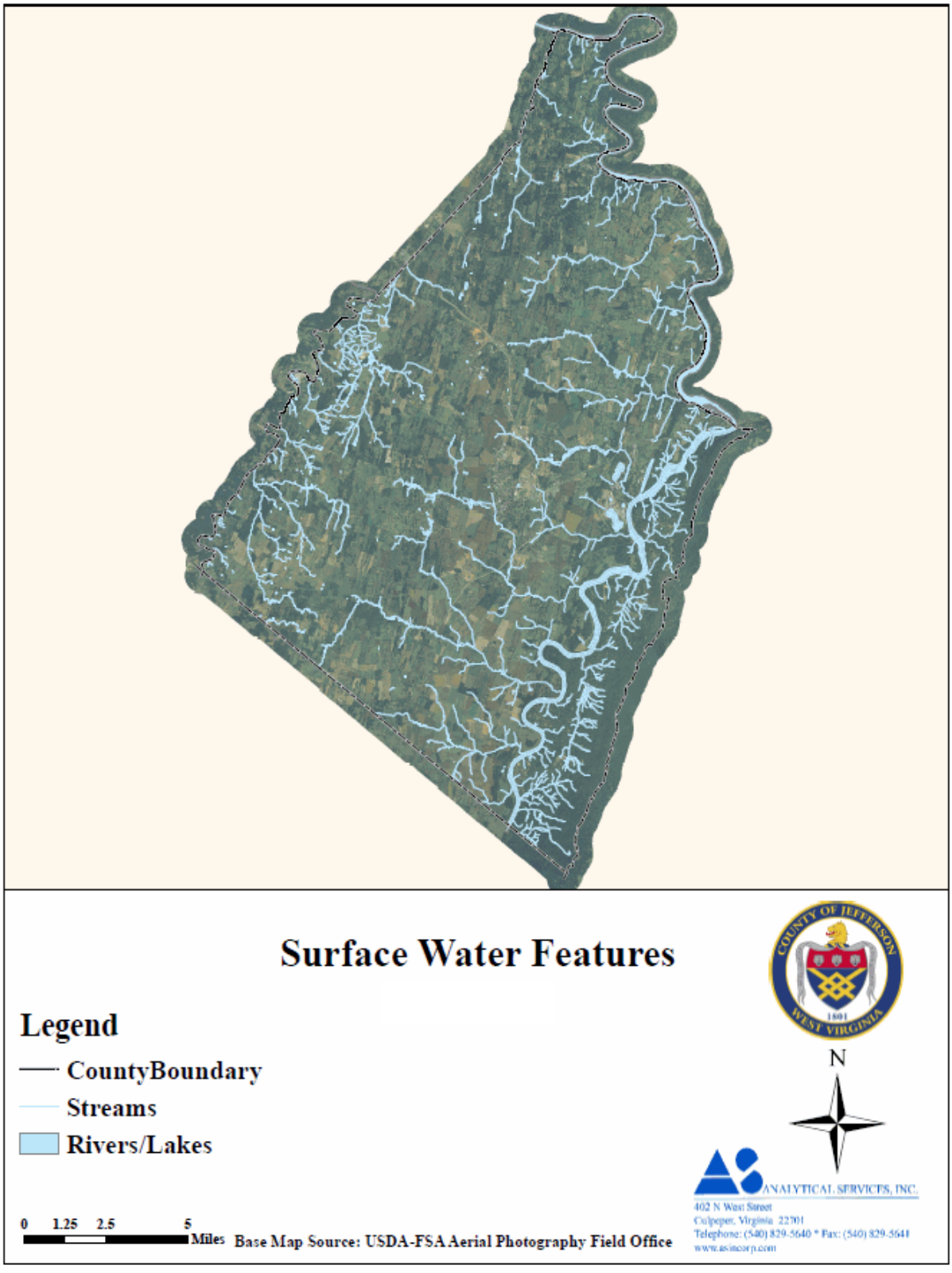

Surface Water Features
Legend
CountyBoundary
Streams
Rivers/Lakes
N
0 1.25 2.5 5
Miles
Base Map Source: USDA-FSA Aerial Photography Field Office
ANALYTICAL SERVICES, INC.
402 N West Street
Culpeper, Virginia 22701
Telephone: (540) 829-5640 * Fax: (540) 829-5641
www.asincorp.com

Figure 2.2d

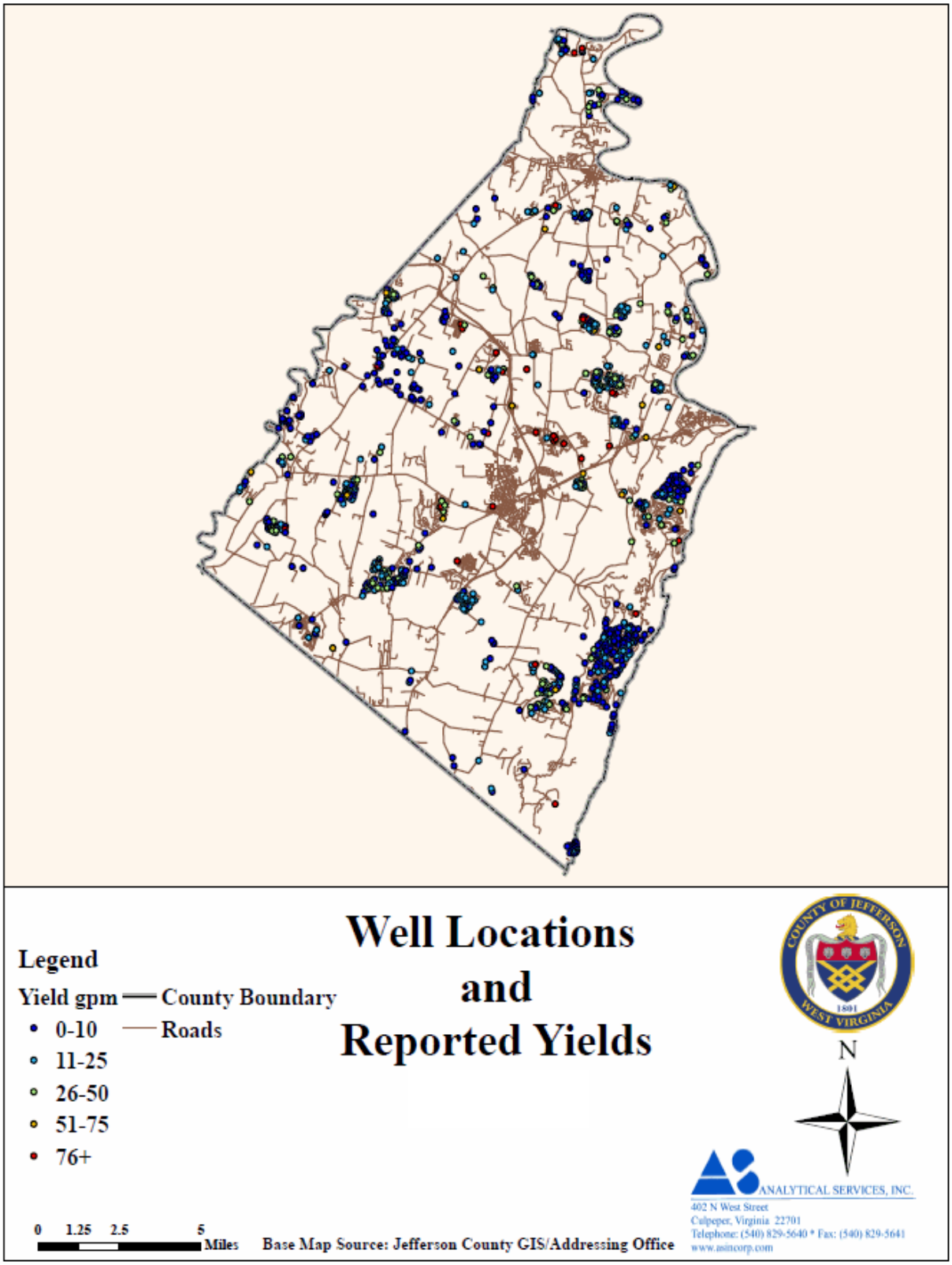

Well Locations
and
Reported Yields
Legend
Yield gpm
0-10
11-25
26-50
51-75
76+
County Boundary
Roads
0 1.25 2.5 5
Miles
Base Map Source: Jefferson County GIS/Addressing Office
N
ANALYTICAL SERVICES, INC.
402 N West Street
Culpeper, Virginia 22701
Telephone: (540) 829-5640 * Fax: (540) 829-5641
www.asiincorp.com

Figure 2.2e

HISTORY OF EVENTS

Every few years West Virginia experiences drought conditions with an inherent impact of moderate on the Palmer Drought Severity Index. In the last century there have been a number of drought episodes, including several that have lasted for more than a single season. According to the United States Geological Survey (USGS) droughts are less of a problem than floods; however, even short-term droughts can be detrimental to local agricultural communities and can limit surface-water supply. The drought of 1929-32 was the most severe in West Virginia's recorded history. Some streams that have drainage areas greater than 900 square miles had periods of zero flow during the summer and fall of 1930. Extended, severe droughts such as that of 1929-32 occur in West Virginia about every 25 years. The table below details the major historical droughts that have occurred in West Virginia.

Historical Droughts of West Virginia		
Date	Area affected	Recurrence Interval (years)
1929-32	Statewide.	>25
Extended over much of the United States, was the most severe in West Virginia history. Stream flows at some gaging stations for that time remained the minimum for the period of record as of 1989, and some streams draining more than 900 mi^2 had periods of zero (0) flow during the drought. Rainfall totals were the minimum of record dating back to the late 1800's. Precipitation was less than average for 16 consecutive months during 1930-31. This drought resulted in more than 50 percent (50%) of agricultural production lost.		
1940-42	Regional drought.	>25
Although statewide in extent, was not as devastating as the drought of 1929-32. In many areas of the State, however, the duration of moisture deficiency exceeded that in 1929-32. The recurrence interval for this drought exceeded 25 years statewide. This drought resulted in severe water shortages for small communities throughout the state.		
1952-54	Statewide.	10 to >25
Was most severe in the western and northern portion of West Virginia. On the basis of stream flow deficits at gaging stations in these areas, the drought generally had a recurrence interval that exceeded 25 years. In the mountainous southern and eastern part of the state, stream flow was only slightly less than normal, and the drought recurrence interval was about 10 years.		
1963-70	Statewide.	>25
Affected the entire Northeastern United States and began in some states in early 1960. When the drought finally ended, it had been the longest in the history of the region. In West Virginia, the duration of the drought generally exceeded seven (7) years.		
1987-88	Statewide.	Unknown
Affected the entire state. As a result of record-breaking heat and the least rainfall in decades, many agricultural and forestry crops withered and died. The entire $300 million agriculture industry in West Virginia was adversely affected.		

Table 2.2a

The following table includes recent significant droughts that have impacted Jefferson County over the past 15 years.

Year	Conditions	Causes
7/1997	Exacerbated drought-like conditions.	Hot dry summer weather.
8/1998	Reduced crop yields, 25 percent (25%) less than normal precipitation for the month.	Persistent high pressure.
5/1999	Long-term severe drought conditions, 13 inches below average precipitation.	High pressure.
10/2007	Persistent severe drought conditions, rainfall deficits of 10 inches below normal.	Low precipitation.

Table 2.2b

HAZARD IMPACTS

Although a variety of weather related phenomena have the potential to cause great economic and personal losses in the US, drought has historically had the greatest impact on the largest number of people. Since 1980, 48 weather-related disasters have each caused at least $1 Billion in economic losses. Of these 48 disasters, the greatest losses have been attributed to drought. The recent drought of 2000 resulted in losses of $4 Billion and 140 deaths.

Drought conditions often affect farmers (both commercial farmers and personal farmers) and the local water supply (wells often run dry, rivers run low forcing public water supplies to decrease). Jefferson County's large agricultural sector is extremely susceptible to drought and could suffer significant economic losses as agriculture has long been an important component of the Jefferson County economy. Additionally there may be impacts to Jefferson County industry, including a negative impact on the capabilities of firefighters in the area, as water shortages may result in reduced water flow and pressure available to combat wild land and structural fires that may take place in the region.

Water is a resource that is often taken for granted. In recent years, water availability and quality have become important public concerns in Jefferson County. While the present availability of water is relatively good in Jefferson County, water is a precious resource that must be conserved and protected.

Methods for estimating annual groundwater consumption in Jefferson County have been modeled after the approach taken by Atkins (2004) in the USGS publication

"*Water-Use Estimates for West Virginia, 2004*". This approach breaks down water use into multiple categories so that each type, or classification, of water usage can be analyzed and estimated separately. The six (6) water-use categories which were used to estimate groundwater usage included: public, domestic, industrial, irrigation, commercial, and mining. This following estimate of water usage pertains only to groundwater withdrawal. The table below provides the estimated values of groundwater usage during 2011.

Jefferson County Groundwater Use Estimates 2011 Data		
Usage Category	**Mgal/day**	**Mgal/yr**
Public Supply	1.24	452.6
Domestic	1.86	678.9
Industrial	2.27	827.03
Irrigation	0.18	65.2
Commercial	0.1	36.1
Mining	0.1	36.5
Total	**5.75***	**2,096.33**

*Note: * = Daily values are rounded and should be considered more approximate than estimated yearly values.*

Table 2.2c

An estimate of groundwater availability has been made considering groundwater recharge, groundwater usage, and the component of groundwater recharge that would be necessary to maintain sufficient base-flow to streams. The highest risk of adequate water supply occurs during drought conditions; therefore, a recharge volume has been estimated assuming severe drought conditions (defined as 60% of normal annual precipitation). The total volume of annual groundwater recharge in drought conditions within Jefferson County has been estimated to be 18.5 billion gallons. The percentage of theoretically available groundwater currently being utilized within Jefferson County is approximately 16 percent (16%).

Factors that may affect the utilization of groundwater include regulatory considerations all states must comply with, such as the U.S. Environmental Protection Agency (EPA) Groundwater Rule which requires states to monitor public wells for bacteriological contamination; water laws such as The Water Resources Protection and Management Act (WRPMA) (West Virginia Code Chapter 22, Article 26), and environmental considerations.

PAST MITIGATION EFFORTS

While the effects of drought on the environment cannot be avoided in many cases, the adverse effects of drought caused by human activities in drought-prone areas can be avoided. Efforts to mitigate the effects of drought conditions in Jefferson County include consistent vigilance of forecasted conditions like the prevalence of rainfall, the development and distribution of public awareness materials concerning natural hazard risks, displaying drought information at public events such as public awareness day, and the county fair. The county has updated their website to provide hazard related information that is easily accessible, and has added a Drought Annex to the Emergency Operations Plan (EOP).

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	0	0%	$2,433,090,000	$0	0%	53,498	0	0%
Commercial	1,640	0	0%	$492,000,000	$0	0%	6,560	0	0%
Industrial	562	0	0%	$196,700,000	$0	0%	2,810	0	0%
Agricultural	546	164	30%	$81,900,000	$4,914,000	6%	182	55	30%
Religious/Non-Profit	30	0	0%	$10,610,000	$0	0%	300	0	0%
Government	80	0	0%	$68,333,360	$0	0%	3,633	0	0%
Education	44	0	0%	$165,000,000	$0	0%	1,701	0	0%
Utilities	41	0	0%	$145,550,000	$0	0%	62	0	0%
Total	25,062	164	1%	$3,593,183,360	$4,914,000	<1%	68,746	55	<1%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Drought

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0%	=	$0	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	0%	=	$0	$5,450,000	X	0%	=	$0
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	30%	=	$900,000
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0%	=	$0	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0%	=	$0	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$0				Total Loss to Contents	$900,000

Hazard: Drought

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$0
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$0
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$0
Shepherdstown Town	$7,000	X	0	+	$875	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$0
Charles Town City Water System	$3,840	X	0	+	$480	X	0	=	$0	$0
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$0
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	0	+	$450	X	0	=	$0	$0
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$0
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$0
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$0
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$0
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$0
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$0
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$0
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$0
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$0
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$0
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$0
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$0
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$0
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$0
Burch Wood Products	$93,600	X	0	+	$15,600	X	0	=	$0	$0
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$0
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	0	+	$17,500	X	0	=	$0	$0
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$0
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	3	+	$45,000	X	0	=	$540,000	$540,000
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	3	+	$40,000	X	0	=	$240,000	$1,140,000
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$0
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	0	+	$750	X	0	=	$0	$0
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

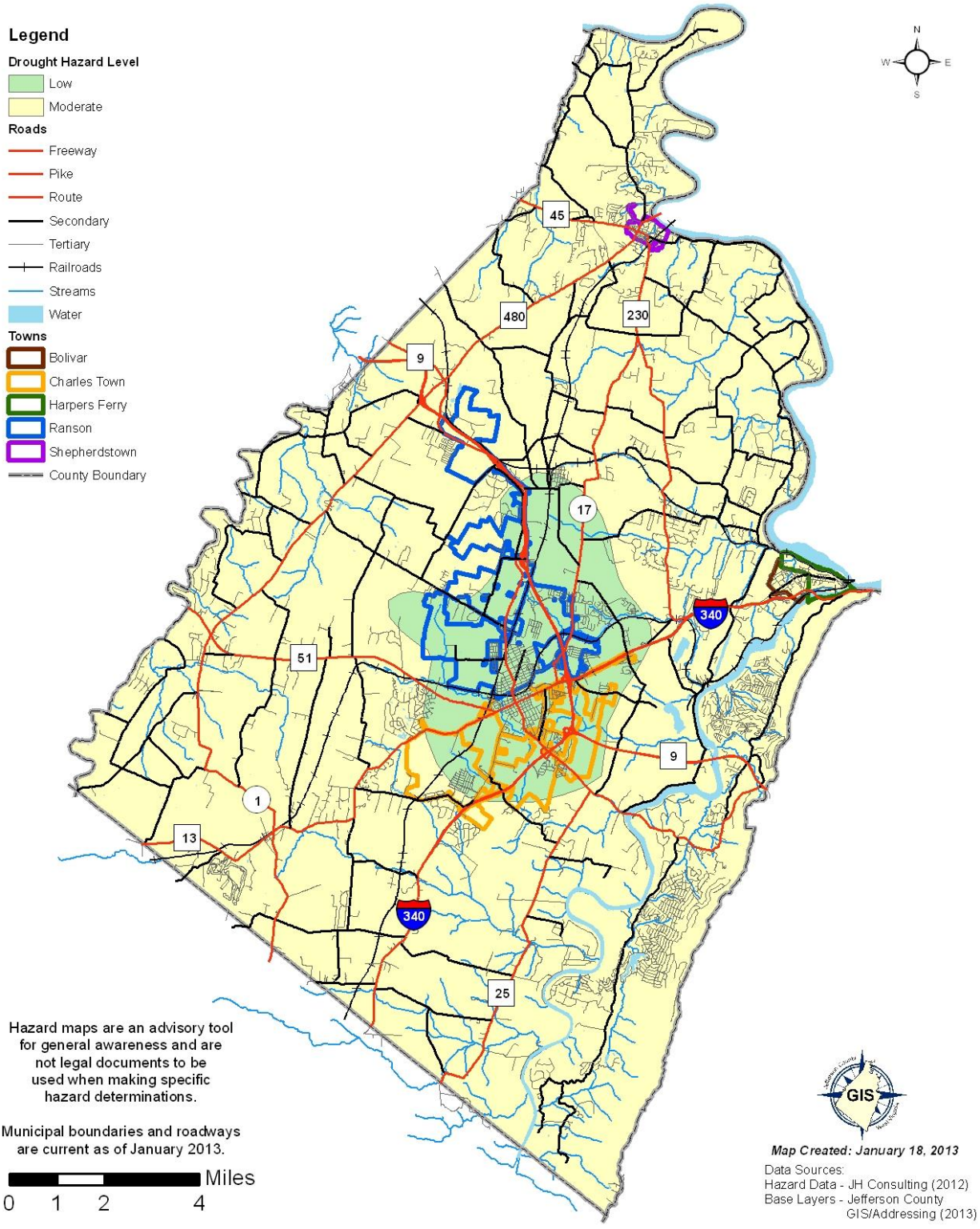
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$0
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$0
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$0
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$0
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$0
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
Total Loss to Structure Use & Function									$780,000	$1,680,000

2.2 PROFILING HAZARDS: DROUGHT MAP



2.2 PROFILING HAZARDS

2.2.3. Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulation within or along the edge of the Earth's tectonic plates.

INTRODUCTION

Earthquakes are one of nature's most damaging hazards and are more widespread than is often realized. The area of greatest seismic activity in the United States is along the Pacific Coast, in the states of California and Alaska; however, as many as 40 states can be characterized as having moderate earthquake risk. Several methods of research identified earthquakes as a hazard in Jefferson County, including the following sources:

Period of Occurrence:	At any time.
Number of Events to Date:	(4) Two (2) felt since 2010
Probability of Event:	Infrequent.
Warning Time:	None.
Potential Impacts:	According to FEMA, areas with a PGA of 3 to 5 (0.03 to 0.05) will incur little to no damage with no function loss.
Cause Injury or Death:	Minor risk of injury.
Potential Facility Shutdown:	None.

Figure 2.3a

- Building Seismic Safety Council
- FEMA HAZUS Homepage
- GIS Data Available on Earthquakes
- USGS Earthquake Homepage

Most earthquakes go unnoticed, some people and animals are more sensitive to minor events than others. Usually, it requires a magnitude of 2.5-3.0 for a local shaker to be noticed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a low earthquake risk. There have been two (2) earthquakes felt in Jefferson County since 2010; neither earthquake resulted in any damages. The risk of earthquake is not targeted to any particular areas within the county.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.3b

HAZARD IDENTIFICATION

Peak Ground Acceleration (PGA) is a measure of the strength of ground movements. The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity. Based on the national map provided by the United States Geological Survey (USGS) (see figure 2.3c at right) that shows the PGA values for areas with a 10 percent (10%) chance of being exceeded over 50 years, the majority of West Virginia including Jefferson County has an earthquake risk as it is located in the three percent (3%) area. According to the FEMA *State and Local Mitigation Planning How-To Guide: Understanding Your Risks,* areas rated as an MMI IV (a PGA of 2.0%-3.0% classifies an area as MMI IV) have a moderate earthquake hazard risk, and should consider earthquake hazards when developing a hazard mitigation plan.

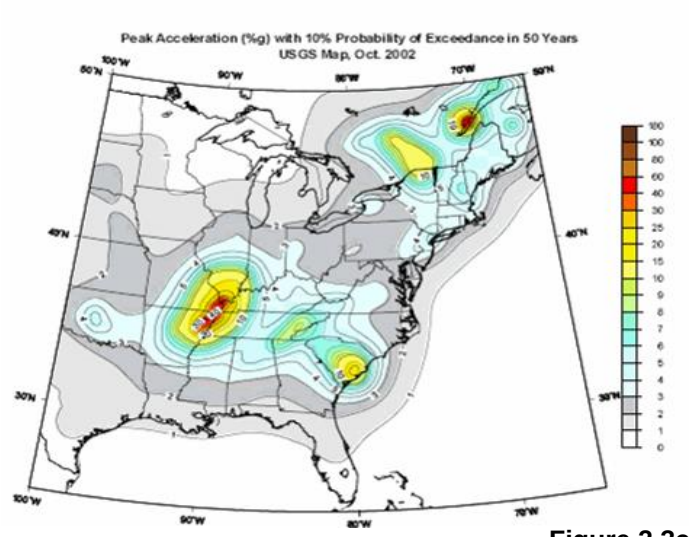


Figure 2.3c

Earthquake activity in Jefferson County would most likely stem from an event in the New Madrid Seismic Zone. West Virginia is on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that was the site of the largest earthquake sequence to occur in historical times in the continental United States. Earthquake activity could also be generated from the semi-active region near Giles County, Virginia. According to the Geohazards Internet site and discussions with local and regional officials, North Central West Virginia has felt slight tremors from minor earthquakes centered in West Virginia and elsewhere on the northern east coast.

The table at right (Table 2.3a) is the Modified Mercalli Scale, which is the general relationship between epicentral Modified Mercalli intensities and magnitude. Intensities can be highly variable depending on local geologic conditions. The Mercalli Scale is a semi-quantitative linear scale, whereas the Richter Scale (shown in Table 2.3b below) is a quantitative logarithmic scale. The Richter Magnitude Scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded between the various seismographs. Adjustments are located for the variation in the distance between the various seismographs and the epicenter of the earthquake. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake and a strong earthquake might be rated as a magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude.

Modified Mercalli Scale		Magnitude Scale
I	Detected only by sensitive instruments	1.5
II	Felt by few persons at rest, especially on upper floors; delicately suspended objects may swing	2
III	Felt noticeably indoors, but not always recognized as earthquake; standing autos rock slightly, vibrations like passing truck	2.5
IV	Felt indoors by many, outdoors by few, at night some awaken; dishes, windows, doors disturbed; standing autos rock noticeably	3
V	Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects	3.5 4
VI	Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small	4.5
VII	Everybody runs outdoors; damage to buildings varies depending on quality of construction; noticed by drivers of autos	5
VIII	Panel walls thrown out of frames; walls, monuments, chimneys fall; sand and mud ejected; drivers of autos disturbed	5.5 6
IX	Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked; underground pipes broken	6.5
X	Most masonry and frame structures destroyed; ground cracked, rails bent, landslides	7
XI	Few structures remain standing; bridges destroyed, fissures in ground, pipes broken, landslides, rails bent	7.5
XII	Damage total; waves seen on ground surface, lines of sight and level distorted, objects thrown up into air	8

Table 2.3a

Severity	Richter Scale	
	Magnitude	Mercalli
Mild	0-2.9	I-III
Moderate	2.9-4.1	IV-V
Intermediate	4.1-5.4	VI-VII
Severe	5.4-7.3	VIII-X
Catastrophic	7.3 +	XI-XIII

Table 2.3b

HISTORY OF EVENTS

According to an *Earthquake Epicenters of West Virginia Map* prepared by the West Virginia Geological and Economic Survey (see Figure 2.3d), a 2.0-2.9 mbLg magnitude earthquake occurred in 1846 that was centered in Jefferson County near the City of Charles Town. There was also a 3.0-3.9 mbLg magnitude earthquake that occurred just to the west of Jefferson County in Berkeley County in 1909.

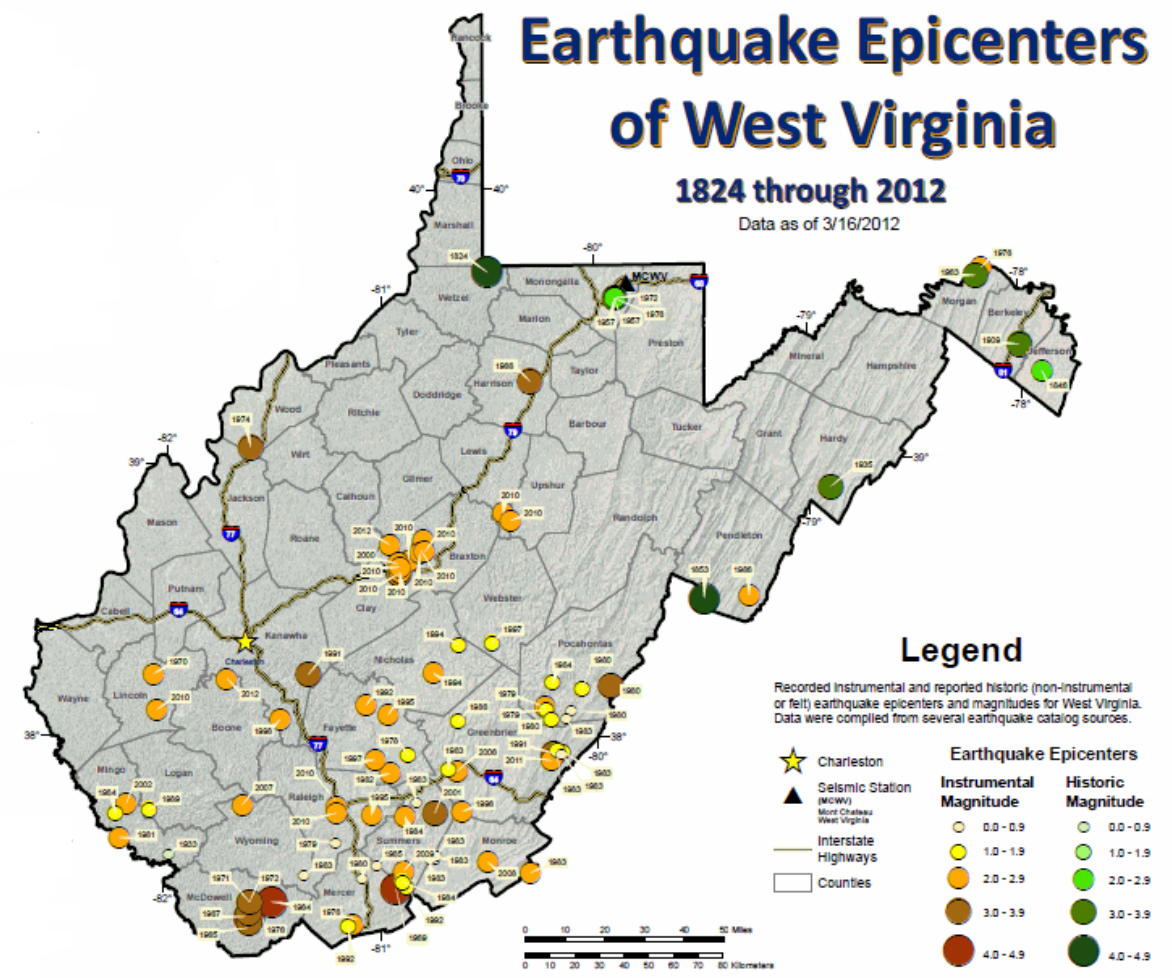


Figure 2.3d

The largest earthquake recorded in West Virginia occurred on November 20, 1969, it was a magnitude 4.5mbLg with an intensity of VI. This earthquake was centered in southern West Virginia. Several areas experienced damage to chimneys, broken windows, and plaster was broken from most interior walls. The earthquake was felt over nine (9) states. The epicenters of multiple earthquakes have been recorded in West Virginia.

Most recently, an earthquake centered in southern West Virginia near Charleston measuring approximately 3.2 on the Richter Scale occurred on June 28, 1991. On July 16, 2010 at approximately 5:13am the Eastern Panhandle of West Virginia felt an earthquake measuring 3.6 on the Richter Scale. This earthquake was centered near the Washington D.C. area in Montgomery County, Maryland. Eight (8) earthquakes with magnitudes between 2.2 and 3.4 were reported in Braxton County, West Virginia in 2010, these quakes were believed to be linked to the disposal of hydraulic fracturing fluids into an underground injection well; however, West Virginia officials were unable to found a correlation between the quakes and active at the injection well. On August 23, 2011 at 1:51pm in the Piedmont region of Virginia a 5.8 magnitude earthquake was epicentered in Louisa County, which is approximately 38 miles northwest of Richmond. The earthquake had a maximum perceived intensity of VII (very strong) on the Mercalli Intensity Scale. Several aftershocks, ranging up to 4.5 in magnitude, occurred after the main tremor. The quake was felt across more than a dozen U.S. states and in several Canadian provinces, and was felt by more people than any other quake in U.S. history. No deaths, and only minor injuries were reported, and minor damage to buildings was widespread. In Martinsburg, several government buildings were evacuated, and multiple citizens reported feeling their homes shaking violently enough to rattle picture frames off the walls. In Charleston, the Kanawha County Courthouse, the West Virginia State Capitol campus, and several other downtown buildings were evacuated. In Philippi, part of a chimney collapsed at the Barbour County courthouse.

Table 2.3c below includes historical earthquakes that have occurred in West Virginia and details the date of occurrence, where the earthquake was epicentered, and a brief description of the earthquake.

WEST VIRGINIA EARTHQUAKE HISTORY		
Date	**Epicenter Location**	**Description**
1846	Jefferson County, West Virginia	A 2.0-2.9 mbLg magnitude earthquake occurred that was centered in Jefferson County near the City of Charles Town.
May 31, 1897	Giles County, Virginia	Damage to chimneys was reported at Bluefield, and broken windows were reported in Grafton from the strong earthquake.
April 2, 1909	Charles Town - Martinsburg area	Pictures were thrown from walls, and many people rushed from their houses in terror at Charles Town from a strong earthquake. The total felt area covered approximately 4,040 square miles.
Nov. 1, 1935	Timiskaming, Quebec, Canada	A number of places in West Virginia felt tremors from a major earthquake. No damage was reported, but houses trembled and windows and dishes rattled.
March 2 and 8, 1937	Anna, Ohio	These earthquakes were reported felt at Huntington, West Virginia; the intensity was estimated to be MM I-III.
Sept. 5, 1944	Cornwall, Ontario, Canada	The earthquake was reported felt at Parkersburg, West Virginia with an intensity of (MM I-III).
April 23, 1959	Virginia - West Virginia border region	The earthquake caused minor damage in Giles County, Virginia, where several chimneys were damaged, plaster on walls cracked, and articles fell from shelves. Two (2) places in West Virginia felt this shock.
Nov. 19, 1969	Unknown	Probably the strongest, most widely felt earthquake in West Virginia's history. Only minor damage was sustained from the magnitude 4.3 shock. It consisted chiefly of cracked and fallen plaster and broken windows. Loud earth noises accompanied the tremor at many places. The earthquake was felt over approximately a 162,000 square miles area across nine (9) states.

Table 2.3c

WEST VIRGINIA EARTHQUAKE HISTORY		
Date	**Date**	**Date**
Aug. 11, 1970	Giles County, Virginia	A small shock in the west-central portion of the State was felt over a limited area. Charleston, Eskdale, Hamlin, Hurricane, and Saint Albans reported MM IV effects. Another minor tremor was reported felt near Morgantown on September 12, 1972. No damage occurred, but small objects shifted, houses and windows rattled, and residents were frightened.
Oct. 20, 1974	Unknown	A small area of northwestern West Virginia and southeastern Ohio reported a minor shock. One report of cracked plaster and articles toppling from shelves was received from Parkersburg.
June 28, 1991	Charleston, West Virginia	An earthquake centered in southern West Virginia near Charleston measuring approximately 3.2 on the Richter Scale.
2010	Braxton County, West Virginia	Braxton County experienced eight (8) small earthquake (i.e., magnitude 2.2 to 3.4) in the same year.

Table 2.3c Continued

HAZARD IMPACTS

A three percent gravity (3%g) PGA classifies Jefferson County as an MMI IV on the Modified Mercalli Scale. According to the FEMA *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*, areas rated as an MMI IV are likely to experience very light damage as a result of earthquakes. In these areas, perceived shaking is moderate, shaking can be felt indoors more so than outdoors, doors and dishes would be disturbed and parked automobiles would be rocked noticeably.

The severity of an earthquake is dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning, and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface ruptures, and ground failure. The risk of fire immediately following an earthquake is often high because of broken electrical lines and gas mains. In recent years, officials in most of the world's major cities have installed devices that shut these services down automatically if an earthquake strikes. Other hazards that may result from an earthquake are utility and communications failures.

The impacts to a community from earthquake events include injuries to citizens and public safety officials, damage to property, lost revenue and economic damages, increased demand on public safety and infrastructure related services. Ground shaking from earthquakes can collapse buildings and bridges, disrupt gas, electric, and phone service, and sometimes trigger landslides, flash floods, fires, and tsunamis.

PAST MITIGATION EFFORTS

The United States has been a world front-runner in mitigation efforts related to natural disasters. The advent of United States building codes, zoning codes, research on liquefaction areas and ground shaking, building retrofitting, non-structural mitigation/tie-downs, public education, drop-cover-and-hold exercises, and public television specials have dramatically reduced the impact to property, injuries and economic damage. When the United States is compared to countries that do not have these codes and standards (e.g., Turkey, Iran, and Pakistan the earthquake disaster results are dramatically different).

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	17,695	80%	$2,433,090,000	$9,732,360	0.40%	53,498	42,798	80%
Commercial	1,640	1,312	80%	$492,000,000	$1,968,000	0.40%	6,560	5,248	80%
Industrial	562	450	80%	$196,700,000	$786,800	0.40%	2,810	2,248	80%
Agricultural	546	437	80%	$81,900,000	$327,600	0.40%	182	146	80%
Religious/Non-Profit	30	24	80%	$10,610,000	$31,830	0.30%	300	240	80%
Government	80	64	80%	$68,333,360	$273,333	0.40%	3,633	2,906	80%
Education	44	35	80%	$165,000,000	$330,000	0.20%	1,701	1,360	80%
Utilities	41	33	80%	$145,550,000	$436,650	0.30%	62	50	80%
Total	25,062	20,050	80%	$3,593,183,360	$13,886,573	<1%	68,746	54,996	80%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		X
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?		X
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Earthquake

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0.25%	=	$2,188
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0.25%	=	$938
Shepherdstown Town	$2,225,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Bridges	$235,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0.25%	=	$398
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0.25%	=	$34,375
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0.25%	=	$22,500
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0.25%	=	$26,375
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0.25%	=	$21,876
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0.25%	=	$13,063
Shepherdstown Water System	$2,225,000	X	0%	=	$0	$5,450,000	X	0.25%	=	$13,625
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0.25%	=	$7,125
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0.25%	=	$4,625
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0.25%	=	$3,563
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0.25%	=	$2,788
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0.25%	=	$2,113
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0.25%	=	$813

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0.25%	=	$2,563
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0.25%	=	$1,813
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0.25%	=	$263
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0.25%	=	$2,225
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0.25%	=	$1,500
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0.25%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0.25%	=	$250
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0.25%	=	$473
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0.25%	=	$495
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0.25%	=	$288
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0.25%	=	$363
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0.25%	=	$138
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0.25%	=	$163

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0.25%	=	$263
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0.25%	=	$37,875
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0.25%	=	$213
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0.25%	=	$2,238
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0.25%	=	$788
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0.25%	=	$175
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0.25%	=	$263
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0.25%	=	$338
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0.25%	=	$170
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0.25%	=	$300
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0.25%	=	$525

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0.25%	=	$588
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0.25%	=	$738
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0.25%	=	$2,375
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0.25%	=	$338
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0.25%	=	$763
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0.25%	=	$525
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0.25%	=	$363
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0.25%	=	$438
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0.25%	=	$538
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0.25%	=	$488
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0.25%	=	$888
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0.25%	=	$100
Burch Wood Products	$895,000	X	0%	=	$0	$350,000	X	0.25%	=	$875
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0.25%	=	$3,125
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0.25%	=	$788
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0.25%	=	$538

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0.25%	=	$775
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0.25%	=	$1,625
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0.25%	=	$1,688
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0.25%	=	$11,388
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0.25%	=	$6,000
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0.25%	=	$3,750
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0.25%	=	$745
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0.25%	=	$888
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0.25%	=	$1,663
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0.25%	=	$1,613
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0.25%	=	$2,390
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0.25%	=	$1,863
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0.25%	=	$288
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0.25%	=	$10,000
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0.25%	=	$245

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0.25%	=	$2,500
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0.25%	=	$4,125
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0.25%	=	$7,500
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0.25%	=	$3,125
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0.25%	=	$3,750
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0.25%	=	$2,250
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0.25%	=	$8,875
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0.25%	=	$4,806
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0.25%	=	$250
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0.25%	=	$140
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Shepherdstown Post Office	$250,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0.25%	=	$638

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0.25%	=	$63
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0.25%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0.25%	=	$250
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0.25%	=	$100
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0.25%	=	$50
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0.25%	=	$213
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0.25%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0.25%	=	$75
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0.25%	=	$338

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
Beverly	$195,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0.25%	=	$100
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0.25%	=	$280
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0%	=	$0	$0	X	0.25%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0.25%	=	$225
Blakeley	$265,000	X	0%	=	$0	$0	X	0.25%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0.25%	=	$15,000
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0.25%	=	$75
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0.25%	=	$338
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Linden Spring	$15,000	X	0%	=	$0	$0	X	0.25%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0.25%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0.25%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0.25%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0.25%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0.25%	=	$38
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0.25%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0.25%	=	$250
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0.25%	=	$163

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0.25%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0.25%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0.25%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0.25%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0.25%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0.25%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Storer College	$395,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Strider Farm	$165,000	X	0%	=	$0	$0	X	0.25%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0.25%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0.25%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0.25%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0.25%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0.25%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0.25%	=	$125
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0.25%	=	$50
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0.25%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Rellim	$85,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0.25%	=	$113
Rockland	$140,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0.25%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0.25%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0.25%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0.25%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0.25%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Vinton	$0	X	0%	=	$0	$0	X	0.25%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0.25%	=	$83
Winward	$98,000	X	0%	=	$0	$20,000	X	0.25%	=	$50
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0.25%	=	$38
Woodlawn	$0	X	0%	=	$0	$0	X	0.25%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0.25%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0.25%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0.25%	=	$0
Residential	$2,433,090,000	X	0%	=	$0	$486,618,000	X	0.25%	=	$1,216,545
				Total Loss to Structure	$0				**Total Loss to Contents**	$1,573,694

Hazard: Earthquake

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$563
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$1,125
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$563
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$2,188
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$938
Shepherdstown Town	$7,000	X	0	+	$875	X	0	=	$0	$563
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$398
Charles Town City Water System	$3,840	X	0	+	$480	X	0	=	$0	$34,375
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$1,063
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$22,500
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$26,375
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$21,876
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$13,063
Shepherdstown Water System	$3,600	X	0	+	$450	X	0	=	$0	$13,625
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$7,125
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$4,625
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$3,563
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$150
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$2,788
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$2,113
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$813

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$2,563
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$1,813
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$188
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$263
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$2,225
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$1,500
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$500
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$250
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$188
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$313
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$473
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$495
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$163
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$288
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$200
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$500
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$163
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$188
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$363
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$138
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$163
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$163

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$263
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$37,875
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$813
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$125
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$200
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$275
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$213
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$625
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$2,238
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$563
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$788
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$163
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$175
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$263
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$563
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$1,125
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$238
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$188
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$338
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$170
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$300
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$500
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$525

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$588
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$738
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$2,375
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$338
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$763
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$525
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$363
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$413
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$438
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$538
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$488
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$888
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$1,063
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$238
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$625
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$100
Burch Wood Products	$93,600	X	0	+	$15,600	X	0	=	$0	$875
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$563
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$3,125
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$788
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$550
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$275
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$538

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$775
Halltown Paperboard Company	$105,000	X	0	+	$17,500	X	0	=	$0	$1,625
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$1,688
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$11,388
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$1,125
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$563
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$375
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$163
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$6,000
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$163
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$3,750
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$813
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$745
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$888
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$1,663
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$563
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$1,613
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$1,125
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$2,390
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$1,863
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$1,063
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$288
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$10,000
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$245

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$563
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$2,500
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$625
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$4,125
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$7,500
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$3,125
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$3,750
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$2,250
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$8,875
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$4,806
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$238
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$188
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$313
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$200
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$250
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$275
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$375
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$140
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$163
Shepherdstown Post Office	$6,000	X	0	+	$750	X	0	=	$0	$150
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$163
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$500
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$550
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$638

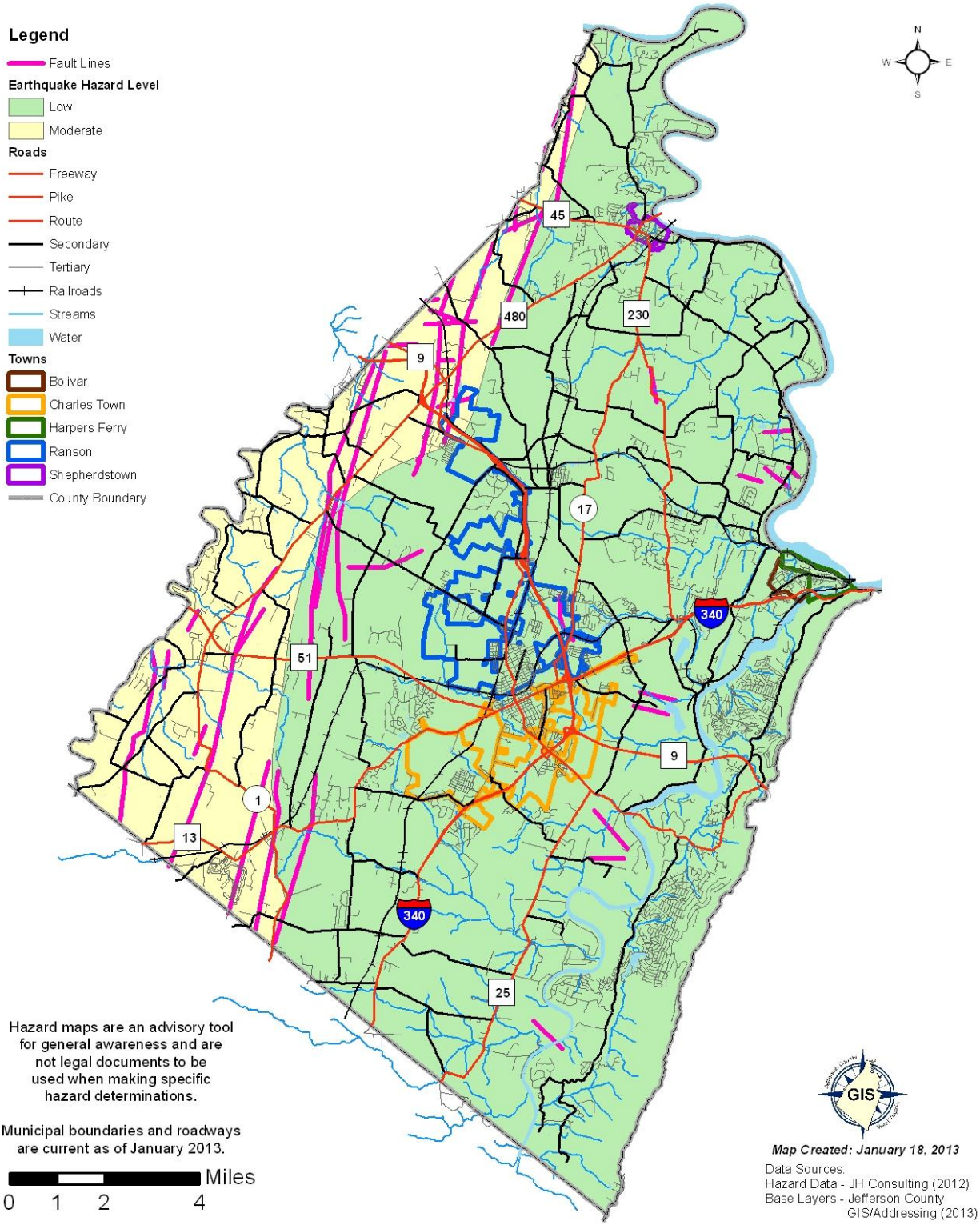
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$550
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$625
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$63
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$125
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$88
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$150
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$250
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$238
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$163
Bower Building	$0	X	0	+	$0	X	0	=	$0	$188
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$100
Barleywood	$0	X	0	+	$0	X	0	=	$0	$88
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$150
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$563
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$275
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$50
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$163
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$313
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$213
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$563
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$375
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$75
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$338

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$125
Beverly	$0	X	0	+	$0	X	0	=	$0	$163
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$125
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$100
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$280
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$0
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$275
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$225
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$313
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$15,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$75
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$338
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$238
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$38
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$125
New Opera House	$0	X	0	+	$0	X	0	=	$0	$250
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$163

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$238
Storer College	$0	X	0	+	$0	X	0	=	$0	$275
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$125
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$50
Piedmont	$0	X	0	+	$0	X	0	=	$0	$88
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$163
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$113
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$88
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$83
Winward	$0	X	0	+	$0	X	0	=	$0	$50
Woodbury	$0	X	0	+	$0	X	0	=	$0	$38
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
Total Loss to Structure Use & Function									$0	$1,573,694

2.2 PROFILING HAZARDS: EARTHQUAKE MAP



2.2 PROFILING HAZARDS

2.2.4. Flooding

Flooding is defined as a general temporary condition of partial or complete inundation of normally dry land areas from: overflow of inland or tidal waters; unusual and rapid accumulation of runoff of surface water from any source; mudflows; or the sudden collapse of shoreline land. A flash flood is rapid flooding of low-lying areas, rivers, and streams that is caused by intense rainfall and is often associated with thunderstorms.

INTRODUCTION

Floods are the most prevalent hazard in the United States. Each year, floods cause more property damage in the United States than any other type of natural disaster, killing an average of 150 people a year. The history of flooding within Jefferson County indicates that flooding can occur at any time of the year. However, nearly all major floods are produced by winter and spring rains falling on already-saturated, snow covered, or frozen soil. Winter and spring rains, although of lesser intensity than summer and fall rains, are usually of longer duration and result in greater peak flows in streams.

Period of Occurrence:	Primarily April through August (history shows incidents occurring year-round). Flash Flood – At any time depending on recent weather conditions. Result of Dam Failure – At any time.
Number of Events to Date (1993 – 2012):	35
Probability of Event:	Frequent.
Warning Time:	River Flood – 3 to 5 days. Flash Flood – Minutes to hours. Dam Failure – None.
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death.
Potential Facility Shutdown:	Days to Weeks.

Figure 2.4a

Several methods of research identified flooding as a hazard in Jefferson County, including reviews of Flood Insurance Rate Map (FIRM) maps, review of existing plans that have been compiled including the Jefferson County Emergency Operations Plan (EOP), reviews of newspaper

coverage, reviews of past disaster declarations, discussions with local floodplain coordinators and floodplain managers, and public input. The following Internet sites were also used to gain information on flooding.

Floods are described by their horizontal extents, the depth of the floodwaters and the probability of occurrence. Unfortunately, the probability of occurrence has historically been expressed in terms such as a "100 year flood", which the general public logically assumes means a flood that happens once in 100 years. In fact, the probability of occurrence is best interpreted as a percent chance of occurring. So, a 100 year flood is that flood level which has a 1 percent (1%) chance of occurring in any given year. The 100 year, or 1% flood, is often used for planning purposes. Smaller floods are more likely to occur, thus a 10 year flood has a 10% chance of occurring in any given year. Table 2.4a shows common flood probability terms.

Flood Recurrence Intervals	Chance of Occurrence in any Given Year
10 Year	10%
50 Year	2%
100 Year	1%
500 Year	0.2%

Table 2.4a

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a moderate to high flooding risk. The risk of flooding is targeted to several different areas within the county. Identification of floodplain areas within the county and its municipalities is based on Flood Insurance Rate Map (FIRM) data produced by the National Flood Insurance Program (NFIP).

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.4b

HAZARD IDENTIFICATION

Flooding is arguably the highest priority hazard in Jefferson County, as flooding in some form has the potential to threaten nearly the entire county. Located at the confluence of the Potomac and Shenandoah Rivers, Jefferson County is separated into three (3) major drainage divides by the county's rolling topography. The Shenandoah River has a drainage area of 105 square miles at the downstream county boundary. Its average channel slope within Jefferson County is approximately 4.6 feet per mile. The Potomac River has a drainage area of 62 square miles. Between these drainage divides are a network of 22 major streams that feed into the two (2) aforementioned rivers and Opequon Creek. Opequon Creek has a drainage area of 44 square miles, and an average channel slope of approximately 56 feet per mile. Most streams in the county flow in a northwest-southeast orientation toward the Opequon or Shenandoah. Turkey Run, one of the largest streams, has a total drainage area of 8.0 square miles and its average channel slope within Jefferson County is approximately 50 feet per mile. Evitts Run, another large stream, has a drainage area of 17.91 square miles. Its headwaters are in central Jefferson County and flows eastward to the Shenandoah River. Flowing Springs Run, an additional large stream, has a drainage area of 7.88 square miles. It heads just north of Ranson and flows eastward to the Shenandoah River. Almost all of these streams are spring fed, thus resulting in the intermingling of surface and subsurface waters. Regardless of their origin, all waters ultimately flow into the lower Potomac River and the Chesapeake Bay.

Riverine flooding, which is usually caused by a significant amount of rainfall over a period of days and can be worsened by snowmelt conditions, is very likely to continue striking areas located along the banks of the Potomac and Shenandoah Rivers. Communities located along the banks of these rivers are in particularly low-lying areas. The towns of Bolivar, Harpers Ferry, and Shepherdstown are all examples of such areas.

Flash flooding in or near the urban areas of the county is often attributed to failing storm sewers and poor drainage systems; however, in the majority of Jefferson County it is often a result of large quantities of water rapidly running off of steep slopes and collecting in narrow river valleys. Excessive amounts of impermeable surfaces such as pavement can increase the amount and rate of water runoff. Development affects the runoff of storm water and snowmelt. When rain falls in an undeveloped area, as much as 90 percent (90%) of it will infiltrate the ground; in a highly developed area, as much as

90% of it will run off. Flash flooding is difficult to mitigate against, as many urbanized areas may not actually be in designated floodplains, and are not subject to floodplain ordinances. However, residents and business owners in these areas should be warned of the potential for flash flooding, especially if the storm water system in their community is old.

There are properties within Jefferson County that have been the site of multiple loss claims due to flooding; these properties are referred to as repetitive loss properties. There are currently 20 listed "repetitive loss" properties in Jefferson County according to representatives with the Federal Emergency Management Agency (FEMA), National Flood Insurance Program (NFIP). Table 2.4b below indicates the type of structure, the number of losses suffered, and the approximate location of the property. This information is legally privileged and confidential. Its use is protected under the privacy act of 1974, 5 U.S.C. Section 552(a). Use of this information should be restricted to Official Use Only (FOUO).

JEFFERSON COUNTY REPETITIVE LOSS DETAILS			
Type of Structure	**Number of Losses**	**Location**	**Mitigated**
Residential – Single Family	2	Shepherdstown	Yes
Residential – Single Family	2	Shepherdstown	Yes
Residential – Single Family	5	Harpers Ferry	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	3	Charles Town	No
Residential – Single Family	3	Charles Town	No
Residential – Single Family	3	Harpers Ferry	No
Residential – Single Family	3	Harpers Ferry	No
Residential – Single Family	3	Shepherdstown	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	2	Charles Town	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	2	Charles Town	No
Residential – Single Family	2	Shepherdstown	No
Residential – Single Family	2	Harpers Ferry	No
Residential – Single Family	2	Charles Town	No
Residential – Single Family	2	Shepherdstown	No
Residential – Single Family	2	Harpers Ferry	No

Table 2.4

The table below indicates when each of the jurisdictions in Jefferson County started participating in the National Flood Insurance Program (NFIP). Jefferson County and participating jurisdictions have adopted and implemented floodplain management requirements, including regulating all and substantially improved construction in Special Flood Hazard Areas, and will continue to enforce regulations in the future. Floodplain mapping has also been developed for participating jurisdictions; the most current floodplain mapping was completed on December 18, 2009.

Jurisdiction	Initial FHBM	Current Effective Map Date
Jefferson County	12/20/74	12/18/09
Bolivar	N/A	12/18/09
Charles Town	2/1/74	12/18/09
Harpers Ferry	2/27/76	12/18/09
Ranson	5/3/74	12/18/09
Shepherdstown	2/1/74	12/18/09

Source: FEMA's CIS database **Table 2.4c**

In 2012, Jefferson County was chosen as one (1) of seven (7) communities throughout the country to participate in a new Pilot Program, Resilient Neighbors Network. Developed by the Natural Hazards Mitigation Association (NHMA) in conjunction with Federal Insurance and Mitigation Administration (FIMA), this grassroots peer-to-peer community program is designed to help communities work together, strengthen, and expand local hazard-mitigation programs. This co-mentoring network will also offer ideas and feedback to FIMA on how they can help increase community resilience to natural hazards. FIMA has developed a "Mitigation Model" to establish mechanisms and incentives to facilitate and enable local risk reduction actions.

HISTORY OF EVENTS

According to records from the National Climatic Data Center (NCDC) Event Record database, the months when the most flooding occurs are March, with five (5) reported floods from 1950 to present, September, with four (4) reported floods and January and February both with three (3) reported floods. There have been 35 flood events in Jefferson County since 1993, 21 of which were river floods, and 14 that were considered flash flood events.

The worst hazard events experienced in Jefferson County were incidences of flooding resulting from heavy rains and snow melt. The earliest flood on record occurred in 1870 when the Shenandoah River was recorded at 12.9 feet above flood stage in the

community of Millville. The most damaging floods in Jefferson County have all occurred within the last decade.

- October 1962 – Flooding of the Shenandoah River at Millville resulted in estimated damages to over 40 homes and mobile homes. The river crested at 32.45 feet.
- April 22, 1992 – Both the Shenandoah and the Potomac Rivers crested above flood stage after 4.5 inches of rainfall. A car and a mobile home were destroyed by the high waters.
- March 25-28, 1993 – Flash flooding occurred after snow melted throughout the county. Several people were evacuated and approximately $5,000 in damages to public facilities was caused.
- January 19-21, 1996 – A three-day period of flooding resulting from snow melting after the Blizzard of 1996. Several roads were closed and many structures were affected or damaged by high water. This flooding resulted in approximately $593,000 in damages to public and private facilities.
- September 6, 1996 – Heavy rain and flooding was experienced as a result of Hurricane Fran. Damage was sustained by many residential structures throughout the county. Harpers Ferry was especially hard hit with the flooding of park exhibition buildings and clean-up costs of over $2.8 million. Transportation was also impacted with roadways closed and washed out as well as severe damage to some CSX tracks.
- November 7-10, 1997 – Flooding on the Potomac River, Opequon Creek, and the Shenandoah River resulted in the inundation of roadways and other minor damages.
- January 8-10, 1998 – Roadways flooded with minor damages reported. The Opequon Creek crested .75 inches above flood stage; Potomac River crested 1/2 foot under flood stage; and the Shenandoah River crested 1.8 feet over flood stage at Millville.
- January 28-29, 1998 – Flooding occurred along the Shenandoah and Potomac Rivers and the Opequon Creek banks during a Winter Storm Warning issued by the National Weather Service.
- May 26, 2002 – Basements and yards were flooded. Water collected on Route 480 near Shepherdstown. Scattered thunderstorms with large hail and very heavy downpours moved through the Eastern Panhandle between 3 and 7 PM. In Jefferson County, golfball sized hail fell in Shepherdstown near Route 480. In

Kearneysville, baseball sized hail was reported. Numerous trees were downed in the vicinity. Power was knocked out in Charles Town and Ranson. Heavy downpours flooded basement and yards. High water was also reported on Route 480 near Shepherdstown. No financial data for property damage was reported.

- January 2, 2003 – Heavy rainfall on the 1st caused minor flooding on rivers and creeks in Berkeley and Jefferson counties. In Shepherdstown, the Potomac River reached a stage of 16.57 feet. Flood stage is 15 feet. The road to a housing development was flooded and several other low lying areas along the river were inundated by water. No financial data for property damage was reported.
- February 23, 2003 – A combination of 1.5 to 3 inches of rain that fell between the evening of the 21st and the morning of the 23rd and snow melt from the massive snowstorm of 14-18 February led to widespread flooding. In Jefferson County, drivers had to be rescued when their vehicles stalled in high water on Bloomery Road. Avon Bend Road was flooded by the Shenandoah River and a motorist had to be rescued when his car became stalled in flood waters. No financial data for property damage was reported.
- May 16, 2003 – A large area of showers and thunderstorms containing heavy downpours moved through the region between the afternoon of the 15th and the morning of the 16th. The system dropped between 1.5 and 3 inches of rain across the extreme northeast portion of the Eastern Panhandle, resulting in minor flooding. In Jefferson County, Route 230 was closed by high water. Roads were also flooded in the Ranson and Millville areas. In addition, flooding was reported along Route 340 near the confluence of the Shenandoah and Potomac rivers near Harpers Ferry. No financial data for property damage was reported.
- September 18-20, 2003 – Heavy rain and flooding was experienced as a result of Hurricane Isabel. At Shepherdstown, there was moderate flooding with the river cresting at 19.83 feet at 4:30 on September 20. Flood stage is 15 feet. The Opequon Creek at Martinsburg had minor flooding. Millville on the Shenandoah River had moderate flooding reaching a crest of 17.31 feet at 8 pm on September 20. Flood stage is 13.5 feet. Harpers Ferry at the confluence of the two rivers saw minor flooding. In Jefferson County, a car drove into flood waters. The driver and child in the car were rescued. Total property and crop damage for the Eastern Panhandle was $1,070,000.

- September 28, 2004: A few secondary roads flooded. The remnants of Hurricane Jeanne brought widespread flooding to Eastern West Virginia on the 28th. The flooding lasted from mid morning at some sites through late evening. Many secondary and primary roads, including US Routes 51 and 11, were under water. No financial data for property damage was reported.
- November 29, 2005 – Vehicles were flooded out in water across the county. A large low pressure system moved from the Ohio Valley into the Middle Appalachians on November 29. Southerly winds brought moisture into the region. Prolonged heavy rainfall occurred in the Eastern West Virginia Panhandle. This heavy rainfall lead to flooding in some areas. On the evening of the 29th, some thunderstorms produced flash flooding in Jefferson and Berkeley counties. A few severe thunderstorms also occurred. Total property damage reported was $150,000.
- June 26, 2006 – High water caused a vehicle accident on Highway 230 near Covenant Baptist Church. Spruce Street flooded. Water went into the Bolivar-Harpers Ferry Public Library. Basement flooding in homes in Bolivar. Scattered areas of flash flooding began late on June 27 and continued into June 28. Numerous road closures and several water rescues were reported across the Eastern Panhandle of West Virginia. Total property damage reported was $25,000.
- March 2, 2007 – On Saturday, March 3rd, two people became stranded in the flood waters when they drove past the "Road Closed" and "High Water" signs on River Road. The occupants were able to get out of their car and wade through the 2 feet of water to get to shore. When a law enforcement officer arrived at the scene to help retrieve the vehicle, he drove an SUV through the water and was able to cross successfully. However, the engine was blown. Another woman was stranded later in the day in the flooded roadway at the Rattlesnake Run end of River Road. The South Branch of the Potomac River at Shepherdstown crested at 15 feet after midnight on March 2nd. Total property damage reported was $15,000.
- April 16, 2007 – Newspapers reported flooding along River Road near the Pack Horse Farm subdivision in Shepherdstown, WV.
- March 13, 2010 – The 2 to 4 inches of rain combined with nearly saturated antecedent conditions to produce flooding over eastern West Virginia. Several

Roads across Jefferson County were closed due to high water, including John Rissler Road, Bloomery Road, and River Road.

- April 16, 2011 – With ground already saturated from several rounds of significant rainfall in the past week, flooding and flash flooding resulted. Rainfall amounts over the eastern West Virginia panhandle exceeded three (3) inches in spots. A mudslide and flooded basements were reported near the top of the mountain near the Virginia border. Chestnut Hill Road was closed due to water cascading down the road toward Highway 340.
- October 30, 2012 – Predicted flooding on Opequon Creek caused evacuations of residents in both Jefferson and Berkeley Counties. The river crested at 13.5 feet.

HAZARD IMPACT

Flooding continues to be a frequent and damaging natural disaster as a result of the Potomac and Shenandoah Rivers, and their many tributaries. Flooding is the most costly natural hazard in Jefferson County, and has resulted in approximately $21 million in property damage over the past 61 years.

Flooding impacts to the community include injuries to citizens and public safety officials, damage to property, lost revenue and economic damages, and increased demand on public safety and infrastructure related services. Response activities include unanticipated overtime for Emergency Operations Center (EOC) activations, evacuations, sheltering of displaced people, rerouting traffic destined for impassible roads, bridge and road damage repairs, and rescue or medical missions related to motorists and isolated families. Private property damages to homes and vehicles as well as land erosion, river channel changes, agricultural damages and livestock losses resulting in significant rural economic impacts to local residents.

The table below summarizes the asset inventory for addressable structures in the floodplain across Jefferson County.

	Charles Town	Ranson	Harpers Ferry	Shepherdstown	Unincorporated County	Total
Addressable Structures	19	88	4	126	443	680

Table 2.4d

Source: Jefferson County GIS/Addressing Office & 2009 FEMA 100-Year Floodplain data

Based on this analysis, of the incorporated areas Shepherdstown has the greatest number of addressable structures within the floodplain in Jefferson County. An estimated 126 addressable structures in the Corporation of Shepherdstown fall within the identified flood hazard areas. Shepherdstown has a mix of both residential and commercial structures at risk from flooding as well as other buildings such as properties belonging to the town and Shepherd University.

The second highest amount of addressable structures within a municipality located in the floodplain occurs in Ranson, where 88 structures are at risk from flooding.

Charles Town has the third highest amount of structures in the floodplain at 19. These structures are primarily located along Evitts Run, a creek that crosses through the southwestern portion of the town, and the majority is in the area surrounding the Evitts Run Park. Charles Town is also the only municipality within Jefferson County to have a critical facility located within the floodplain, the Charles Town Waste Water Treatment Plant.

Based on the existing FIRM maps and the Jefferson County GIS/Addressing Office database only four (4) structures within Harpers Ferry are located within the 100-year floodplain all of which are located in the Harpers Ferry National Historical Park. Interviews with town representatives indicate that Harpers Ferry has experienced some of the worst flooding within Jefferson County and many structures have received damages in the past. The inaccuracy of the FIRM maps used to delineate the floodplain in this area may account for the lower than expected structure count. GIS maps from the National Park Service that contain more updated studies of the location of floodplains in Harpers Ferry were also reviewed, however, this information did not lend any insight to the flood problem outside of the park boundaries.

According to information collected by the National Park Service, the lower town of Harpers Ferry has reached or surpassed the flood stage of 18.5 feet over 36 times. The highest river crest on record for the Harpers Ferry area was 36.5 feet on March 19, 1936. Based on the procedures detailed in the Emergency Response Plan for Harpers Ferry National Historical Park a variety of park and town facilities are at risk when the river crests above flood stage:

- 16-18 feet – Pedestrian Bridge over Potomac River.
- 18.5-20 feet – Shenandoah Street and Harpers Ferry/Bolivar Public Service District.
- 20-27 feet – Lower town.

Interviews with local government officials in Harpers Ferry provided further insight to the flooding problem experienced by the town. Based on previous flood events when waters rise above 23 feet in Harpers Ferry, the first two (2) buildings on Potomac Street outside of the National Park property are inundated with water. If the floodwaters rise to 25 feet the remaining properties on Potomac Street are flooded including six (6) commercial establishments and one (1) residential property.

Infrastructure layers were also intersected with FEMA 100-Year floodplain data across the county to determine the location and amounts of vulnerable roadways, railroads, and utilities. The table below summarizes the findings of this portion of the analysis. These results indicate that approximately 65 miles of infrastructure are located in flood hazard areas.

Facility Type	Number of Miles
Roads	46.81
Utilities	2.25
Railroads	15.53
Total	**64.59**

Table 2.4e
Source: Jefferson County GIS/Addressing Office

PAST MITIGATION EFFORTS

Past mitigation efforts to reduce the effects of flooding throughout Jefferson County include the following:

- The distribution of public awareness materials concerning flood hazard risks, updating the county's website, and use of social media (i.e., facebook, twitter, etc.) to provide hazard related information that is easily accessible.
- The yearly distribution of letters to all property owners in or near a floodplain in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS). Jefferson County is now a Class eight (8) in the CRS, resulting in a 10% reduction of flood insurance premiums for policies in the unincorporated areas of Jefferson County.
- Holding local courses on the National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.
- Working with the municipalities to update all floodplain ordinances adopted prior to 1987, all have been updated.

- Providing additional training to county and municipal development officials on NFIP requirements.
- Providing training to municipalities on the CRS program and encouraging them to participate.
- Collecting updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- Developing a database of information on all repetitive loss properties including maps.
- Identifying owners of repetitive loss properties who are interested in participating in future property acquisition and relocation projects.
- Conducted buyouts or property acquisition and relocation projects in several areas, and have conducted flood elevation adjustments to several facilities.
- Working with FEMA and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) on the Map Modernization Program to improve FIRMs.
- Working with the West Virginia Department of Highways to identify areas of frequent roadways flooding and develop mitigation strategies.
- Working with National Weather Service (NWS) to evaluate the flood stage data for Millville on the Shenandoah River and as of March, 2012 adjusted the flood stage from 13 feet to 10 feet.
- Utilizing the media from the distribution and publication of flooding information.
- A large USDA funded storm water channeling mitigation project was conducted in the West side of the City of Ranson.
- Potomac Edison, the NWS, and USGS formed a partnership to keep the river gauge on the Shenandoah River.
- Several mitigation buyout projects have been completed by Jefferson County. Property on Bloomery Road and Riverside Drive were purchased and returned to open space. A property at Dam Four was purchased and worked with DNR to create a recreational use/open space area.
- Structural elevations have been conducted on two (2) residential properties.
- Jefferson County has been designated by the NWS as a StormReady community since 2004.
- Jefferson County is part of FEMA's RiskMAP Program.

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	1,106	5%	$2,433,090,000	$12,165,450	0.50%	53,498	1,070	2%
Commercial	1,640	16	1%	$492,000,000	$344,400	0.07%	6,560	459	7%
Industrial	562	0	0%	$196,700,000	$0	0%	2,810	0	0%
Agricultural	546	5	1%	$81,900,000	$65,520	0.08%	182	15	8%
Religious/Non-Profit	30	0	0%	$10,610,000	$0	0%	300	0	0%
Government	80	0	0%	$68,333,360	$0	0%	3,633	0	0%
Education	44	0	0%	$165,000,000	$0	0%	1,701	0	0%
Utilities	41	11	27%	$145,550,000	$1,455,500	1%	62	35	56%
Total	25,062	1,138	5%	$3,593,183,360	$14,030,870	<1%	68,746	1,579	2%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Flooding

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	2%	=	$84,658	$875,000	X	5%	=	$43,750
Ranson City Hall	$2,850,645	X	2%	=	$57,013	$375,000	X	5%	=	$18,750
Shepherdstown Town	$2,225,000	X	2%	=	$44,500	$225,000	X	5%	=	$11,250
Bridges	$235,000,000	X	0.25%	=	$587,500	$0	X	0%	=	$0
Railroads	$195,000,000	X	1%	=	$1,950,000	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0.10%	=	$1,215,000	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	2%	=	$20,100	$159,000	X	5%	=	$7,950
Charles Town City Water System	$6,213,000	X	1%	=	$62,130	$13,750,000	X	5%	=	$687,500
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	2%	=	$130,400	$10,550,000	X	5%	=	$527,500
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	2%	=	$35,000	$5,225,000	X	5%	=	$261,250
Shepherdstown Water System	$2,225,000	X	2%	=	$44,500	$5,450,000	X	5%	=	$272,500
Shenandoah Junction Water System	$1,000,000	X	2%	=	$20,000	$2,850,000	X	5%	=	$142,500
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	2%	=	$14,300	$1,115,000	X	5%	=	$55,750
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	1%	=	$12,500	$1,025,000	X	0.05%	=	$513
Friendship VFD	$1,150,000	X	1%	=	$11,500	$725,000	X	0.05%	=	$363
Harpers Ferry National Park Service Police	$315,000	X	1%	=	$3,150	$75,000	X	5%	=	$3,750
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	2%	=	$10,100	$125,000	X	5%	=	$6,250
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	2%	=	$8,500	$198,000	X	5%	=	$9,900
Shepherdstown University Police	$395,000	X	2%	=	$7,900	$65,000	X	5%	=	$3,250
Shepherdstown VFD	$845,000	X	1%	=	$8,450	$115,000	X	5%	=	$5,750
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	2%	=	$6,100	$75,000	X	5%	=	$3,750
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	2%	=	$4,500	$65,000	X	5%	=	$3,250

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	2%	=	$31,000	$325,000	X	5%	=	$16,250
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	2%	=	$137,000	$315,000	X	5%	=	$15,750
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	2%	=	$43,000	$95,000	X	5%	=	$4,750
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	2%	=	$37,100	$68,000	X	5%	=	$3,400
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0.50%	=	$277,750	$950,000	X	0.50%	=	$4,750
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	1%	=	$32,250	$145,000	X	5%	=	$7,250
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	1%	=	$18,500	$355,000	X	5%	=	$17,750
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	2%	=	$17,900	$350,000	X	5%	=	$17,500
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	2%	=	$25,000	$220,000	X	5%	=	$11,000
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	2%	=	$25,520	$650,000	X	5%	=	$32,500
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	2%	=	$29,000	$225,000	X	5%	=	$11,250
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	1%	=	$6,250	$65,000	X	5%	=	$3,250
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	2%	=	$8,500	$298,000	X	5%	=	$14,900
McDaniel Hardwood Products	$1,750,000	X	2%	=	$35,000	$355,000	X	5%	=	$17,750
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	2%	=	$13,000	$115,000	X	5%	=	$5,750
Universal Forest Products	$2,250,000	X	2%	=	$45,000	$4,000,000	X	2%	=	$80,000
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	1%	=	$300,000	$3,550,000	X	5%	=	$177,500
Southern States	$2,210,000	X	2%	=	$44,200	$1,922,345	X	5%	=	$96,117
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	1%	=	$2,150	$56,000	X	5%	=	$2,800
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	1%	=	$2,500	$60,000	X	5%	=	$3,000
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	1%	=	$6,150	$220,000	X	5%	=	$11,000
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	1%	=	$1,100	$50,000	X	5%	=	$2,500
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	2%	=	$33,000	$0	X	5%	=	$0
Beall-Air Building	$450,000	X	2%	=	$9,000	$100,000	X	5%	=	$5,000
Belvedere Building	$500,000	X	2%	=	$10,000	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	2%	=	$7,300	$75,000	X	5%	=	$3,750
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	2%	=	$3,300	$60,000	X	5%	=	$3,000
Charles Town Historic District	$2,000,000	X	0.25%	=	$5,000	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	2%	=	$1,800	$20,000	X	5%	=	$1,000
Duffields Depot	$310,000	X	2%	=	$6,200	$65,000	X	5%	=	$3,250
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	2%	=	$19,300	$225,000	X	5%	=	$11,250
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	2%	=	$40,000	$0	X	5%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	2%	=	$4,300	$50,000	X	5%	=	$2,500
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	2%	=	$11,800	$50,000	X	5%	=	$2,500
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0.25%	=	$10,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0.25%	=	$6,138	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	2%	=	$13,700	$125,000	X	5%	=	$6,250
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0.10%	=	$10,000	$6,000,000	X	0.20%	=	$12,000
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	2%	=	$5,300	$95,000	X	5%	=	$4,750
Linden Spring	$15,000	X	2%	=	$300	$0	X	5%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	2%	=	$7,000	$0	X	5%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	2%	=	$2,300	$15,000	X	5%	=	$750
Morgan's Grove District	$550,000	X	0.50%	=	$2,750	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	2%	=	$5,300	$50,000	X	5%	=	$2,500
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	2%	=	$1,300	$0	X	5%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0.25%	=	$9,375	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	2%	=	$3,300	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	2%	=	$1,900	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	2%	=	$4,500	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	2%	=	$300	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	2%	=	$1,500	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0.50%	=	$2,250	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.02%	=	$486,618	$486,618,000	X	0.05%	=	$243,309
				Total Loss to Structure	$6,200,501				**Total Loss to Contents**	$2,924,001

Hazard: Flooding

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$0
Jefferson County Courthouse	$10,000	X	3	+	$2,500	X	1	=	$32,500	$160,908
Ranson City Hall	$3,600	X	3	+	$900	X	1	=	$11,700	$87,463
Shepherdstown Town	$7,000	X	3	+	$875	X	1	=	$21,875	$77,625
Bridges	$0	X	0	+	$0	X	0	=	$0	$587,500
Railroads	$0	X	0	+	$0	X	0	=	$0	$1,950,000
Roads	$0	X	0	+	$0	X	0	=	$0	$1,215,000
Potomac Edison	$53,100	X	3	+	$1,700	X	0	=	$159,300	$187,350
Charles Town City Water System	$3,840	X	3	+	$480	X	0	=	$11,520	$761,150
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	3	+	$765	X	0	=	$18,360	$676,260
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	3	+	$300	X	0	=	$7,200	$303,450
Shepherdstown Water System	$3,600	X	3	+	$450	X	0	=	$10,800	$327,800
Shenandoah Junction Water System	$3,400	X	3	+	$425	X	0	=	$10,200	$172,700
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$70,050
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$13,013
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$11,863
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$6,900
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$16,350
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$18,400
Shepherdstown University Police	$1,800	X	3	+	$225	X	1	=	$5,625	$16,775
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$14,200
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Canterbury of Shepherdstown	$5,200	X	3	+	$650	X	0	=	$15,600	$25,450
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$7,750

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	1	+	$4,200	X	0	=	$16,800	$64,050
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	3	+	$5,500	X	1	=	$71,500	$224,250
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$0
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	3	+	$3,000	X	1	=	$39,000	$86,750
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	3	+	$2,200	X	1	=	$41,800	$82,300
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$0
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$0
Shepherd University	$280,000	X	1	+	$35,000	X	0	=	$280,000	$562,500
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	3	+	$3,600	X	1	=	$46,800	$86,300
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	3	+	$9,500	X	1	=	$123,500	$159,750
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$0
Burch Wood Products	$93,600	X	3	+	$15,600	X	1	=	$296,400	$331,800
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	3	+	$13,750	X	1	=	$178,750	$214,750
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	3	+	$17,500	X	0	=	$315,000	$373,020
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	3	+	$10,000	X	1	=	$130,000	$170,250
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$9,500
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	3	+	$13,000	X	1	=	$169,000	$192,400
McDaniel Hardwood Products	$168,000	X	3	+	$28,000	X	1	=	$532,000	$584,750
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	3	+	$2,000	X	0	=	$12,000	$30,750
Universal Forest Products	$60,000	X	1	+	$30,000	X	0	=	$60,000	$185,000
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	1	+	$150,000	X	0	=	$500,000	$977,500
Southern States	$13,000	X	3	+	$1,200	X	1	=	$40,200	$180,517
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$0
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	3	+	$525	X	0	=	$6,300	$11,250
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	3	+	$750	X	0	=	$18,000	$23,500
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

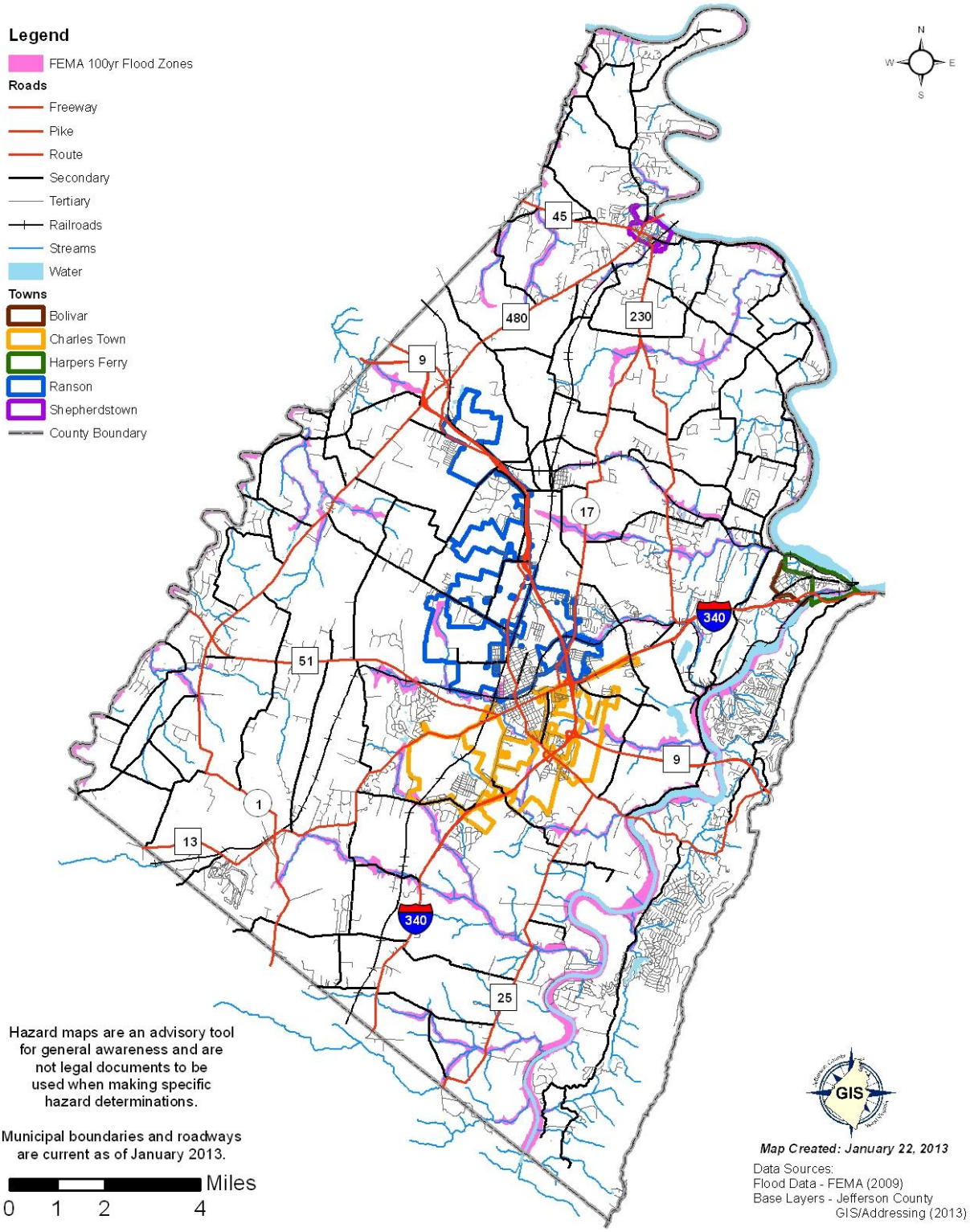
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	3	+	$745	X	0	=	$13,410	$30,560
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$3,600
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$33,000
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$14,000
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$10,000
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$11,050
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$6,300
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$5,000
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$2,800
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$9,450
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$30,550
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$40,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$6,800
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$14,300
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$10,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$6,138
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$19,950
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$22,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$10,050
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$300
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$7,000
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$3,050
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$2,750
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$7,800
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

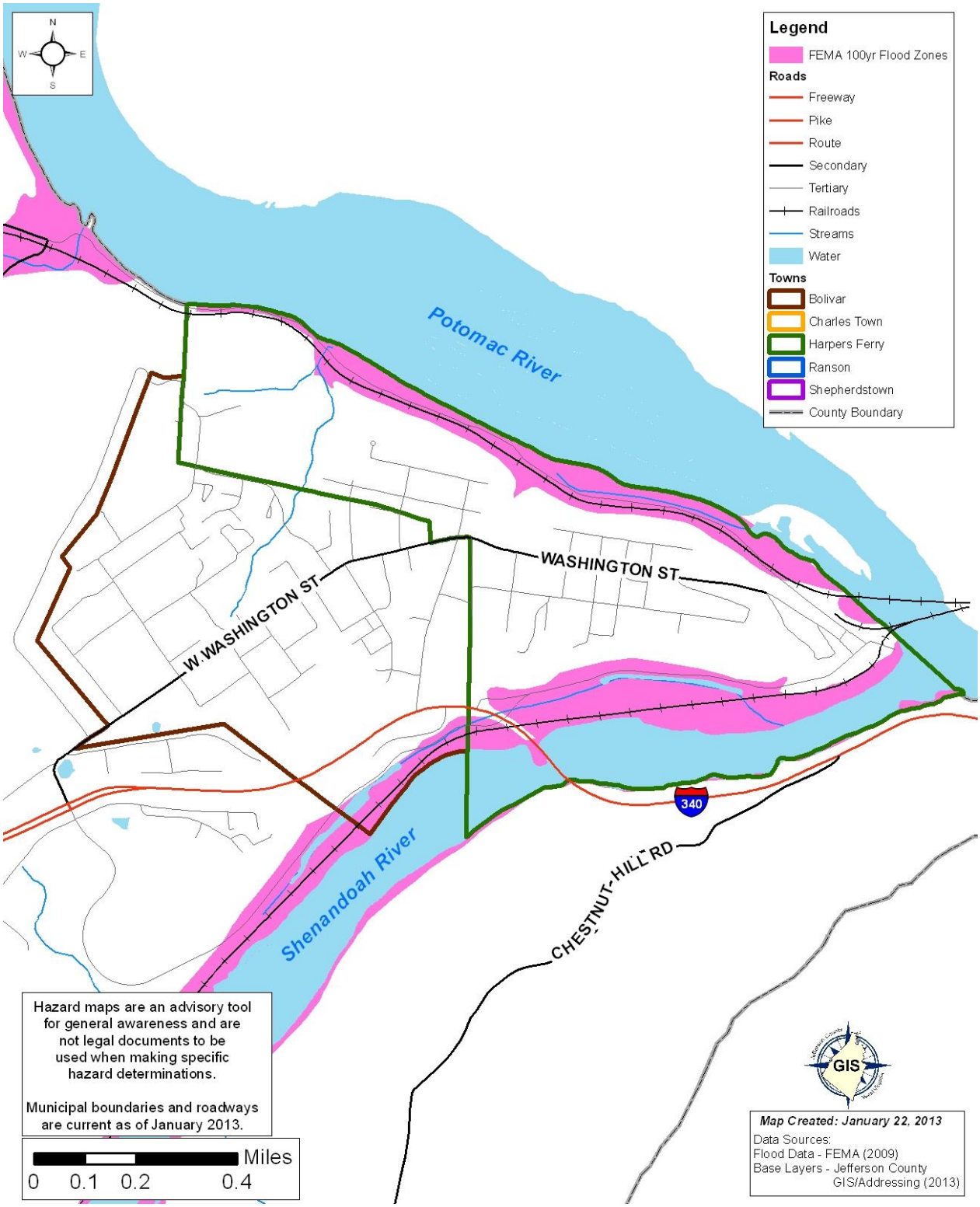
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$1,300
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$9,375
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$3,300
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$1,900
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$4,500
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$300
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$1,500
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$2,250
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
							Total Loss to Structure Use & Function		$3,195,140	$12,319,642

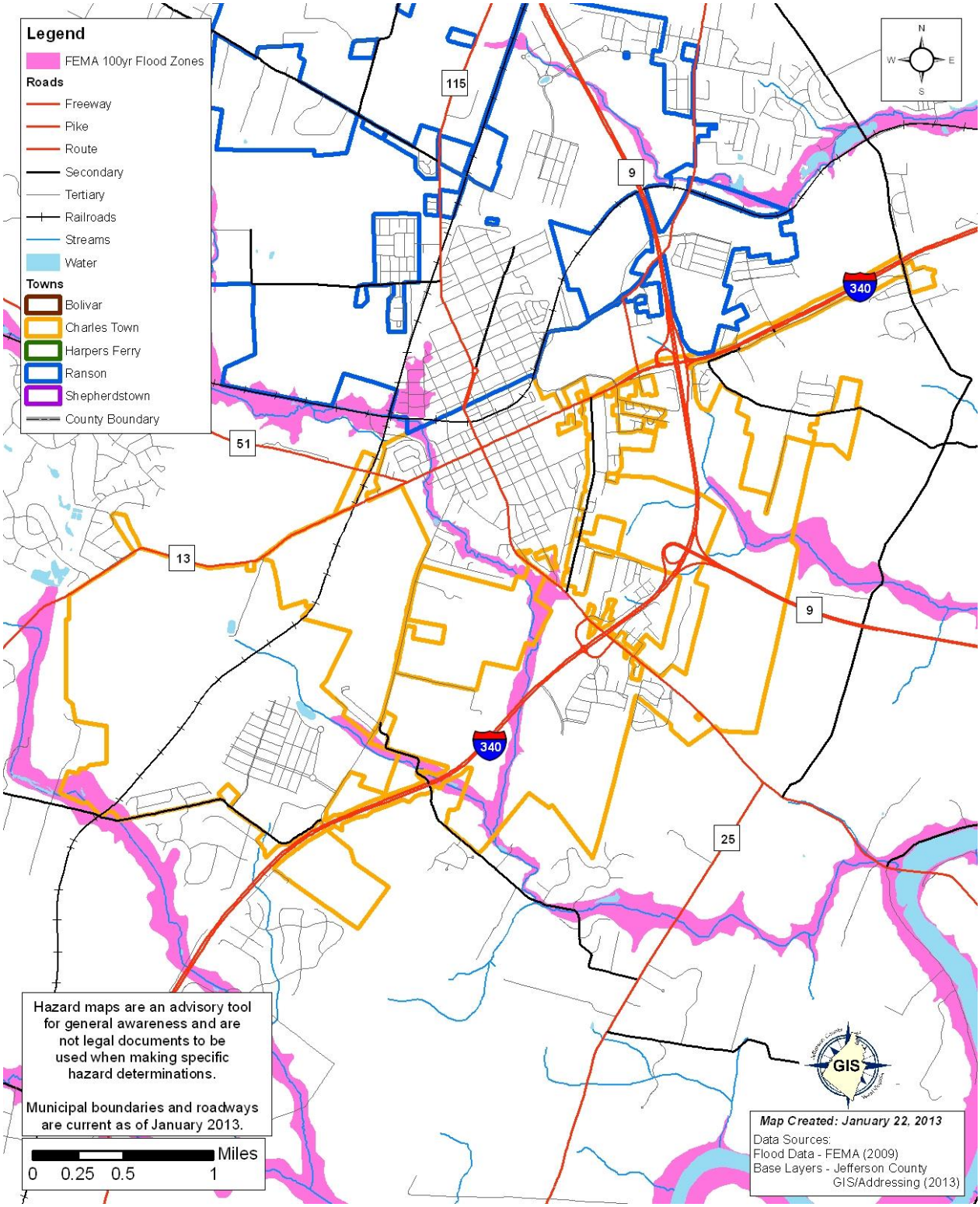
2.2 PROFILING HAZARDS: FLOODING MAP



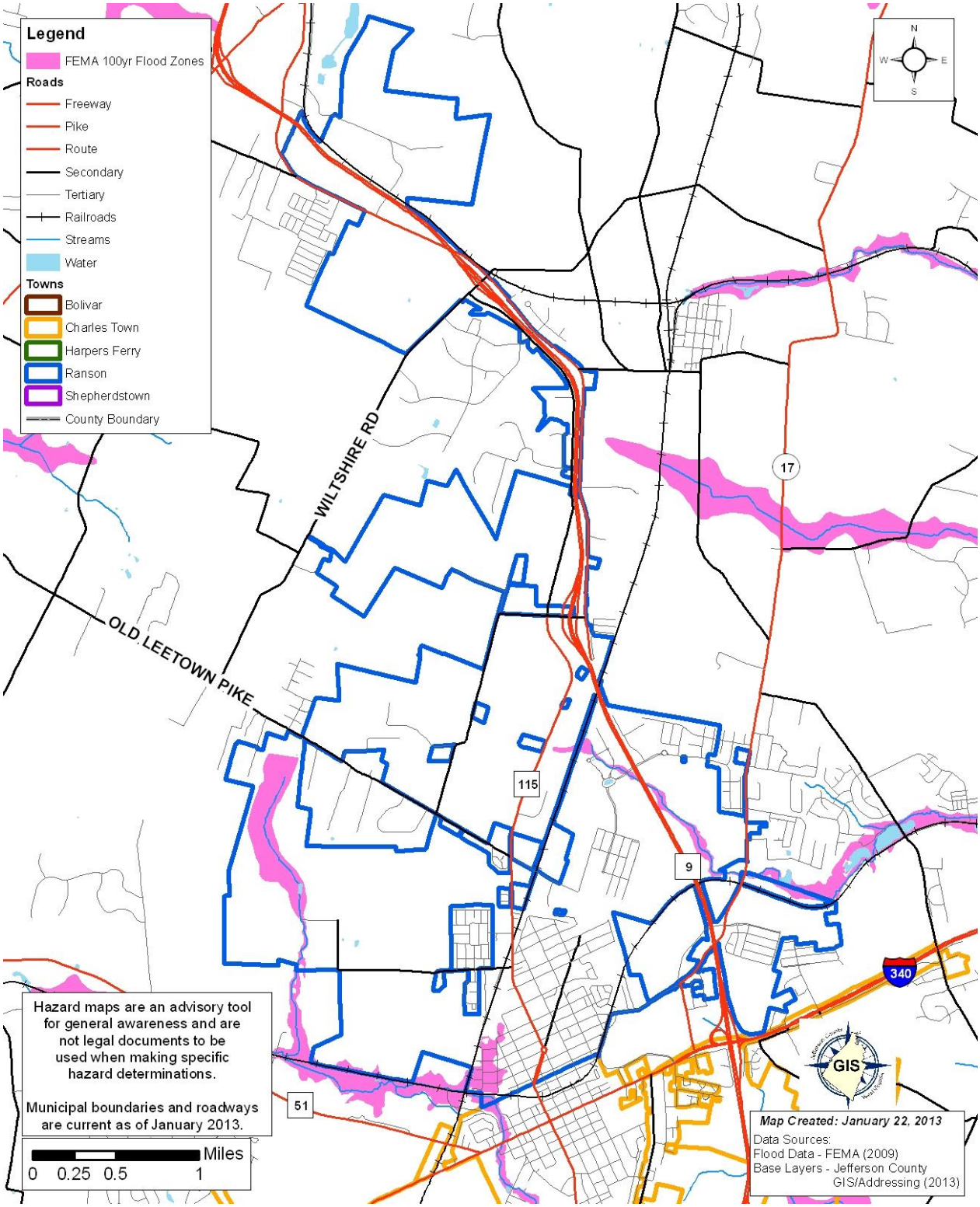
2.2 PROFILING HAZARDS: FLOODING MAP (BOLIVAR-HARPERS FERRY)



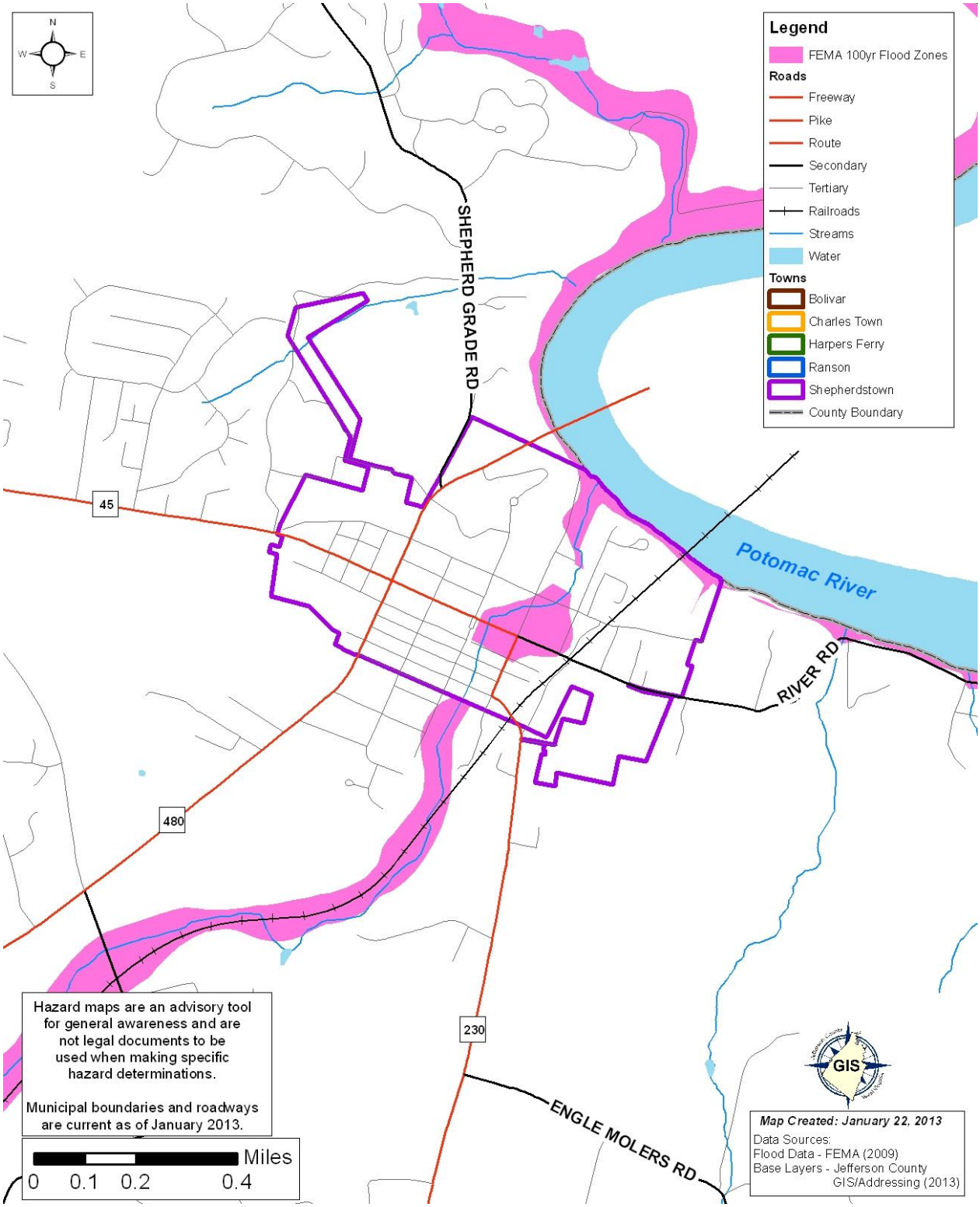
2.2 PROFILING HAZARDS: FLOODING MAP (CHARLES TOWN)



2.2 PROFILING HAZARDS: FLOODING MAP (RANSON)



2.2 PROFILING HAZARDS: FLOODING MAP (SHEPHERDSTOWN)



2.2 PROFILING HAZARDS

2.2.5. Hazardous Material Incident

A technological hazard refers to the origins of incidents that can arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials.

INTRODUCTION

Hazardous Materials are defined as explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious, or radioactive materials that, when involved in an accident and released in sufficient quantities, will place a segment of the general public in immediate danger from exposure, contact, inhalation, or ingestion. These are incidents involving either the release or potential release of a hazardous material as the result of accidental spills, leaks, or released airborne hazardous materials at transportation or fixed facilities.

Period of Occurrence:	At any time
Number of Events to Date:	Few small scale incidents
Probability of Event:	Infrequent
Warning Time:	None
Potential Impacts:	Potential loss of human life, economic loss, environmental damage
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks

Figure 2.5a

Hazardous substances fall under two (2) definitions of hazard: ***Health Hazard*** – Means a chemical for which there is statistically significant evidence based on at least one (1) study conducted in accordance with established scientific principles that acute or chronic health effects may occur. Hazardous materials can enter the body in one (1) of four (4) ways. The four (4) routes of entry include inhalation, ingestion, injection, and skin absorption. ***Physical Hazard*** – Means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed liquid, a compressed gas, explosive, flammable, an organic oxide, an oxidizer, pyrophoric (ignites spontaneously), unstable (reactive), or water reactive.

Hazardous chemicals are prevalent throughout our society. While industry is the primary user and maintainer of hazardous chemicals, we also have them in our homes, in our cars, at our places of work and recreation. The geographic and economic characteristics of Jefferson County make it likely for a hazmat release to occur. For the

purposes of this Hazard Risk Assessment (HRA), it is assumed that Jefferson County has a moderate probability, moderate severity risk from hazmat incidents. The hazard of a hazmat incident is targeted to the central portion of the county due to the number of industrial/commercial facilities, as well as the majority of the major transportation infrastructure to include highway, and railway.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.5b

HAZARD IDENTIFICATION

The hauling, storage, and use of hazardous materials play a vital role in the economy of our nation. These materials are stored and handled at fixed facilities and are transported over highway, railway, and water transportation systems, as well as pipelines. It is estimated that over four (4) billion tons of hazardous materials are transported annually and that 100,000 trucks haul hazardous materials on the country's highways each day. Almost half of all freight trains carry hazardous materials. The majority of the transportation infrastructure utilized to move hazardous materials through Jefferson County is located in the central portion of the county; this is also the most populated area of the county, and the location for the majority of the high hazard areas for natural hazards, thus increasing the chance of a release. An incident causing the accidental release of a hazardous material is spontaneous, with little time of warning. Further, the recovery and clean-up activities involved in a hazmat incident may require several hours, days, or even weeks to complete.

The types of materials that can cause a hazmat release are wide ranging in nature and may include chlorine, sodium hydroxide, sulfuric acid, radioactive isotopes, anhydrous ammonia, gasoline and other hydrocarbons, as well as medical/biological waste from hospitals or clinics. Hazardous materials subject to reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA) or Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) include these four (4) groups:

- Extremely Hazardous Substances (EHS) – These are materials with acutely toxic properties that may do irreversible damage or cause death to people or harm the

environment when released or used outside their intended use. Examples include: ammonia, chlorine, and sulfuric acid.

- Hazardous Substances – These are any materials posing a threat to human health and/or the environment, or any substance designated by the Environmental Protection Agency (EPA) to be reported if a designated quantity of the substance is spilled into the waters of the United States or is otherwise released into the environment.
- Hazardous Chemicals – If present at a chemical facility in certain amounts, these substances require a Material Safety Data Sheet (MSDS) under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects such as cancer, burns, or dermatitis.
- Toxic Chemicals – Chemicals or chemical categories that appear on the list because of their chronic or long-term toxicity.

During the summer of 2012, the Jefferson County Local Emergency Planning Committee (LEPC) conducted an update to their existing Commodity Flow Study (CFS) in a continuing effort to identify the major risks involved with hazardous material transportation in, and through Jefferson County. As a result of the two (2) day placard survey, it was determined that 57% of all the hazardous materials traveling through Jefferson County were flammable liquids. By using the identification number of the placard, approximately 56%, of those flammable liquids were identified as gasoline. Another 31% of the flammable liquids were identified as diesel fuel. There was a 22% increase in the amount of flammable liquids observed during 2012 update when compared to 2006 data.

Flammable Gases also made a significant contribution to the total number of hazardous materials being transported by highway through the county; they accounted for 28% of the total placard count, and included Propane as well as ethylbenzene. Propane made up 75% of the flammable gases observed, and 21% of the total placards observed. This is a trend that continued from 2006 data. Corrosives made up 11% of the total placards observed. The only corrosive observed during this update was Sulfuric Acid.

The following equations provide a methodology to calculate the probability of a hazardous material transportation accident on the roadways within the boundaries of Jefferson County, based upon the number of hazardous material placarded vehicles which were observed during the survey, the highway miles within the boundaries of Jefferson County, and the national hazardous materials accident frequency rate.

Hazardous Materials Accident Risk Calculation

- The calculation requires the following data:
  1. Highway miles within Jefferson County = "CFS miles"
  2. The number of hazardous materials placards observed on a particular highway.
  3. The hours of survey time.
  4. The national truck accident frequency rate – 1.21.

- The risk calculation is performed as follows:
  1. CFS miles x placards observed = "hazmat miles"
  2. ("hazmat miles"/1,000,000) x 1.21 = "hazmat accidents"
  3. Survey hours/24 = "survey days"
  4. ("hazmat accidents"/"survey days") x 365 = estimated number of hazardous materials accidents per year.

For example there are approximately 15.42 miles of U.S. Route 340 in Jefferson County, there were 21 placarded vehicles observed during four (4) hours of monitoring, and according to the US Department of Transportation the national truck accident frequency rate is 1.21. Therefore the hazmat miles equal 323.82, the hazmat accidents equal .00039, the survey days equal .166, and the estimated number of hazardous materials accidents that could occur per year on the portion of U.S. Route 340 that runs through Jefferson County would be approximately 0.85. Table 2.5a above gives the estimated number of hazardous materials accidents that could occur per year on each of

Hazardous Materials Accident Risk Calculation

Roadway Monitored	Estimated Number of Hazmat Accidents per Year	
U.S. Route 340	0.85	
SR 9	0.40 (2006)	0.95 (2012)
SR 45	0.05	
SR 51	0.43	
SR 115	0.23	
SR 480	0.09	

Table 2.5a

the six (6) roadways monitored during the study. A comparison between 2006 and 2012 calculations are illustrated for State Route 9 due to the significant difference.

Figures 2.5c and 2.5d below illustrate the total number of different hazardous materials placards observed on each route at the monitoring sites for both the 2006 and 2012 studies.

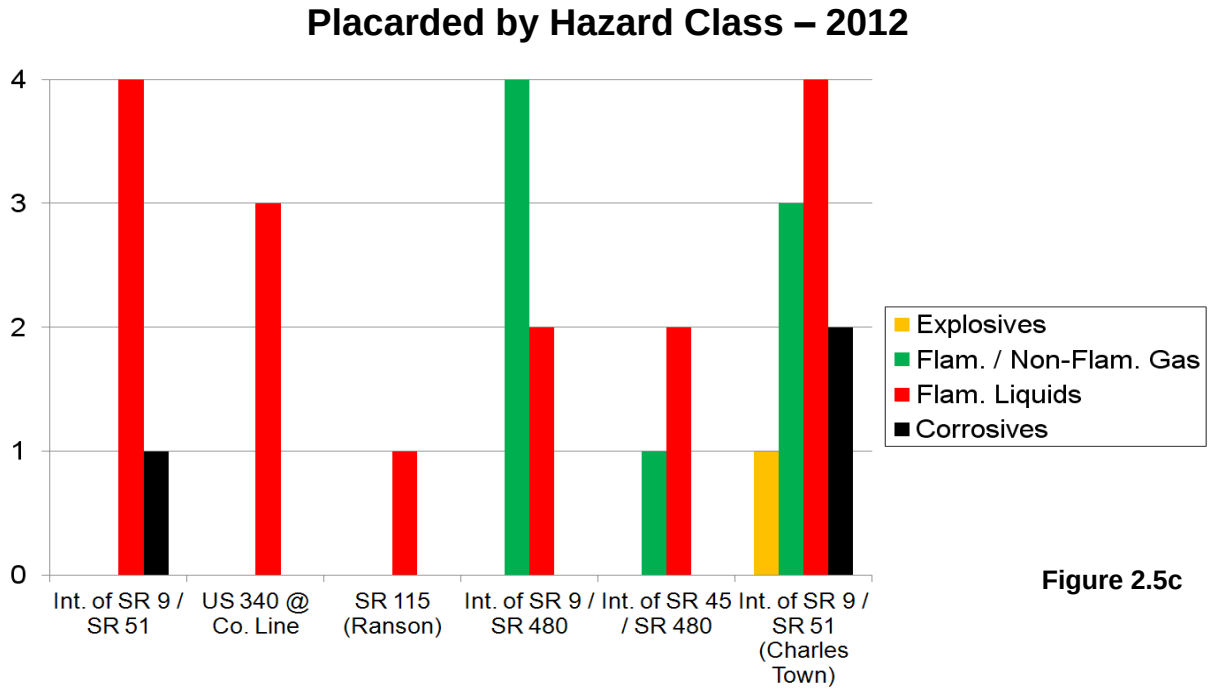


Figure 2.5c

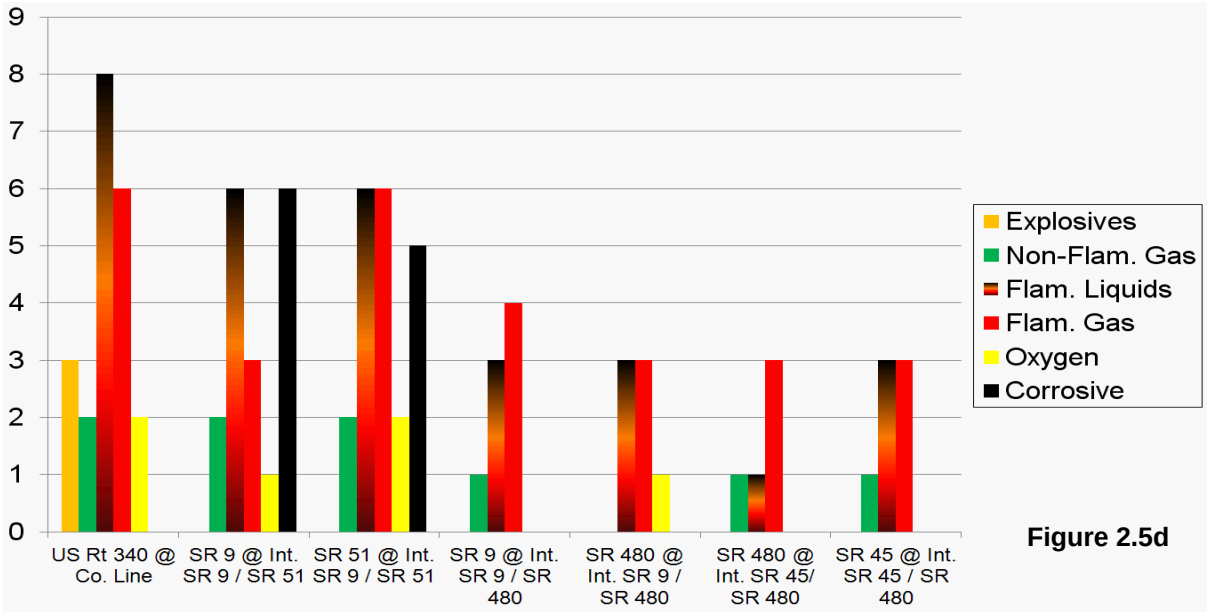


Figure 2.5d

Tables 2.5b and 2.5c contain the latest available flow study information that was provided by Norfolk Southern and CSX representatives. The information received from Norfolk Southern contains the top 25 commodities transported through Charles Town for the 12 months ending December 31, 2011. Chemicals highlighted in yellow indicate substances that can be found on the U.S. EPA's list of Extremely Hazardous Substances (EHS).

Norfolk Southern Top 25 Commodities Transported Through Charles Town – 2011		
Proper Shipping Name	**Class**	**UN Number**
Petroleum Gases	2.1	1075
Sulfuric Acid	8	1830
Ethylene Oxide	2.3	1040
Sodium Hydroxide Solution	8	1824
Vinyl Chloride	2.1	1086
Acetone	3	1090
Alcohols, N.O.S.	3	1987
Molten Sulfur	9	2448
Environmentally Hazardous	9	3077
Ferric Chloride Solution	8	2582
Ammonium Nitrate	5.1	1942
Vinyl Acetate, Stabilized	3	1301
1,1,1-Trichloroethane	6.1	2831
Phosphoric Acid Solution	8	1805
Other Regulated	9	3082
Hydrochloric Acid	8	1789
Carbon Dioxide	2.2	2187
Hypochlorite Solutions	8	1791
Elevated Temperature	9	3257
Butanols	3	1120
Organophosphorus	6.1	2783

Table 2.5b

Table 2.5c contains the latest available *Hazardous Materials Density Study* information that was provided by CSX representatives. The information received from CSX covers the latest full year of data available. The information lists each commodity by name, hazard class, and standard transportation commodity code number, as well as a breakout of the 25 most often transported products for Jefferson County and the total hazardous materials traffic handled. Chemicals highlighted in yellow indicate substances that can be found on the U.S. EPA's list of Extremely Hazardous Substances (EHS).

CSX Top 25 Commodities Transported Through Charles Town – 2011			
Commodity	**Hazard Class**	**Carloads (2011)**	**% of Carload**
Alcohols, N.O.S.	3	11,875	36.3%
Sulfur, Molten	9	7,741	23.66%
Elevated Temperature Liquid, N.O.S.	9	2,960	9.05%
Liquefied Petroleum Gases	2.1	1,768	5.4%
Fuel Oil	CL	1,014	3.1%
Sodium Hydroxide Solution	8	873	2.67%
Phosphoric Acid, Liquid	8	819	2.5%
Sulfuric Acid	8	594	1.82%
Environ. Hazardous Substances, Solid, N.O.S.	9	536	1.64%
Flammable Liquids, N.O.S.	3	424	1.3%
Environ. Hazardous Substances, Liquid, N.O.S.	9	403	1.23%
Hydrochloric Acid	8	367	1.12%
Ferrous Chloride Solution	8	300	<1%
Alcoholic Beverages	3	215	<1%
Propane	2.1	203	<1%
Hazardous Waste, Solid, N.O.S.	9	193	<1%
Hydrogen Peroxide	5.1	146	<1%
Acrylic Acid, Stabilized	8	143	<1%
Sodium Chlorate	5.1	136	<1%
Other Regulated Substances, Liquid, N.O.S.	9	136	<1%
Chlorine	2.3	127	<1%
Benzene	3	119	<1%
Phenol, Molten	6.1	118	<1%
Ammonium Nitrate	5.1	109	<1%
Acetone	3	88	<1%
Totals	**Top 25**	**31,407**	**96%**

Table 2.5c

Hazardous materials can be released as a secondary result of a natural disaster like an earthquake or flood. In either case, buildings or vehicles can release their hazardous materials inventories when structurally compromised or involved in traffic accidents. Additional potential causes of hazardous material releases may include terrorist incident and illegal drug labs or dumping. Illegal drug labs present a special concern due to the fact that each must be treated as a chemical hazard site and decontaminated before the property can be used again. Illegal drug labs can be set up in homes, apartments, vacant buildings, shacks in the forest or even in a van parked on the street.

In order to further profile the hazardous materials hazard in Jefferson County information was compiled on the location of fixed facilities that store hazardous materials. Based on records provided by Jefferson County Local Emergency Planning Committee (LEPC) there are approximately 40 SARA Title III, Tier II reporting facilities in the county that store hazardous materials, 14 of which store Extremely Hazardous Substances (EHS).

HAZARD IMPACTS

Hazardous materials incidents are significant man-made hazards in Jefferson County. Hazardous materials in various forms have the potential to result in death, serious injury, produce long-lasting health effects, and damage buildings, homes, and other property. These events can occur rapidly over a large area. The chemical, physical, and biological properties of hazardous materials pose a potential risk to life, health, the environment, and property when not properly contained.

Many factors determine the impact of a potential incident including quick and solid decision-making by emergency officials, location and type of release, evacuation and shelter-in-place needs, public health concerns, and relevant economic considerations. Additionally, while most incidents are generally brief, the resulting recovery and cleanup may take time to exact.

If evacuation is necessary due to a chemical emergency, road closures and traffic jams may result. If a large-scale evacuation is deemed necessary, it can pose serious long term economic consequences to the involved population area. A delay in the resumption of industry commerce may cause economic losses for both business owners and employees. In addition, an evacuation ordered on short-notice could cause serious problems for businesses requiring time to shut down specialized equipment.

There is also the monetary impact borne by responding public or private emergency response organizations. These agencies may be challenged by the expenses dictated by a hazardous material release, and may need to wait an uncomfortable length of time for the responsible party to reimburse any outstanding costs, further straining the economic resources of the region.

A major incident involving significant injuries may severely tax regional medical services, as medical facilities aren't generally designed to handle mass amounts of victims on short notice. Consequently, in the event of a major incident, hospitals and other medical facilities must still be able to provide their customary level of service to all patients, regardless of whether they were incident victims or not.

HISTORY OF EVENTS

- February 28, 2003: A tanker carrying 2,000 gallons of propane overturned causing a release of the gas into the environment. Nine (9) residences within a quarter-mile of the accident site were evacuated. Summit Point Road was also closed for a mile in either direction for three (3) hours while the propane leak was contained and the vehicle was cleared from the roadway. The tanker driver suffered minor injuries.
- May 4, 2007: A truck wreck on Route 51 next to the Opequon Creek raised concerns of possible diesel fuel leakage into the drinking water supply for several downstream sources. The Berkeley county Hazmat Team arrived on-scene and began hand pumping diesel fuel from the passenger saddle tank. It was reported that the driver side tank had failed and an unknown amount of diesel fuel spilled. Most of the diesel fuel was removed from the passenger tank. The safe extraction of the dump truck was done by three (3) large tow trucks. After the truck was pulled from the bank and secured on the roadway, DEP inspected the wreck site. DEP noted diesel fuel spillage located at the impact point. There was no visible staining of fuel or oils beyond this impact area, especially to the creek bank.

PAST MITIGATION EFFORTS

Several emergency preparedness and response plans have been developed with regards to hazardous materials incidents for Jefferson County, including the *Jefferson County Emergency Operations Plan* and *Annex L – Hazmat Response*, the *Jefferson County Commodity Flow Study, 2012,* and the *Jefferson County Tier II Assessment, 2010*. Several Extremely Hazardous Substances (EHS) facilities have developed Off-Site Emergency Response Plans as well. Upon reviewing the information from the commodity flow study it was apparent that liquefied petroleum gas presented a risk to several areas in Jefferson County, therefore the LEPC decided to undertake a Propane Risk Assessment project in 2008 and 2009.

Hazard: Hazardous Materials

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	2,212	10%	$2,433,090,000	$729,927	0.03%	53,498	5,350	10%
Commercial	1,640	98	6%	$492,000,000	$147,600	0.03%	6,560	2,099	32%
Industrial	562	51	9%	$196,700,000	$59,010	0.03%	2,810	1,293	46%
Agricultural	546	27	5%	$81,900,000	$24,570	0.03%	182	53	29%
Religious/Non-Profit	30	2	7%	$10,610,000	$0	0%	300	0	0%
Government	80	3	4%	$68,333,360	$0	0%	3,633	0	0%
Education	44	0	0%	$165,000,000	$0	0%	1,701	0	0%
Utilities	41	21	51%	$145,550,000	$43,665	0.03%	62	27	44%
Total	25,062	2,414	10%	$3,593,183,360	$1,004,772	<1%	68,746	8,822	13%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Hazardous Materials

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0.25%	=	$938
Shepherdstown Town	$2,225,000	X	0%	=	$0	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	3%	=	$4,770
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0.25%	=	$34,375
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0.25%	=	$26,375
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0.25%	=	$21,876
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0.25%	=	$13,063
Shepherdstown Water System	$2,225,000	X	0%	=	$0	$5,450,000	X	0.25%	=	$13,625
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0.25%	=	$7,125
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0.25%	=	$4,625
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0.25%	=	$3,563
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0.25%	=	$813

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	1%	=	$1,000
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0.25%	=	$473
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	1%	=	$800
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0.25%	=	$37,875
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0.25%	=	$788
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0.25%	=	$338
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0.25%	=	$300
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0.25%	=	$525

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0.25%	=	$338
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0.25%	=	$238
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0.25%	=	$3,125
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0.25%	=	$788
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0.25%	=	$538

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0.25%	=	$775
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0.25%	=	$1,625
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0.25%	=	$6,000
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0.25%	=	$1,613
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0.25%	=	$1,863
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0.25%	=	$4,125
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0.25%	=	$3,125
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0.25%	=	$3,750
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0.25%	=	$2,250
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0.00%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0.25%	=	$4,806
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0.25%	=	$338

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0%	=	$0	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0.25%	=	$15,000
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0.25%	=	$50
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0.25%	=	$113
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0%	=	$0	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$0				Total Loss to Contents	$235,999

Hazard: Hazardous Materials

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	1	+	$1,200	X	0	=	$4,800	$5,925
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$0
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$0
Ranson City Hall	$3,600	X	1	+	$900	X	0	=	$3,600	$4,538
Shepherdstown Town	$7,000	X	0	+	$875	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	1	+	$1,700	X	0	=	$53,100	$57,870
Charles Town City Water System	$3,840	X	1	+	$480	X	0	=	$3,840	$38,215
Frontier Communications	$48,000	X	1	+	$12,000	X	0	=	$48,000	$49,063
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	1	+	$765	X	0	=	$6,120	$32,495
Jefferson County Solid Waste Authority	$4,480	X	1	+	$560	X	0	=	$4,480	$26,356
Meadowbrook Water System	$2,400	X	1	+	$300	X	0	=	$2,400	$15,463
Shepherdstown Water System	$3,600	X	1	+	$450	X	0	=	$3,600	$17,225
Shenandoah Junction Water System	$3,400	X	1	+	$425	X	0	=	$3,400	$10,525
Tuscawilla Utilities	$2,400	X	1	+	$300	X	0	=	$2,400	$7,025
Walnut Grove Utilities	$2,400	X	1	+	$300	X	0	=	$2,400	$5,963
Hollywood Casino WTP	$2,560	X	1	+	$320	X	0	=	$2,560	$2,710
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$0
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	1	+	$1,280	X	0	=	$5,120	$5,933

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$0
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	1	+	$3,600	X	0	=	$14,400	$15,400
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	1	+	$750	X	0	=	$3,000	$3,473
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$0
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$0
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$0
West Virginia State Police	$6,000	X	1	+	$1,500	X	0	=	$6,000	$6,800
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$0
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	1	+	$104,000	X	0	=	$416,000	$453,875
Jefferson Urgent Care	$16,800	X	1	+	$4,200	X	0	=	$16,800	$17,613
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	1	+	$720	X	0	=	$5,760	$5,960
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	1	+	$2,560	X	0	=	$20,480	$21,105
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	1	+	$5,500	X	0	=	$22,000	$22,788
Claymont Children's School	$8,800	X	1	+	$2,200	X	0	=	$8,800	$8,963
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$0
Jefferson High School	$38,000	X	1	+	$9,500	X	0	=	$38,000	$39,125
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	1	+	$2,700	X	0	=	$16,200	$16,538
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	1	+	$3,100	X	0	=	$12,400	$12,700
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	1	+	$3,500	X	0	=	$14,000	$14,525

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$0
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$0
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$0
T.A. Lowery Elementary	$12,400	X	1	+	$3,100	X	0	=	$12,400	$12,738
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	1	+	$4,865	X	0	=	$19,460	$19,873
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	1	+	$10,500	X	0	=	$42,000	$42,238
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$0
Burch Wood Products	$93,600	X	0	+	$15,600	X	0	=	$0	$0
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	1	+	$50,000	X	0	=	$200,000	$203,125
Clarion Hotel & Conference Center	$60,000	X	1	+	$15,000	X	0	=	$60,000	$60,788
Comcast	$55,000	X	1	+	$13,750	X	0	=	$55,000	$55,550
Concert Technology	$59,400	X	1	+	$14,850	X	0	=	$59,400	$59,675
DALB, Inc.	$100,000	X	1	+	$25,000	X	0	=	$100,000	$100,538

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	1	+	$35,000	X	0	=	$140,000	$140,775
Halltown Paperboard Company	$105,000	X	1	+	$17,500	X	0	=	$105,000	$106,625
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	1	+	$12,500	X	0	=	$50,000	$51,125
Jefferson Asphalt Products	$40,000	X	1	+	$10,000	X	0	=	$40,000	$40,563
Jefferson County Chamber of Commerce	$22,800	X	1	+	$5,700	X	0	=	$22,800	$23,175
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	1	+	$15,500	X	0	=	$62,000	$68,000
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	1	+	$11,000	X	0	=	$44,000	$44,813
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$0
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	1	+	$16,800	X	0	=	$67,200	$68,813
R.A.I.	$61,600	X	1	+	$15,400	X	0	=	$61,600	$62,725
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	1	+	$15,400	X	0	=	$58,000	$59,863
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	1	+	$27,400	X	0	=	$109,600	$113,725
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	1	+	$10,000	X	0	=	$65,000	$68,125
Holiday Inn Express	$80,000	X	1	+	$12,000	X	0	=	$80,000	$83,750
Inn at Charles Town	$55,000	X	1	+	$8,000	X	0	=	$55,000	$57,250
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	1	+	$1,200	X	0	=	$13,000	$17,806
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$313
Halltown Post Office	$1,800	X	1	+	$900	X	0	=	$1,800	$1,800
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	1	+	$955	X	0	=	$3,820	$4,095
Ranson Post Office	$3,000	X	1	+	$1,500	X	0	=	$3,000	$3,375
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	0	+	$750	X	0	=	$0	$0
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

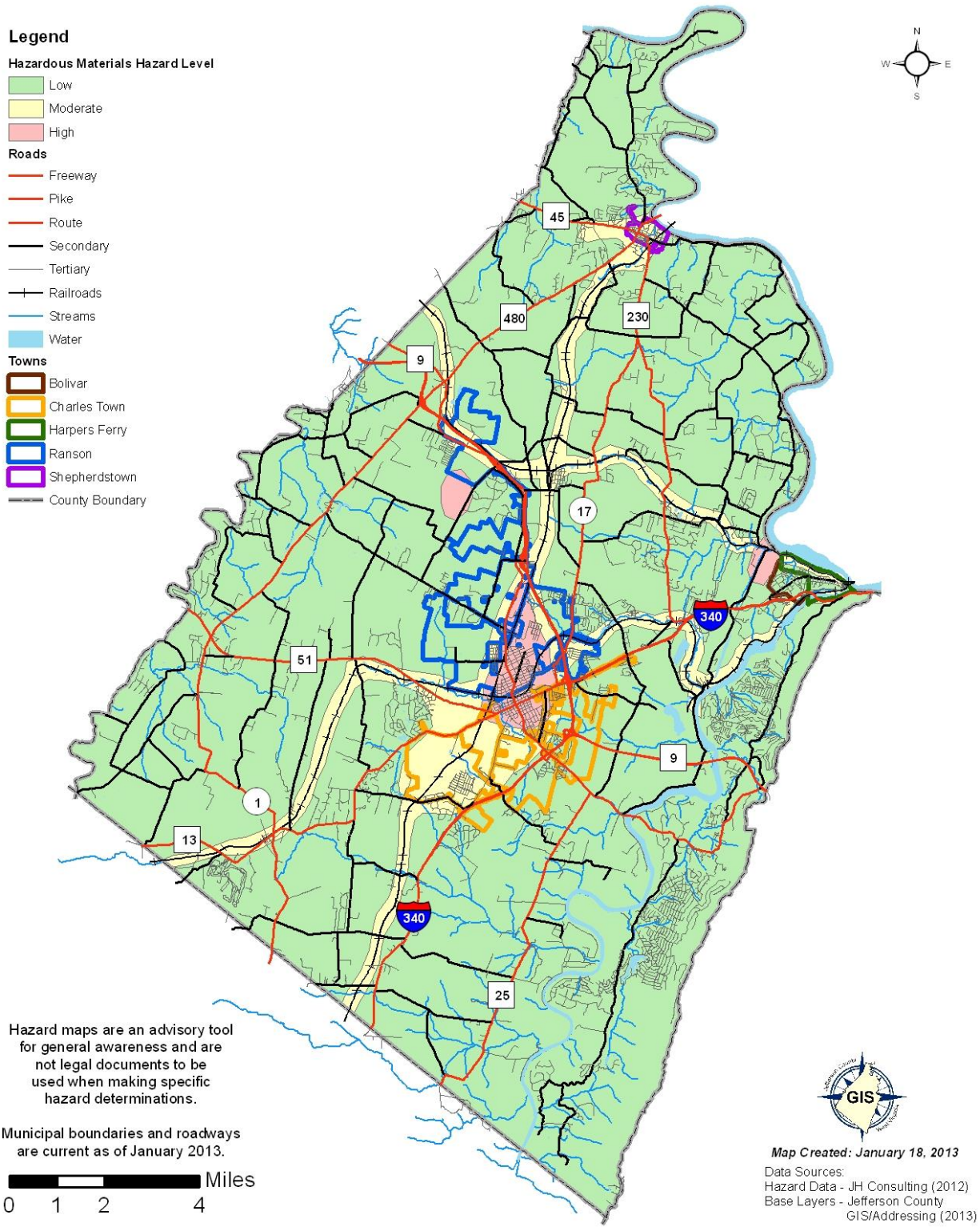
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$0
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$563
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$0
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$338

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$0
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$275
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$15,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$0
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$50
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$113
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
								Total Loss to Structure Use & Function	$2,269,740	$2,505,739

2.2 PROFILING HAZARDS: HAZARDOUS MATERIALS MAP



2.2 PROFILING HAZARDS

2.2.6. Landslide

Landslides are described as the downward movement of a slope and materials under the force of gravity.

INTRODUCTION

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Landslides are influenced by human activity (mining and construction of buildings, railroads, and highways) and natural factors (geology, precipitation, and topography). Landslides occur when masses of rock, earth, or debris move down a slope. Therefore, gravity acting on an overly steep slope is the primary cause of a landslide. Storms, fires, or human modifications to the land typically activate landslides. Several research methods identified landslides as a moderate hazard in Jefferson County, including reviews of the USGS Internet site, and discussions with local officials. Further, the following Internet sites were also searched (in addition to the USGS site).

Period of Occurrence:	At any time – Chance of occurrence increases following long periods of heavy rain, snowmelt, or near timbering and construction activity.
Number of Events to Date:	Limited unspecified events.
Probability of Event:	Infrequent.
Warning Time:	Weeks to months – Some instances of landslide can occur quickly without warning, but often in the context of other storm events.
Potential Impacts:	Economic losses such as decreased land values, agrobusiness losses, disruption of utility and transportation systems, and costs for any litigation. May cause geological movement, causing infrastructure damages ranging from minimal to severe.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days to weeks.

Figure 2.6a

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Jefferson County has a moderate probability, and moderate impact to landslides. The hazards of landslides are more pronounced in portions of Harpers Ferry and Shepherdstown.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.6b

HAZARD IDENTIFICATION

"Landslide" is a general term used for a wide variety of down-slope movements of earthen materials resulting in the perceptible downward and outward movement of soil, rock, and vegetation under the influence of gravity. The materials may move by falling, toppling, sliding, spreading, or flowing. Some landslides are rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Although landslides usually occur on steep slopes, they also can occur in areas of low relief. The two (2) major types of landslides are rotational and translational. Rotational landslides occur when the surface of rupture is curved concavely upward and the slide movement is more or less rotational. A "slump" is an example of a small rotational landslide. Translational landslides occur when a mass of soil and rock moves out or down with little rotational movement or backward tilting. Translational landslide material may range from loose, unconsolidated soils to extensive slabs of rock and may progress over great distances.

The different sub-types of landslides include falls, which are the abrupt movement of material that becomes detached from steep slopes or cliffs, and move by free-fall, bouncing, and rolling. Lateral spreads often occur on very gentle slopes and result in nearly horizontal movement of earthen materials. Lateral spreads are usually caused by liquefaction, where saturated sediments (usually sands and silts) are transformed from a solid into a liquefied state, usually triggered by earthquakes.

Many types of mass movements are included in the general term "flow", including: creep, or the slow, steady down-slope movement of soil or rock (often indicated by curved tree trunks, bent fences or retaining walls, and tilted poles); debris flow, which is a rapid mass movement in which loose soils, rocks, and organic matter combine with entrained air and water to form a slurry that flows down-slope, usually

associated with steep gullies; and mudflows, or the rapid flow in mass of wet material that contains at least 50% sand, silt, and clay-sized particles.

In some ways, landslide areas are similar to avalanche terrain. Characteristics of landslide hazard areas include:

1. A slope greater than 15%.
2. Landslide activity or movement in the last 10,000 years.
3. Stream or wave action with erosion or bank undercutting.
4. The presence or potential for snow avalanches.
5. The presence of an alluvial fan that indicates vulnerability to the flow of debris or sediments.
6. The presence of impermeable soils, such as silt or clay, which are mixed with granular soils such as sand and gravel.

According to the United States Geological Survey (USGS), landslides constitute a major geologic hazard because they are widespread, occur in all 50 states and U.S. territories, and cause $1-2 billion in damages and more than 25 fatalities on average each year. Expansion of urban and recreational developments into hillside areas leads to more people that are threatened by landslides each year.

HISTORY OF EVENTS

Landslides have been known to occur in West Virginia and adjoining states since 1850, but the damage caused by landslides has become increasingly expensive as development encroaches more and more on the area's hillsides. A large portion of Jefferson County's topography is that of mountainous and steep. Although landslides are site-specific hazards, local officials feel proactive measures should be taken to mitigate landslides across the county, especially near areas targeted for development.

According to the United States Geological Survey (USGS), most of West Virginia is listed as having high percentages of landslide incidents. Specifically, the southeastern corner of Jefferson County has the highest landslide risk. The remainder of the county is characterized as either a medium or low landslide risk. The communities of Harpers Ferry, Bolivar, Charles Town, and Ranson fall in the medium landslide risk category, whereas Shepherdstown is considered a low landslide risk area as illustrated in the figure below.

EXPLANATION OF GRAPHIC

LANDSLIDE INCIDENCES

- Low (less than 1.5% of area involved)
- Moderate (1.5%-15% of area involved)
- High (greater than 15% of area involved)

LANDSLIDE SUSCEPTIBILITY/INCIDENCE

- Moderate susceptibility/low incidence
- High susceptibility/low incidence
- High susceptibility/moderate incidence

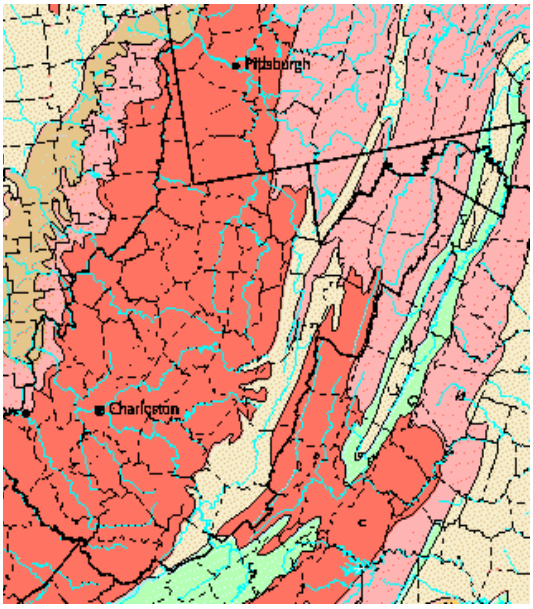


Figure 2.6c

HAZARD IMPACT

Landslides are a major hazard in most mountainous and hilly regions as well as in steep river banks and coastlines. Their impact depends largely on their size and speed, the elements at risk in their path, and the vulnerability of these elements. Every year landslides cause fatalities and result in large damage to infrastructure (roads, railways, pipelines, artificial reservoirs, etc.) and property (buildings, agricultural land, etc.). Large landslides in mountainous areas can result in landslide dams blocking river courses. These natural dams cause valley inundation upstream and can be subsequently breached by lake water pressure, hence generating deadly flash floods or debris flows downstream. Submarine and large coastal cliff landslides can trigger tsunami, as can landslides in lake and reservoir shores.

In areas affected by landslides, these are a major source of soil erosion and sediment yield to valleys and rivers. Most statistics on natural disasters underestimate the impacts from landslides as they often do not separate them from other triggering or concurrent natural hazards such as storms, floods or earthquakes.

Using the landslide hazard map developed for Jefferson County with Jefferson County GIS/Addressing Office data overlaid indicated where structures exist in relation to landslide risk. Results indicate that there are 347 addressable structures in the unincorporated portion of the county that are located within the high landslide risk area. Also contained within this area is one critical facility, a microwave tower at Bluemont that provides communications services. There are no historic sites located in high landslide risk areas.

PAST MITIGATION EFFORTS

Past mitigation efforts to reduce the effects of landslides in Jefferson County include reviews of all capital improvement plans to ensure that infrastructure improvements are not directed towards hazardous areas, and reviews of existing regulations to ensure adequacy in reducing the amount of future development in identified hazard areas.

Hazard: Landslide

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	442	2%	$2,433,090,000	$486,618	0.02%	53,498	1,070	2%
Commercial	1,640	16	1%	$492,000,000	$49,200	0.01%	6,560	66	1%
Industrial	562	6	1%	$196,700,000	$19,670	0.01%	2,810	28	1%
Agricultural	546	6	1%	$81,900,000	$16,380	0.02%	182	9	5%
Religious/Non-Profit	30	0	0%	$10,610,000	$0	0%	300	0	0%
Government	80	0	0%	$68,333,360	$0	0%	3,633	0	0%
Education	44	0	0%	$165,000,000	$0	0%	1,701	0	0%
Utilities	41	0	0%	$145,550,000	$0	0%	62	0	0%
Total	25,062	470	2%	$3,593,183,360	$571,868	<1%	68,746	1,173	2%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?		X
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Landslide

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	2%	=	$42,300	$225,000	X	3%	=	$6,750
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	2%	=	$50,680	$225,000	X	3%	=	$6,750
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	2%	=	$44,500	$225,000	X	3%	=	$6,750
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	1%	=	$57,250	$9,000,000	X	0.10%	=	$9,000
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	1%	=	$22,250	$5,450,000	X	1%	=	$54,500
Shenandoah Junction Water System	$1,000,000	X	10%	=	$100,000	$2,850,000	X	1%	=	$28,500
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	10%	=	$71,500	$1,115,000	X	1%	=	$11,150
Blue Ridge Mtn. VFD	$950,000	X	10%	=	$95,000	$845,000	X	1%	=	$8,450
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	10%	=	$31,500	$75,000	X	10%	=	$7,500
Harpers Ferry Police Department	$210,000	X	10%	=	$21,000	$105,000	X	10%	=	$10,500
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	10%	=	$42,500	$198,000	X	10%	=	$19,800
Shepherdstown University Police	$395,000	X	10%	=	$39,500	$65,000	X	10%	=	$6,500
Shepherdstown VFD	$845,000	X	10%	=	$84,500	$115,000	X	10%	=	$11,500
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	10%	=	$11,000	$65,000	X	10%	=	$6,500
Canterbury of Shepherdstown	$305,000	X	10%	=	$30,500	$75,000	X	10%	=	$7,500
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	10%	=	$22,500	$65,000	X	10%	=	$6,500

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	1%	=	$38,500	$225,000	X	5%	=	$11,250
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	1%	=	$75,000	$225,000	X	5%	=	$11,250
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	1%	=	$18,550	$68,000	X	5%	=	$3,400
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	1%	=	$39,950	$235,000	X	5%	=	$11,750
Shepherdstown Middle	$8,650,000	X	1%	=	$86,500	$295,000	X	5%	=	$14,750
Shepherd University	$55,550,000	X	0.50%	=	$277,750	$950,000	X	1%	=	$9,500
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	10%	=	$185,000	$40,000	X	10%	=	$4,000
Burch Wood Products	$895,000	X	10%	=	$89,500	$350,000	X	10%	=	$35,000
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	2%	=	$22,300	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	10%	=	$57,500	$75,000	X	10%	=	$7,500
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	10%	=	$42,500	$80,000	X	10%	=	$8,000
Harpers Ferry Post Office	$485,000	X	10%	=	$48,500	$100,000	X	10%	=	$10,000
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	10%	=	$25,000	$60,000	X	10%	=	$6,000
Summit Point Post Office	$175,000	X	10%	=	$17,500	$65,000	X	10%	=	$6,500
Bolivar/Harpers Ferry Public Library	$580,000	X	10%	=	$58,000	$200,000	X	10%	=	$20,000
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	10%	=	$79,000	$255,000	X	10%	=	$25,500

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	10%	=	$61,500	$220,000	X	10%	=	$22,000
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	10%	=	$9,500	$25,000	X	10%	=	$2,500
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	10%	=	$25,500	$35,000	X	10%	=	$3,500
Aspen Hill	$195,000	X	10%	=	$19,500	$60,000	X	10%	=	$6,000
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	10%	=	$42,500	$65,000	X	10%	=	$6,500
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	10%	=	$12,500	$40,000	X	10%	=	$4,000
Barleywood	$135,000	X	10%	=	$13,500	$35,000	X	10%	=	$3,500
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	10%	=	$27,500	$85,000	X	10%	=	$8,500
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	10%	=	$22,000	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	1%	=	$20,000	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0.50%	=	$20,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	2%	=	$49,100	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	10%	=	$9,500	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	10%	=	$35,000	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	10%	=	$39,500	$65,000	X	10%	=	$6,500

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	10%	=	$9,500	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	10%	=	$39,500	$110,000	X	10%	=	$11,000
Strider Farm	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	10%	=	$19,500	$50,000	X	10%	=	$5,000
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	10%	=	$14,000	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	10%	=	$6,000	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	10%	=	$6,750	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.03%	=	$729,927	$486,618,000	X	0.03%	=	$145,985
				Total Loss to Structure	$3,159,807				**Total Loss to Contents**	$617,535

Hazard: Landslide

	Structure Use and Function Loss (Task A3)									Structure + Contents + Function Loss
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	
Bolivar Town Hall	$6,000	X	2	+	$750	X	3	=	$14,250	$63,300
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	2	+	$825	X	3	=	$15,675	$73,105
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$0
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$0
Shepherdstown Town	$7,000	X	2	+	$875	X	3	=	$16,625	$67,875
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$0
Charles Town City Water System	$3,840	X	0	+	$480	X	0	=	$0	$0
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	2	+	$350	X	0	=	$5,600	$71,850
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$0
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	2	+	$450	X	0	=	$7,200	$83,950
Shenandoah Junction Water System	$3,400	X	2	+	$425	X	0	=	$6,800	$135,300
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	3	=	$1,950	$84,600
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	3	=	$0	$103,450
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	3	=	$1,350	$40,350
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	3	=	$2,625	$34,125
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	3	=	$1,500	$63,800
Shepherdstown University Police	$1,800	X	0	+	$225	X	3	=	$675	$46,675
Shepherdstown VFD	$0	X	0	+	$0	X	3	=	$0	$96,000
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	3	=	$8,400	$25,900
Canterbury of Shepherdstown	$5,200	X	2	+	$650	X	0	=	$10,400	$48,400
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	3	=	$4,800	$33,800

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$0
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	2	+	$2,800	X	0	=	$11,200	$60,950
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$0
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	2	+	$4,300	X	0	=	$68,800	$155,050
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	2	+	$2,200	X	0	=	$26,400	$48,350
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	2	+	$3,450	X	0	=	$55,200	$106,900
Shepherdstown Middle	$36,000	X	2	+	$4,500	X	0	=	$72,000	$173,250
Shepherd University	$280,000	X	2	+	$35,000	X	0	=	$560,000	$847,250
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	2	+	$1,300	X	0	=	$15,600	$204,600
Burch Wood Products	$93,600	X	2	+	$15,600	X	3	=	$234,000	$358,500
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$0
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	0	+	$17,500	X	0	=	$0	$0
Harpers Ferry Family Medicine Center	$96,000	X	2	+	$16,000	X	0	=	$192,000	$214,300
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$0
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	2	+	$950	X	0	=	$7,600	$72,600
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Halltown Post Office	$1,800	X	2	+	$900	X	0	=	$3,600	$54,100
Harpers Ferry Post Office	$2,000	X	2	+	$1,000	X	0	=	$4,000	$62,500
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$0
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	2	+	$750	X	0	=	$12,000	$43,000
Summit Point Post Office	$710	X	2	+	$355	X	0	=	$1,420	$25,420
Bolivar/Harpers Ferry Public Library	$3,840	X	2	+	$480	X	0	=	$7,680	$85,680
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	2	+	$1,000	X	0	=	$16,000	$120,500

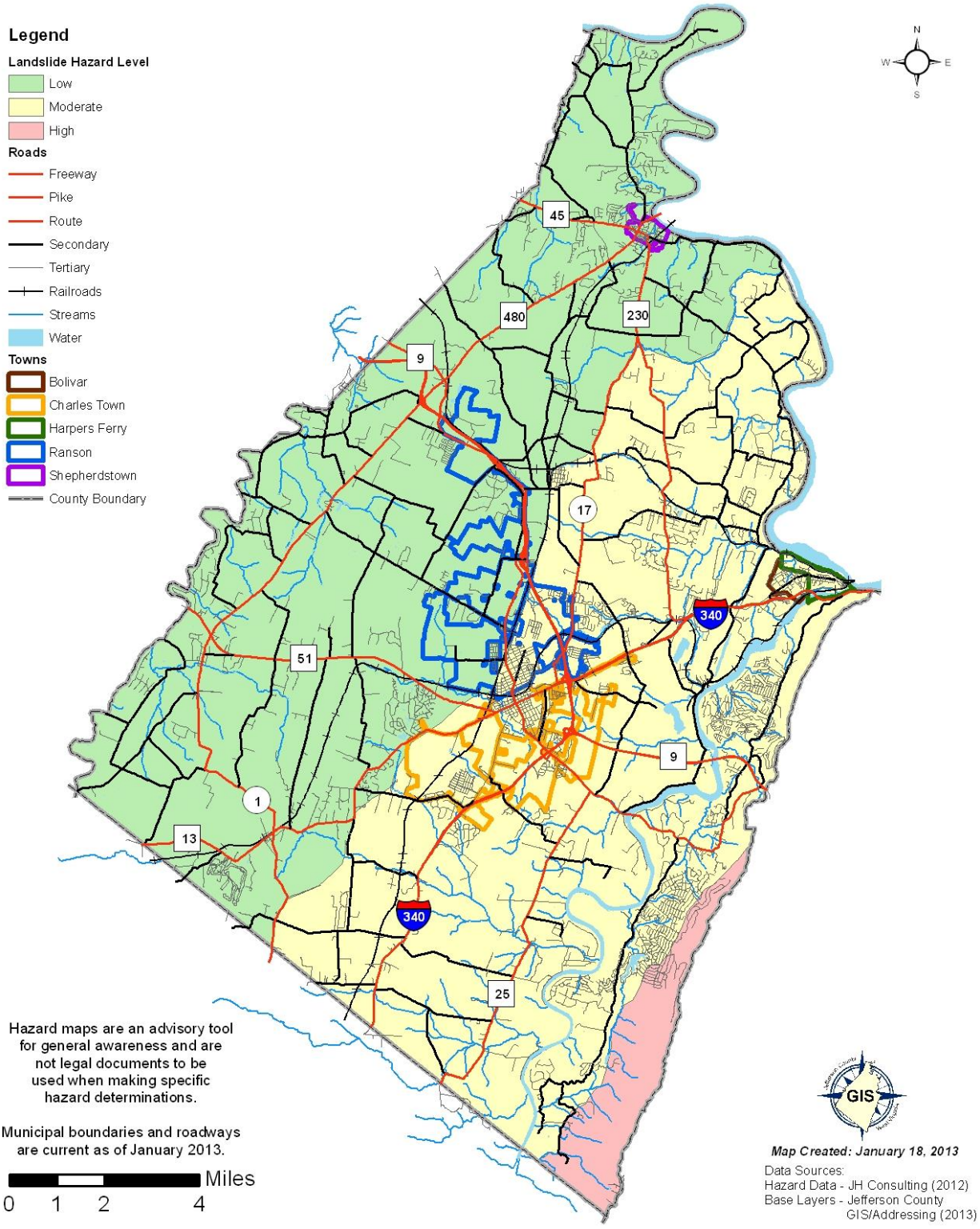
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	2	+	$745	X	0	=	$8,940	$92,440
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$12,000
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$29,000
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$25,500
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$49,000
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$16,500
Barleywood	$0	X	0	+	$0	X	0	=	$0	$17,000
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$36,000
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$0
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$22,000
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$20,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$20,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$49,100
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$0
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$9,500
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$35,000
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$0
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$46,000

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$9,500
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$50,500
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$24,500
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$14,000
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$6,000
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$6,750
							Total Loss to Structure Use & Function		$1,394,290	$5,171,632

2.2 PROFILING HAZARDS: LANDSLIDE MAP



2.2 PROFILING HAZARDS

2.2.7. Land Subsidence

Land subsidence (commonly named sinkholes) refers to any failures in the ground that cause collapses in the earth's surface.

INTRODUCTION

Land subsidence is a general term for a variety of collapses in the earth's surface. Some can be rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Land subsidence can be caused by natural processes, such as the dissolving of limestone underground, and earthquake, or volcanic activity. It can also be the result of human actions such as withdrawal of subsurface fluids. Land subsidence occurs when large amounts of ground water have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rocks fall into the void. Land subsidence can go unnoticed because it can occur over large areas rather than in a small spot.

Period of Occurrence:	At any time – Chance of occurrence increases following long periods of heavy rain, snowmelt, or near timbering and construction activity.
Number of Events to Date:	Limited unspecified events.
Probability of Event:	Infrequent.
Warning Time:	Weeks to months – Some instances of land subsidence can occur quickly without warning, but often in the context of other storm events.
Potential Impacts:	Economic losses such as decreased land values, agrobusiness losses, disruption of utility and transportation systems, and costs for any litigation. May cause geological movement, causing infrastructure damages ranging from minimal to severe.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days to weeks.

Figure 2.7a

Research identified land subsidence as a potential hazard in Jefferson County. Subsidence information was obtained from the following resources.

- West Virginia DEP – Division of Land Restoration
- Public Comment

- USGS Soil Survey

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Jefferson County has a moderate probability, and low impact to land subsidence. The hazard of land subsidence is present in every municipality; however, is more prominent in the City of Charles Town.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.7b

HAZARD IDENTIFICATION

Land subsidence is a global problem and, in the United States, more than 17,000 square miles in 45 states, an area roughly the size of New Hampshire and Vermont combined, have been directly affected by subsidence. More than 80% of the identified subsidence in the nation has occurred because of exploitation of underground water, and increasing development of land and water resources threatens to exacerbate existing land-subsidence problems and initiate new ones.

Approximately 86% of Jefferson County lies on a geologic formation known as karst from carbonate rock as illustrated in figure 2.7c below from the USGS, which is prone to land subsidence and sink holes.

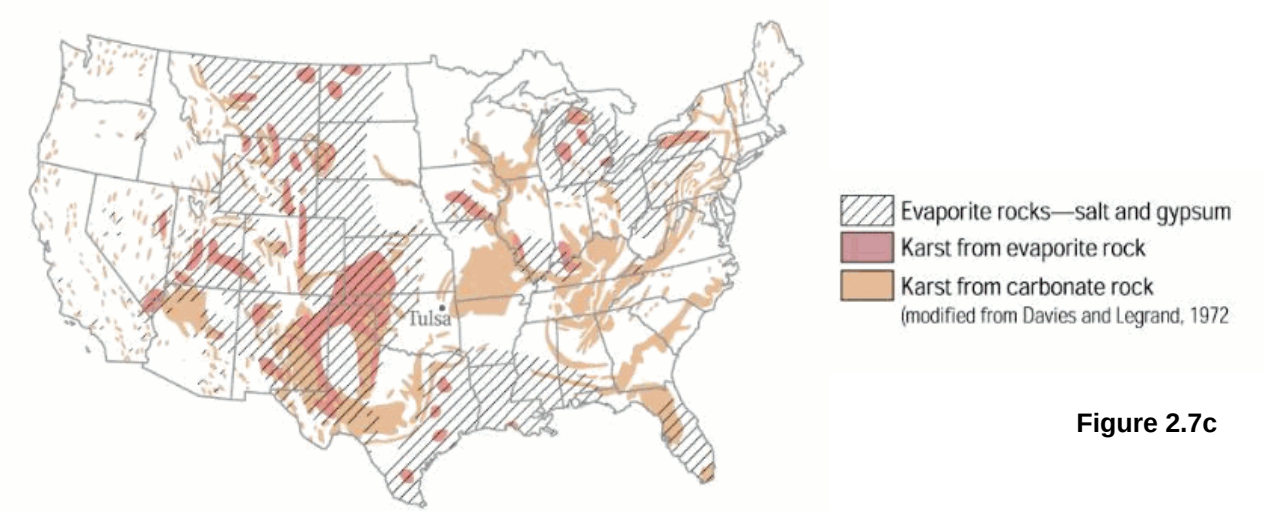


Figure 2.7c

Comprised predominantly of fractured limestone, the karst formation covers most of the county between the Shenandoah River and Opequon Creek. Topographically, this formation is characterized by fertile soils and sinkholes that are created when the carbonate rock beneath is eroded by subsurface water to the point where the structure collapses, creating a crater on the land surface. Sinkholes are the most visibly apparent feature of the karst geology that lies under much of the area. Figure 2.7d below illustrates the location of known and recorded sinkholes throughout Jefferson County.

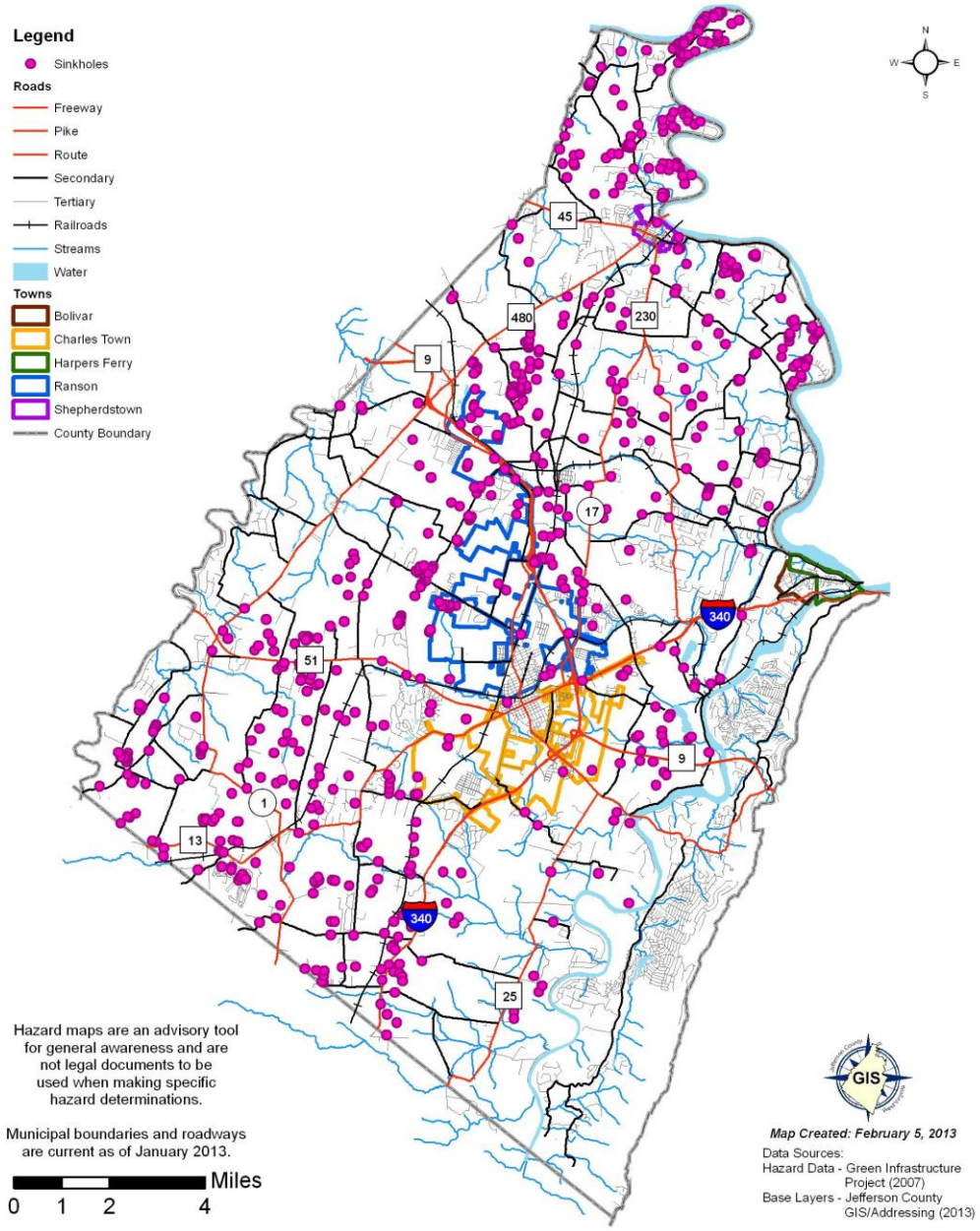


Figure 2.7d

This formation is very porous and allows for the transmission of liquid from the surface of the soil to aquifers below, which provides most residents with their drinking water. These sinkholes, therefore, are important environmental features of the landscape as well as vulnerable portals that could inadvertently be used as contamination points to the aquifers, if the land in their immediate proximity is not effectively managed. These sinkholes act as infiltration devices. The storm water gathers in these sinkholes and drains into the water table. This acts as a form of flood control but assists in polluting the water table. Although flooding is reduced, it is a temporary solution. The sinkholes may get larger as the limestone dissolves from the surface water. This can cause problems for nearby structures. The remedy has generally been to fill in the sinkhole with rock, debris, concrete, or other materials. However, the filling in of large sinkholes for any reason eliminates the ad hoc storm water pond/infiltration trench and may increase the potential for flooding.

In Jefferson County the presence of limestone geology, underground water sources, and several underground caves increases the possibility of sinkholes and land subsidence. Potential land subsidence areas were determined based on the location and size of caves throughout the county. Cave location information was obtained through studies developed by the West Virginia Geological Survey as well as local cave enthusiasts. Using latitude and longitude information provided in these studies, the Jefferson County GIS/Addressing Office was able to map each of the recorded cave entrances. Several of the limestone caves are located near Shepherdstown, Bolivar, Harpers Ferry, and Charles Town as well as other locations in the unincorporated portions of the county including along the Opequon Creek and the Shenandoah River.

To determine the area of potential risk surrounding the caves, GIS was used to create an area of risk around the cave entrances. The recorded maximum horizontal length of the cave determined the size of each area of risk. To this extent, the areas of risk include more land than may actually be at risk from land subsidence.

HISTORY OF EVENTS

There have been ambiguous and very limited historical reports of land subsidence activity in Jefferson County. Extensive and exhaustive research indicates that there have been unspecified limited land subsidence events in the county since this plan was originally adopted in 2003. As information becomes available a more comprehensive and detailed analysis can be developed.

HAZARD IMPACT

Land subsidence causes many problems including: changes in elevation and slope of streams, canals, and drains; damage to bridges, roads, railroads, electric power lines, storm drains, sanitary sewers, canals, and levees; damage to private and public buildings; failure of well casings from forces generated by compaction of fine-grained materials in aquifer systems. Safety problems for residents caused by sinkholes and subsidence (as illustrated in figure 2.7e) are a growing concern.



Figure 2.7e

Assets that are at risk of land subsidence were determined based on the intersection of the Jefferson County GIS/Addressing Office structure data with the land subsidence risk areas. Properties located within land subsidence risk areas occurred in Charles Town and some portions of the unincorporated county. According to this analysis, 187 residential and 263 commercial properties were located in land subsidence areas across the county. In Charles Town, there were 55 properties located in the land subsidence risk area, some of which are critical facilities (Jefferson County Judicial Center, Charles Town Police Department, and Charles Town Maintenance Department). There are no historic sites located in land subsidence risk areas.

Inventory of Properties Located in Land Subsidence Hazard Areas in Jefferson County

Use Type	Charles Town	Ranson	Shepherdstown	Harpers Ferry	Bolivar	County	Total
Incorporated Town	2,664	2,362	676	0	0	N/A	**5,702**
Industrial/ Commercial	N/A	N/A	N/A	N/A	N/A	391	**391**
Residential	N/A	N/A	N/A	N/A	N/A	3,481	**3,481**
Mixed	N/A	N/A	N/A	N/A	N/A	1,421	**1,421**
Rural	N/A	N/A	N/A	N/A	N/A	7,739	**7,739**
Village	N/A	N/A	N/A	N/A	N/A	639	**639**
Total	**2,664**	**2,362**	**676**	**0**	**0**	**13,671**	**19,373**

NOTE: Mixed = residential, light industrial, and/or commercial **Table 2.7a**
Source: Jefferson County GIS/Addressing Office

Table 2.7a above illustrates the number of structures located in moderate or high hazard areas for land subsidence, and indicates that usage type of the structures. The high risk areas contain only 371 address points which are all within the Rural zone. The only infrastructure located in land subsidence risk areas across the county are railroads. Approximately 0.33 miles of railroad track is located in the land subsidence risk area to the northwest of Bolivar.

The loss estimation for land subsidence was developed using the asset inventory for the risk areas around the identified cave entrances. According to this assessment approximately 487 properties within Jefferson County are located in land subsidence hazard areas, the majority of which occur in the unincorporated county.

PAST MITIGATION EFFORTS

Efforts to mitigate the effects of land subsidence in Jefferson County have included the review of existing regulations, comprehensive plans, and capital improvement plans, to ensure adequacy in reducing the amount of future development in areas identified as prone to land subsidence.

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	664	3%	$2,433,090,000	$4,866,180	0.20%	53,498	4,280	8%
Commercial	1,640	16	1%	$492,000,000	$1,476,000	0.30%	6,560	66	1%
Industrial	562	11	2%	$196,700,000	$590,100	0.30%	2,810	56	2%
Agricultural	546	27	5%	$81,900,000	$409,500	0.50%	182	9	5%
Religious/Non-Profit	30	3	10%	$10,610,000	$31,830	0.30%	300	30	10%
Government	80	4	5%	$68,333,360	$205,000	0.30%	3,633	182	5%
Education	44	4	9%	$165,000,000	$495,000	0.30%	1,701	170	10%
Utilities	41	6	15%	$145,550,000	$436,650	0.30%	62	9	15%
Total	25,062	735	3%	$3,593,183,360	$8,510,260	<1%	68,746	4,802	7%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Land Subsidence

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	2.50%	=	$63,350	$225,000	X	5%	=	$11,250
Jefferson County Courthouse	$4,232,887	X	5%	=	$211,644	$875,000	X	10%	=	$87,500
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	2.50%	=	$55,625	$225,000	X	5%	=	$11,250
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0.30%	=	$585,000	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0.15%	=	$1,822,500	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	2%	=	$114,500	$9,000,000	X	5%	=	$450,000
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	2%	=	$44,500	$5,450,000	X	5%	=	$272,500
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	2.50%	=	$17,875	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	5%	=	$36,250	$325,000	X	10%	=	$32,500

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	2.50%	=	$28,750	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	2.50%	=	$5,250	$105,000	X	5%	=	$5,250
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	2.50%	=	$2,375	$75,000	X	5%	=	$3,750
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	2.50%	=	$10,625	$198,000	X	5%	=	$9,900
Shepherdstown University Police	$395,000	X	2.50%	=	$9,875	$65,000	X	5%	=	$3,250
Shepherdstown VFD	$845,000	X	2.50%	=	$21,125	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	2.50%	=	$2,750	$65,000	X	5%	=	$3,250
Canterbury of Shepherdstown	$305,000	X	2.50%	=	$7,625	$75,000	X	5%	=	$3,750
Eastern Panhandle Free Clinic	$1,560,000	X	2.50%	=	$39,000	$145,000	X	5%	=	$7,250
Friendship Fire EMS	$85,000	X	2.50%	=	$2,125	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	2.50%	=	$2,250	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	2.50%	=	$5,625	$65,000	X	5%	=	$3,250

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	5%	=	$40,250	$105,000	X	5%	=	$5,250
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	2%	=	$31,000	$325,000	X	5%	=	$16,250
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	2%	=	$137,000	$315,000	X	5%	=	$15,750
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	2%	=	$150,000	$225,000	X	5%	=	$11,250
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	2%	=	$43,000	$95,000	X	5%	=	$4,750
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	2%	=	$60,000	$200,000	X	5%	=	$10,000
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	2%	=	$79,900	$235,000	X	5%	=	$11,750
Shepherdstown Middle	$8,650,000	X	2%	=	$173,000	$295,000	X	5%	=	$14,750
Shepherd University	$55,550,000	X	1%	=	$555,500	$950,000	X	2%	=	$19,000
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	2%	=	$64,500	$145,000	X	5%	=	$7,250
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	2%	=	$55,000	$215,000	X	5%	=	$10,750
Driswood Elementary	$2,250,000	X	2%	=	$45,000	$195,000	X	5%	=	$9,750
Aggregate Industries/Millville Quarry	$1,850,000	X	2.50%	=	$46,250	$355,000	X	5%	=	$17,750
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	2.50%	=	$46,250	$40,000	X	5%	=	$2,000
Burch Wood Products	$895,000	X	2.50%	=	$22,375	$350,000	X	5%	=	$17,500
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	5%	=	$62,500	$220,000	X	10%	=	$22,000
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	2.50%	=	$44,625	$310,000	X	5%	=	$15,500
Halltown Paperboard Company	$1,276,000	X	2.50%	=	$31,900	$650,000	X	5%	=	$32,500
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	2.50%	=	$30,625	$150,000	X	5%	=	$7,500
Jefferson County Fairgrounds	$625,000	X	2.50%	=	$15,625	$65,000	X	5%	=	$3,250
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	2.50%	=	$24,875	$65,000	X	5%	=	$3,250
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	2.50%	=	$43,750	$355,000	X	5%	=	$17,750
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	2.50%	=	$24,725	$225,000	X	5%	=	$11,250
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	2.50%	=	$75,125	$425,000	X	5%	=	$21,250
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	2%	=	$271,000	$1,500,000	X	5%	=	$75,000
Inn at Charles Town	$7,650,000	X	2%	=	$153,000	$900,000	X	5%	=	$45,000
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	5%	=	$42,500	$125,000	X	10%	=	$12,500
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	2.50%	=	$13,125	$110,000	X	5%	=	$5,500
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	2.50%	=	$5,625	$65,000	X	5%	=	$3,250
Shepherdstown Post Office	$250,000	X	2.50%	=	$6,250	$60,000	X	5%	=	$3,000
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	2.50%	=	$11,250	$220,000	X	5%	=	$11,000
Shepherdstown Public Library	$790,000	X	2.50%	=	$19,750	$255,000	X	5%	=	$12,750

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	5%	=	$30,750	$220,000	X	10%	=	$22,000
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	2%	=	$40,000	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	2.50%	=	$7,750	$65,000	X	5%	=	$3,250
Entler Hotel	$415,000	X	2.50%	=	$10,375	$125,000	X	5%	=	$6,250
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	2.50%	=	$24,125	$225,000	X	5%	=	$11,250
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	2.50%	=	$4,125	$30,000	X	5%	=	$1,500
Glenburnie Building	$320,000	X	2.50%	=	$8,000	$135,000	X	5%	=	$6,750

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	2.50%	=	$4,875	$65,000	X	5%	=	$3,250
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	2.50%	=	$2,875	$40,000	X	5%	=	$2,000
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0%	=	$0	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	2.50%	=	$10,750	$90,000	X	5%	=	$4,500
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	5%	=	$20,000	$135,000	X	10%	=	$13,500
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	5%	=	$750	$0	X	10%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	2.50%	=	$375	$0	X	5%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	2.50%	=	$37,500	$0	X	5%	=	$0
Miller's Tavern	$115,000	X	2.50%	=	$2,875	$15,000	X	5%	=	$750
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	2.50%	=	$6,625	$50,000	X	5%	=	$2,500
New Opera House	$295,000	X	2.50%	=	$7,375	$100,000	X	5%	=	$5,000
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	2.50%	=	$16,875	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	2.50%	=	$2,375	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0%	=	$0
Shipley School	$245,000	X	2.50%	=	$6,125	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	2.50%	=	$8,750	$95,000	X	5%	=	$4,750
Storer College	$395,000	X	2.50%	=	$9,875	$110,000	X	5%	=	$5,500
Strider Farm	$165,000	X	2.50%	=	$4,125	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	2.50%	=	$2,375	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	2.50%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	2.50%	=	$4,125	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	2.50%	=	$6,625	$45,000	X	5%	=	$2,250
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	2.50%	=	$1,500	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	2.50%	=	$1,875	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	2.50%	=	$4,875	$33,000	X	5%	=	$1,650
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	2.50%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	2%	=	$13,000	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.03%	=	$729,927	$486,618,000	X	0.04%	=	$194,647
			Total Loss to Structure		$6,545,446			**Total Loss to Contents**		$1,671,947

Hazard: Land Subsidence

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	2	+	$825	X	0	=	$13,200	$87,800
Jefferson County Courthouse	$10,000	X	5	+	$2,500	X	0	=	$50,000	$349,144
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$0
Shepherdstown Town	$7,000	X	2	+	$875	X	0	=	$14,000	$80,875
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$585,000
Roads	$0	X	0	+	$0	X	0	=	$0	$1,822,500
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$0
Charles Town City Water System	$3,840	X	0	+	$480	X	0	=	$0	$0
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	2	+	$350	X	0	=	$5,600	$570,100
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$0
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	2	+	$450	X	0	=	$7,200	$324,200
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$0
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$17,875
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$68,750

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$28,750
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$0
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$10,500
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$6,125
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$20,525
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$13,125
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$21,125
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$6,000
Canterbury of Shepherdstown	$5,200	X	2	+	$650	X	0	=	$10,400	$21,775
Eastern Panhandle Free Clinic	$12,800	X	2	+	$3,200	X	0	=	$25,600	$71,850
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$2,125
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$2,250
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$8,875

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$45,500
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	2	+	$4,200	X	0	=	$33,600	$80,850
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	2	+	$5,500	X	0	=	$44,000	$196,750
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	2	+	$4,300	X	0	=	$68,800	$230,050
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	2	+	$3,000	X	0	=	$24,000	$71,750
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	2	+	$1,680	X	0	=	$26,880	$96,880
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	2	+	$3,450	X	0	=	$55,200	$146,850
Shepherdstown Middle	$36,000	X	2	+	$4,500	X	0	=	$72,000	$259,750
Shepherd University	$280,000	X	2	+	$35,000	X	0	=	$560,000	$1,134,500
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	2	+	$3,600	X	0	=	$28,800	$100,550
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	2	+	$1,437	X	0	=	$23,000	$88,750
Driswood Elementary	$10,000	X	2	+	$1,250	X	0	=	$20,000	$74,750
Aggregate Industries/Millville Quarry	$38,000	X	2	+	$9,500	X	0	=	$76,000	$140,000
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	2	+	$1,300	X	0	=	$15,600	$63,850
Burch Wood Products	$93,600	X	2	+	$15,600	X	0	=	$187,200	$227,075
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	5	+	$13,750	X	0	=	$275,000	$359,500
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	2	+	$35,000	X	0	=	$280,000	$340,125
Halltown Paperboard Company	$105,000	X	2	+	$17,500	X	0	=	$210,000	$274,400
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	2	+	$5,700	X	0	=	$45,600	$83,725
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$18,875
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	2	+	$4,250	X	0	=	$34,000	$62,125
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	2	+	$28,000	X	0	=	$336,000	$397,500
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	2	+	$18,000	X	0	=	$144,000	$179,975
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	2	+	$12,750	X	0	=	$102,000	$198,375
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	2	+	$12,000	X	0	=	$160,000	$506,000
Inn at Charles Town	$55,000	X	2	+	$8,000	X	0	=	$110,000	$308,000
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$55,000
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	2	+	$955	X	0	=	$7,640	$26,265
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	2	+	$600	X	0	=	$7,200	$16,075
Shepherdstown Post Office	$6,000	X	2	+	$750	X	0	=	$12,000	$21,250
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	2	+	$800	X	0	=	$3,200	$25,450
Shepherdstown Public Library	$8,000	X	2	+	$1,000	X	0	=	$16,000	$48,500

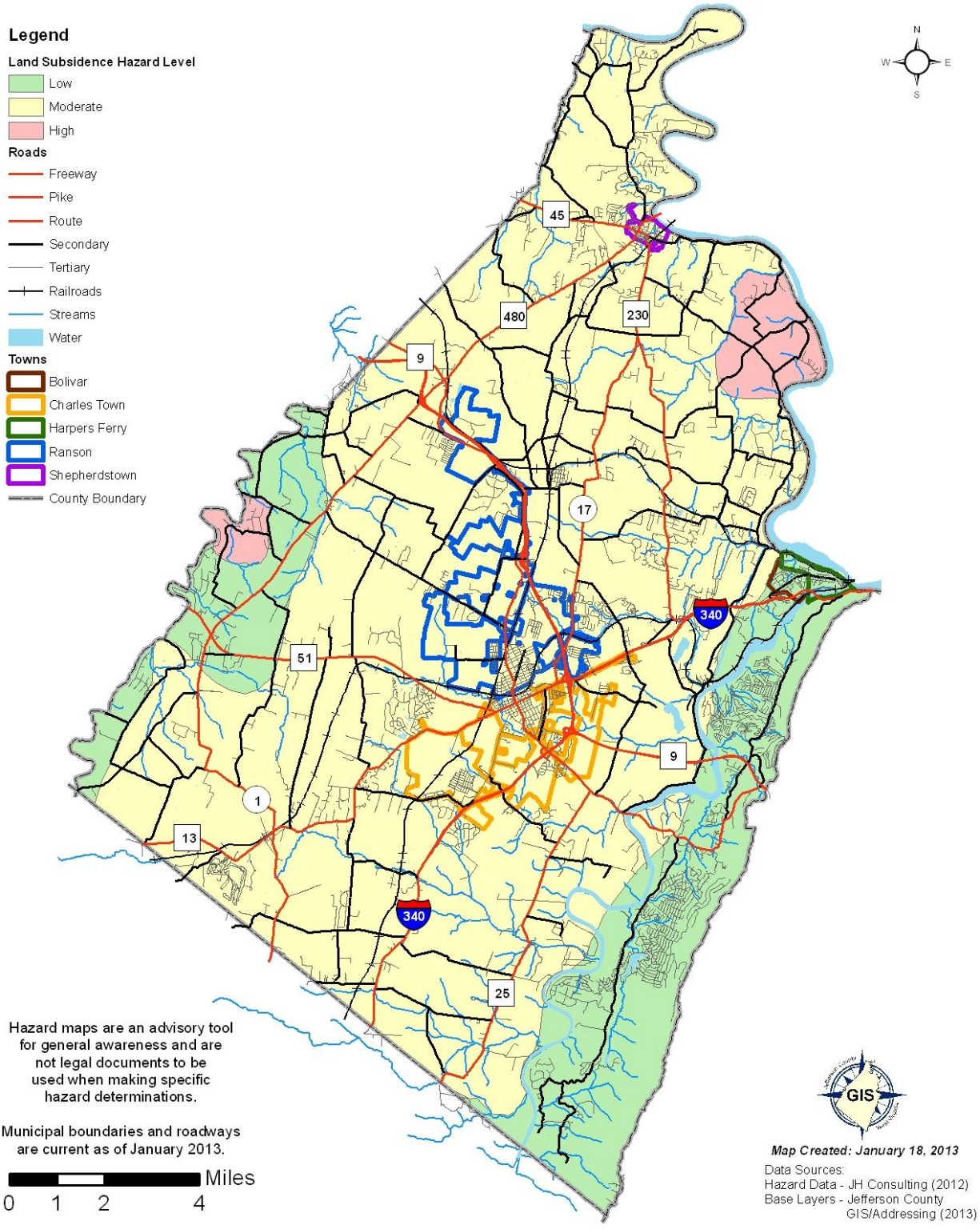
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	5	+	$745	X	0	=	$22,350	$75,100
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$40,000
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$11,000
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$16,625
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$35,375
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$5,625
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$14,750

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$8,125
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$4,875
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$0
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$15,250
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$0
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$33,500
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$750
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$375
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$37,500
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$3,625
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$9,125
New Opera House	$0	X	0	+	$0	X	0	=	$0	$12,375
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$16,875
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$2,375
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$6,125
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$13,500
Storer College	$0	X	0	+	$0	X	0	=	$0	$15,375
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$4,125
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$2,375
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$4,125
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$8,875
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$1,500
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$1,875
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$6,525
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$13,000
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
							Total Loss to Structure Use & Function		$3,126,070	$11,343,463

2.2 PROFILING HAZARDS: LAND SUBSIDENCE MAP



2.2 PROFILING HAZARDS

2.2.8. Severe Thunderstorm/Hail

A thunderstorm is considered severe when that storm produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least ¾" in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal too, or greater than 40 mph (35 knots), and/or hail of at least ½" is defined as "approaching severe".

Hail is a form of precipitation which occurs when freezing water in thunderstorm type clouds accumulates in layers around an icy core. When this event takes place, balls or irregular lumps of ice are created. On average, hail can be from 5mm to 50mm in diameter.

INTRODUCTION

A severe thunderstorm is the result of a violent form of convection wherein cold upper air falls, and warm moist air rises. As the warm air rises, cumulonimbus clouds can develop and turn into severe thunderstorms with strong winds, lightning, heavy rain, and hail. Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a bolt. This flash of light usually occurs within the clouds or between the clouds and the ground.

Period of Occurrence:	Spring, and early summer.
Number of Events to Date (2007 – 2012):	42 Thunderstorms 24 Hail 0 Lightning
Probability of Event:	Frequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems). Impacts human life, health, and public safety.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days.

Figure 2.8a

A hailstorm is defined as an atmospheric disturbance manifested in strong winds and accompanied by precipitation. The precipitation is made of hailstones or hard pellets of snow and ice. Several methods of research identified severe thunderstorms and hail as natural hazards in Jefferson County, including discussions with local representatives, as well as research of several Internet sites.

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Jefferson County has a high probability, and low impact to severe thunderstorms and hail. The hazard of severe thunderstorm and hail is not targeted to any specific portion of Jefferson County.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.8b

HAZARD IDENTIFICATION

The National Weather Service (NWS) defines a thunderstorm as "severe" when wind speeds reach 58 mph or stronger, and/or hail is produced that is three-fourths of an inch in diameter or larger, and/or a tornado is produced. High wind events are among the most common types of hazards in Jefferson County. Figure 2.8c shows the number of days that winds exceed 50-knots per year. To be classified as a "high wind event," winds must be in excess of 52 mph (45 knots). As can be seen, the eastern panhandle of West Virginia including Jefferson County is located in an area that experiences winds at or above 50 knots between four (4) and five (5) days per year.

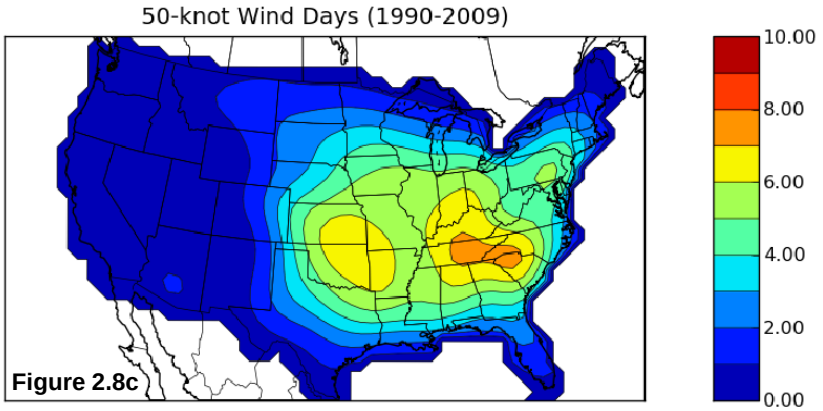


Figure 2.8c

Thunderstorms are a seasonal hazard and can be expected to occur every year. According to the NWS, the most active thunderstorm season in West Virginia is late spring and early summer. The key ingredient that defines a thunderstorm is lightning. Because lightning creates thunder, a storm with lightning is termed a thunderstorm. A bolt of lightning reaches a temperature of 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.

A hot summer afternoon thunderstorm is capable of transforming the landscape from verdant green to icy white with the onset of a hailstorm. The first sign that hail may

be arriving is a growing whitening among shafts of rain. Soon, a rattling sound is heard as hailstones strike roofs and pavements and the ground whitens, becoming slippery as hailstones cover grass and roadways. A hailstorm can be the most damaging part of a thunderstorm, inflicting injury to man and beast and destroying crops, gardens, and property.

As water vapor inside a thunderstorm cloud condenses to become ice, a large amount of heat energy is given off during this transition and the process produces hailstones. Hailstones are initially small in size but due to rain water freezing over them they gradually grow in size as they fall to the ground at speeds of 50 meters per second or 111 miles per hour.

HISTORY OF EVENTS

According to records provided by the National Weather Service (NWS) and National Climatic Data Center (NCDC), Jefferson County has experienced numerous severe thunderstorm events.

- July 24, 1999: A severe thunderstorm with winds over 50 mph resulted in damage to trees and the loss of power for approximately 1,000 customers.
- April 9, 2002: A severe thunderstorm event resulted in strong winds and lightning strikes that caused power outages, felled trees, a field fire, and minor structural damages.
- April 28, 2002: Numerous trees were downed. Thunderstorms with high winds moved through the Eastern Panhandle between 5 and 7 PM EDT on the 28th. In Jefferson County, numerous trees were downed. The roof of a large hay barn was blown off in Rippon. Damages totaled $20,000 for the Eastern Panhandle.
- May 14, 2002: Showers that produced damaging winds moved south through the Eastern Panhandle between 3:30 and 5:00 PM EDT. Over 3,000 customers lost power as a direct result of the storm. In Jefferson County, a 3-foot diameter oak tree was blown onto a 1987 Toyota Celica traveling along Route 9 about 3.5 miles from the Virginia border. The driver of the vehicle, a 49 year-old woman, was killed. Trees and power lines were also downed in other parts of the county. Damages totaled $5,000.
- May 26, 2002: Numerous trees were downed. Scattered thunderstorms with large hail and very heavy downpours moved through the Eastern Panhandle between 3 and 7 PM on the 26th. In Jefferson County, golfball sized hail fell in Shepherdstown

near Route 480. In Kearneysville, baseball sized hail was reported. Numerous trees were downed in the vicinity. Power was knocked out in Charles Town and Ranson. Heavy downpours flooded basements and yards. High water was also reported on Route 480 near Shepherdstown. Total property damage was $10,000.

- June 12, 2003: Showers and thunderstorms with heavy rainfall and high winds moved through the Eastern Panhandle during the afternoon and evening of the 12th. In Jefferson County, trees and power lines were downed in Charles Town. One tree was felled onto a car on Samuel Street. Job Corps Road was closed for an hour after a downed power line caused trees along the road to smolder. In addition, a home in the county caught fire after being struck by lightning. Total property damage was $5,000.
- August 26, 2003: Numerous trees were downed. A line of thunderstorms with high winds moved through Morgan, Berkeley, and Jefferson counties during the afternoon of the 26th. Over 8,000 customers lost power in these areas as a direct result of the storms. In Jefferson County, numerous trees were downed in Kearneysville and Shepherdstown. Tree damage was also reported in the Leetown area. Route 230 south of Shepherdstown and Route 9 east of Charles Town were blocked by fallen trees. Penny sized hail fell in Harpers Ferry. In addition, a late morning thunderstorm led to a fire at a home in Shepherdstown. Lightning struck a home on Elizabeth Court and the home sustained significant damage. Total property damages were $5,000.
- January 14, 2006: Information gathered in local newspaper reports indicated that a farm sustained significant damage due to severe level thunderstorm winds overnight. Wooden foundation beams were destroyed and blown down with significant damages to farm equipment and outbuildings. The farm was located near Kabletown, WV. A major low pressure system moved from the Middle Ohio Valley on the afternoon of January 13 to the Mid Atlantic during the overnight. A strong cold front passed through the region overnight and spawned scattered thunderstorms with a few of those reaching severe limits across areas of Northern Virginia. One report was also received from Jefferson County, WV, of damaging wind gusts causing property damage. Total damages totaled $100,000.
- June 1, 2006: Intense lightning occurred with a batch of strong thunderstorms as they moved across the Eastern Panhandle of West Virginia. Newspaper reports indicated several house fires in Jefferson County, with extensive property damage.

A few trees were also damaged due to the intense lightning strikes. Total property damages were $300,000.

- August 26, 2006: Intense lightning from strong thunderstorms caused four house fires around Charles Town and Harpers Ferry. A few of these storms reached severe limits during the evening, with several instances of downed trees and power lines, and large hail. Total property damages were $500,000.
- June 4, 2008: An NWS storm survey observed tree and siding damage in the Ranson area. A church was damaged and several windows were broken by falling branches and trees. One (1) barn was destroyed. An amateur radio operator reported a wind gust of 85 MPH. Significant damage was reported in the Kabletown area. Numerous trees and outbuildings were destroyed. A 40 foot by 40 foot concrete block of a barn and tractor shed was destroyed. A roof was blown off and deposited nearly 80 feet away. Another nearby barn roof was blown off and deposited 100 feet away. A third barn completely collapsed, killing 6 cattle inside. Farms were located near Old Shennandale Road off Kabletown Road. All totaled this event resulted in approximately $405,000 in property damage.
- November 16, 2010: Damage was reported at retail stores along Patrick Henry way from a severe thunderstorm.
- July 19, 2011: Large branches were down on several pear trees. Shingles were also removed from a home.
- June 29, 2012: A widespread, long lived, straight line wind storm associated with a band of severe thunderstorms, known as a Derecho, moved through the region causing widespread damage and leaving scores without power for several days. The tin roof of the Jefferson County Commission Office building was blown off during this event.
- October 30, 2012: Hurricane Sandy produced winds and heavy rain as it moved over Jefferson County and later became a Super Storm dumping record snowfall in the Central Mountains of West Virginia, downing trees and electric lines, resulting in mass power outages throughout the state. The Jefferson County EOC was activated in anticipation of Superstorm Sandy and remained open for three (3) days and nights. The highlight of this activation was the predicted record flooding by the NWS which prompted an evacuation order along the Opequon Creek. None of Jefferson County's rivers crested at the predicted levels, due in part to the heavy

snows that were experienced in the mountainous regions to the West of the Eastern Panhandle.

According to the National Climatic Data Center (NCDC) Event Record Database, there have been a total of 38 hailstorms since 1975. Nearly 79% of the hailstorms reported occurred between the months of May and July. There have been 15 hailstorm occurrences since the plan was adopted in 2008. The following table details the hail storms that have occurred in Jefferson County over the past 42 years, including the location, date, and magnitude of the event. The majority of the hail events were reported in the Towns of Harpers Ferry and Shepherdstown.

Jefferson County Hailstorm History		
Location	**Date of Occurrence**	**Magnitude**
Countywide	07/10/1975	1.75 inches
Countywide	06/16/1982	0.75 inches
Countywide	05/16/1988	1.75 inches
Countywide	06/09/1990	1.00 inches
Countywide	09/18/1991	1.00 inches
Countywide	08/11/1992	0.75 inches
Countywide	04/01/1993	0.88 inches
Charles Town	05/12/1993	1.75 inches
Harpers Ferry	08/17/1993	1.25 inches
Countywide	05/29/1995	0.75 inches
Countywide	07/10/1995	0.88 inches
Kabletown	07/25/1999	1.00 inches
Shepherdstown	05/10/2000	1.00 inches
Summit Point	05/13/2000	1.25 inches
Shepherdstown	07/14/2000	1.00 inches
Shepherdstown	07/16/2000	1.75 inches
Kearneysville, Shepherdstown	05/26/2002	2.75 inches
Harpers Ferry	06/14/2003	0.75 inches
Harpers Ferry	08/26/2003	0.75 inches
Ranson	05/23/2004	0.75 inches
Harpers Ferry	05/25/2004	1.75 inches
Harpers Ferry	07/28/2007	0.88 inches
Summit Point	08/25/2007	1.00 inches
Charles Town	06/10/2008	0.75 inches
Bardane	06/23/2008	0.75 inches
Mechanicstown	06/28/2008	0.75 inches
Mechanicstown	07/26/2008	0.88 inches
Bolivar	07/26/2008	1.00 inches
Middleway	06/10/2008	0.75 inches
Mannings, Harpers Ferry, Bolivar	08/14/2008	0.88 inches
Countywide	04/25/2010	1.00 inches
Kearneysville	05/26/2011	1.00 inches

Jefferson County Hailstorm History		
Location	**Location**	**Location**
Countywide	06/21/2011	1.00 inches
Middleway	07/11/2011	1.00 inches
Leetown	09/14/2011	1.00 inches
Shepherdstown	05/03/2012	1.00 inches
Shepherdstown	06/07/2012	1.00 inches
Bolivar	07/08/2012	1.00 inches

Table 2.8a

HAZARD IMPACT

Severe thunderstorms that occur in Jefferson County can be associated with winds over 50 mph resulting in damage to trees, the loss of electrical power to several customers, as well the closure of roads due to limbs and other debris. Severe thunderstorms can also prompt flash flooding which can result in road closures, and minor basement flooding in some residential areas. Severe thunderstorms are also capable of producing hail which can break windows, destroy HVAC systems, and destroy several acres of cash crops.

Hail damage is often confined to automobiles and crops; however, structural damage is a possibility in the form of broken windows and damaged gutters or HVAC systems (depending on the size of the structure). Historical records indicate that hailstorms are a countywide hazard and can occur at any time in any location. Hail is often associated with severe thunderstorms and/or severe winter storms, both of which have been identified as natural hazards in Jefferson County.

PAST MITIGATION EFFORTS

One of the most common impacts from severe weather is the loss of commercial power. Since many of the services rely on power for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from severe thunderstorms. Jefferson County Homeland Security and Emergency Management (JCHSEM) have also developed a countywide Continuity of Operations Plan (COOP) which includes specific COOP guidelines for nearly all of the county agencies.

Past mitigation efforts to reduce the effects of hail storms throughout Jefferson County include the following; the development and distribution of public awareness materials concerning hail storms, the utilization of local media and social media (i.e., facebook and twitter) for the distribution and publication of hazard information, and conducting National Weather Service Storm Spotter classes.

Hazard: Severe Thunderstorm/Hail

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	22,119	100%	$2,433,090,000	$0	0%	53,498	53,498	100%
Commercial	1,640	1,640	100%	$492,000,000	$0	0%	6,560	6,560	100%
Industrial	562	562	100%	$196,700,000	$0	0%	2,810	2,810	100%
Agricultural	546	546	100%	$81,900,000	$0	0%	182	182	100%
Religious/Non-Profit	30	30	100%	$10,610,000	$0	0%	300	300	100%
Government	80	80	100%	$68,333,360	$0	0%	3,633	3,633	100%
Education	44	44	100%	$165,000,000	$0	0%	1,701	1,701	100%
Utilities	41	41	100%	$145,550,000	$0	0%	62	62	100%
Total	25,062	25,062	100%	$3,593,183,360	$0	0%	68,746	68,746	100%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		X
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?		X
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Thunderstorm / Hail

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0.05%	=	$1,058	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0.05%	=	$1,513	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0.05%	=	$1,267	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0.05%	=	$2,116	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0.05%	=	$1,425	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0.05%	=	$1,113	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0.00%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0.00%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0.00%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0.05%	=	$503	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0.05%	=	$3,107	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0.05%	=	$713	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0.05%	=	$2,863	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0.05%	=	$3,260	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0.05%	=	$2,000	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0.05%	=	$875	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	0.05%	=	$1,113	$5,450,000	X	0%	=	$0
Shenandoah Junction Water System	$1,000,000	X	0.05%	=	$500	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0.05%	=	$375	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0.05%	=	$413	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0.50%	=	$625	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0.50%	=	$3,575	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0.50%	=	$4,750	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0.50%	=	$3,625	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0.50%	=	$6,250	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0.50%	=	$5,750	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0.50%	=	$1,575	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0.50%	=	$1,050	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0.50%	=	$4,875	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0.05%	=	$3,750	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X		=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0.25%	=	$1,813	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0.25%	=	$2,125	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0.50%	=	$475	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0.25%	=	$1,263	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0.25%	=	$1,530	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0.25%	=	$1,063	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0.25%	=	$988	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0.25%	=	$2,113	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0.25%	=	$2,250	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0.50%	=	$650	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0.50%	=	$550	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0.25%	=	$763	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0.25%	=	$3,900	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0.50%	=	$425	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0.50%	=	$450	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0.50%	=	$1,125	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0.25%	=	$2,013	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0.05%	=	$24,113	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0.50%	=	$7,750	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0.50%	=	$1,100	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0.50%	=	$1,550	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0.50%	=	$2,500	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0.50%	=	$1,875	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0.50%	=	$2,875	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0.05%	=	$10,363	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0.10%	=	$3,850	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0.10%	=	$6,850	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0.10%	=	$2,150	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0.10%	=	$2,000	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0.10%	=	$3,075	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0.10%	=	$7,500	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0.10%	=	$16,850	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0.10%	=	$2,150	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0.10%	=	$1,965	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0.10%	=	$2,985	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0.10%	=	$1,855	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0.10%	=	$2,865	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0.10%	=	$3,000	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0.10%	=	$4,000	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0.10%	=	$3,995	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0.10%	=	$8,650	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0.05%	=	$27,775	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0.10%	=	$2,650	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0.05%	=	$8,998	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0.05%	=	$3,278	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0.05%	=	$1,613	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0.05%	=	$2,675	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0.05%	=	$750	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0.05%	=	$1,375	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0.05%	=	$1,125	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0.05%	=	$925	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0.10%	=	$985	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0.10%	=	$550	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0.10%	=	$1,795	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0.10%	=	$1,850	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0.10%	=	$895	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0.10%	=	$1,500	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0.05%	=	$7,825	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0.05%	=	$5,428	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0.10%	=	$1,250	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0.50%	=	$3,250	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0.50%	=	$2,275	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0.10%	=	$1,785	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0.10%	=	$1,276	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0.10%	=	$1,115	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0.05%	=	$6,280	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0.05%	=	$1,275	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0.10%	=	$1,450	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0.10%	=	$1,225	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0.10%	=	$625	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0.10%	=	$1,850	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0.10%	=	$995	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0.10%	=	$850	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0.10%	=	$950	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0.50%	=	$2,125	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0.10%	=	$1,750	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0.10%	=	$2,865	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0.10%	=	$989	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0.10%	=	$3,895	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0.10%	=	$1,225	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0.05%	=	$2,825	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0.10%	=	$1,350	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0.10%	=	$3,005	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0.50%	=	$3,250	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0.10%	=	$2,250	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0.10%	=	$965	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0.10%	=	$2,450	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0.10%	=	$2,875	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0.10%	=	$3,675	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0.10%	=	$3,850	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0.10%	=	$2,525	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0.10%	=	$8,850	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0.10%	=	$13,550	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0.10%	=	$7,650	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0.10%	=	$30,000	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0.10%	=	$2,210	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0.50%	=	$2,250	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0.10%	=	$575	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0.10%	=	$850	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0.10%	=	$425	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0.10%	=	$485	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0.10%	=	$525	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0.10%	=	$575	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0.10%	=	$215	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0.10%	=	$225	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0.10%	=	$250	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0.50%	=	$875	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0.50%	=	$2,900	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0.50%	=	$2,250	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0.50%	=	$3,950	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0.50%	=	$3,075	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0.50%	=	$2,750	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0.50%	=	$475	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0.50%	=	$550	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0.50%	=	$1,275	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0.50%	=	$975	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0.05%	=	$825	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0.50%	=	$2,250	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0.50%	=	$2,500	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0.50%	=	$2,125	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0.50%	=	$1,825	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0.50%	=	$625	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0.50%	=	$675	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0.50%	=	$825	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0.10%	=	$2,000	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0.50%	=	$5,000	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0.50%	=	$1,750	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0.50%	=	$450	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0.50%	=	$1,550	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0.50%	=	$2,075	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0.50%	=	$1,375	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0.25%	=	$2,413	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0.50%	=	$1,100	$0	X	0%	=	$0
Bellevue	$355,000	X	0.50%	=	$1,775	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0.05%	=	$1,000	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0.50%	=	$825	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0.50%	=	$1,600	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0.50%	=	$1,075	$50,000	X	0%	=	$0
Beverly	$195,000	X	0.50%	=	$975	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0.50%	=	$2,950	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0.50%	=	$575	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0.50%	=	$1,475	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0.05%	=	$2,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0.05%	=	$1,228	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0.50%	=	$1,325	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0.50%	=	$2,150	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0.50%	=	$1,325	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0.50%	=	$3,425	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0.05%	=	$5,000	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0.50%	=	$725	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0.50%	=	$2,000	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0.50%	=	$1,325	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
Cool Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Media Farm	$350,000	X	0.50%	=	$1,750	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0.25%	=	$3,750	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0.50%	=	$575	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0.50%	=	$2,750	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0.50%	=	$1,325	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0.50%	=	$1,475	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0.50%	=	$2,325	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0.50%	=	$1,975	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0.50%	=	$3,375	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0.50%	=	$325	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0.05%	=	$1,875	$0	X	0%	=	$0
Shipley School	$245,000	X	0.50%	=	$1,225	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0.50%	=	$550	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0.50%	=	$1,750	$95,000	X	0%	=	$0
Storer College	$395,000	X	0.50%	=	$1,975	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0.50%	=	$825	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0.50%	=	$550	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
York Hill	$875,000	X	0.25%	=	$2,188	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0.50%	=	$1,100	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0.50%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0.50%	=	$1,125	$0	X	0%	=	$0
The Hermitage	$195,000	X	0.50%	=	$975	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0.50%	=	$425	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0.50%	=	$775	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0.50%	=	$825	$0	X	0%	=	$0
Prato Rio	$115,000	X	0.50%	=	$575	$65,000	X	0%	=	$0
Rellim	$85,000	X	0.50%	=	$425	$0	X	0%	=	$0
Rion Hall	$265,000	X	0.50%	=	$1,325	$45,000	X	0%	=	$0
Rockland	$140,000	X	0.50%	=	$700	$0	X	0%	=	$0
Rock Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Rosebrake	$30,000	X	0.50%	=	$150	$0	X	0%	=	$0
Rose Hill	$60,000	X	0.50%	=	$300	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0.50%	=	$40	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0.50%	=	$375	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0.50%	=	$300	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0.50%	=	$825	$35,000	X	0%	=	$0
Vinton	$0	X	0.50%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0.50%	=	$975	$33,000	X	0%	=	$0
Winward	$98,000	X	0.50%	=	$490	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0.50%	=	$700	$15,000	X	0%	=	$0
Woodlawn	$0	X	0.50%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0.50%	=	$3,250	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0.50%	=	$2,250	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0.50%	=	$338	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.01%	=	$243,309	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$793,292				**Total Loss to Contents**	$0

Hazard: Severe Thunderstorm / Hail

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0.25	+	$750	X	0	=	$1,500	$2,558
Charles Town City Hall	$4,800	X	0.25	+	$1,200	X	0	=	$1,200	$2,713
Harpers Ferry Town Hall	$6,600	X	0.25	+	$825	X	0	=	$1,650	$2,917
Jefferson County Courthouse	$10,000	X	0.25	+	$2,500	X	0	=	$2,500	$4,616
Ranson City Hall	$3,600	X	0.25	+	$900	X	0	=	$900	$2,325
Shepherdstown Town	$7,000	X	0.25	+	$875	X	0	=	$1,750	$2,863
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0.25	+	$1,700	X	0	=	$13,275	$13,778
Charles Town City Water System	$3,840	X	0.25	+	$480	X	0	=	$960	$4,067
Frontier Communications	$48,000	X	0.25	+	$12,000	X	0	=	$12,000	$12,713
Harpers Ferry Job Corps	$2,800	X	0.25	+	$350	X	0	=	$700	$3,563
Jefferson County PSD	$6,120	X	0.25	+	$765	X	0	=	$1,530	$4,790
Jefferson County Solid Waste Authority	$4,480	X	0.25	+	$560	X	0	=	$1,120	$3,120
Meadowbrook Water System	$2,400	X	0.25	+	$300	X	0	=	$600	$1,475
Shepherdstown Water System	$3,600	X	0.25	+	$450	X	0	=	$900	$2,013
Shenandoah Junction Water System	$3,400	X	0.25	+	$425	X	0	=	$850	$1,350
Tuscawilla Utilities	$2,400	X	0.25	+	$300	X	0	=	$600	$975
Walnut Grove Utilities	$2,400	X	0.25	+	$300	X	0	=	$600	$1,013
Hollywood Casino WTP	$2,560	X	0.25	+	$320	X	0	=	$640	$1,265
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$3,575
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$4,750
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$3,625

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$6,250
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$5,750
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$1,575
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$1,050
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$4,875
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$3,750
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$1,813
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$2,125
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$475
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$1,263
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$1,530
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$1,063
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$988
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$2,113
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$2,250
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$650
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$550
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$763
Eastern Panhandle Free Clinic	$12,800	X	0.25	+	$3,200	X	0	=	$3,200	$7,100
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$425
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$450
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$1,125

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$2,013
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$24,113
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$7,750
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$1,100
Allegheny Optical Medical Building	$5,760	X	0.25	+	$720	X	0	=	$1,440	$2,990
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$2,500
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$1,875
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$2,875
American Public University	$53,000	X	0.25	+	$26,500	X	0	=	$13,250	$23,613
Blue Ridge Elementary	$5,600	X	0.25	+	$2,800	X	0	=	$1,400	$5,250
Charles Town Middle	$22,000	X	0.25	+	$5,500	X	0	=	$5,500	$12,350
Claymont Children's School	$8,800	X	0.25	+	$2,200	X	0	=	$2,200	$4,350
Country Day School of Jefferson County	$10,800	X	0.25	+	$2,700	X	0	=	$2,700	$4,700
CW Shipley Elementary	$12,400	X	0.25	+	$3,100	X	0	=	$3,100	$6,175
Harpers Ferry Middle	$34,400	X	0.25	+	$4,300	X	0	=	$8,600	$16,100
Jefferson High School	$38,000	X	0.25	+	$9,500	X	0	=	$9,500	$26,350
Kingsway Christian Academy	$12,000	X	0.25	+	$3,000	X	0	=	$3,000	$5,150
Morgan Academy	$11,600	X	0.25	+	$2,900	X	0	=	$2,900	$4,865
North Jefferson Elementary	$16,200	X	0.25	+	$2,700	X	0	=	$4,050	$7,035
Opportunity Learning Center	$13,200	X	0.25	+	$2,200	X	0	=	$3,300	$5,155
Page Jackson Elementary	$12,400	X	0.25	+	$3,100	X	0	=	$3,100	$5,965
Blue Ridge Primary	$13,440	X	0.25	+	$1,680	X	0	=	$3,360	$6,360
Ranson Elementary	$14,000	X	0.25	+	$3,500	X	0	=	$3,500	$7,500

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0.25	+	$3,450	X	0	=	$6,900	$10,895
Shepherdstown Middle	$36,000	X	0.25	+	$4,500	X	0	=	$9,000	$17,650
Shepherd University	$280,000	X	0.25	+	$35,000	X	0	=	$70,000	$97,775
T.A. Lowery Elementary	$12,400	X	0.25	+	$3,100	X	0	=	$3,100	$5,750
Washington High	$44,000	X	0.25	+	$11,000	X	0	=	$11,000	$19,998
Wildwood Middle	$16,000	X	0.25	+	$4,000	X	0	=	$4,000	$7,278
Wright Denny Elementary	$14,400	X	0.25	+	$3,600	X	0	=	$3,600	$5,213
Jefferson County BOE	$19,460	X	0.25	+	$4,865	X	0	=	$4,865	$7,540
The Joy of Learning Montessori	$11,520	X	0.25	+	$1,440	X	0	=	$2,880	$3,630
South Jefferson Elementary	$11,500	X	0.25	+	$1,437	X	0	=	$2,875	$4,250
Driswood Elementary	$10,000	X	0.25	+	$1,250	X	0	=	$2,500	$3,625
Aggregate Industries/Millville Quarry	$38,000	X	0.25	+	$9,500	X	0	=	$9,500	$10,425
Arcadia Building Company	$44,800	X	0.25	+	$11,200	X	0	=	$11,200	$12,185
Automated Merchandising System	$42,000	X	0.25	+	$10,500	X	0	=	$10,500	$11,050
Bavarian Inn	$38,000	X	0.25	+	$9,500	X	0	=	$9,500	$11,295
Bolivar Community Center	$7,800	X	0.25	+	$1,300	X	0	=	$1,950	$3,800
Burch Wood Products	$93,600	X	0.25	+	$15,600	X	0	=	$23,400	$24,295
Business Technology Source	$74,000	X	0.25	+	$18,500	X	0	=	$18,500	$20,000
Hollywood Casino at Charles Town Races	$200,000	X	0.25	+	$50,000	X	0	=	$50,000	$57,825
Clarion Hotel & Conference Center	$60,000	X	0.25	+	$15,000	X	0	=	$15,000	$20,428
Comcast	$55,000	X	0.25	+	$13,750	X	0	=	$13,750	$15,000
Concert Technology	$59,400	X	0.25	+	$14,850	X	0	=	$14,850	$18,100
DALB, Inc.	$100,000	X	0.25	+	$25,000	X	0	=	$25,000	$27,275

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0.25	+	$35,000	X	0	=	$35,000	$36,785
Halltown Paperboard Company	$105,000	X	0.25	+	$17,500	X	0	=	$26,250	$27,526
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$1,115
Hilldale Shopping Center	$113,600	X	0.25	+	$28,400	X	0	=	$28,400	$34,680
Home Depot	$50,000	X	0.25	+	$12,500	X	0	=	$12,500	$13,775
Jefferson Asphalt Products	$40,000	X	0.25	+	$10,000	X	0	=	$10,000	$11,450
Jefferson County Chamber of Commerce	$22,800	X	0.25	+	$5,700	X	0	=	$5,700	$6,925
Jefferson County Fairgrounds	$0	X	0.25	+	$0	X	0	=	$0	$625
Jefferson Rental	$62,000	X	0.25	+	$15,500	X	0	=	$15,500	$17,350
Jefferson County Council on Aging	$17,000	X	0.25	+	$4,250	X	0	=	$4,250	$5,245
KOA Campgrounds	$62,800	X	0.25	+	$7,850	X	0	=	$15,700	$16,550
KRM Associates Inc.	$44,000	X	0.25	+	$11,000	X	0	=	$11,000	$11,950
Lowe Products	$52,000	X	0.25	+	$13,000	X	0	=	$13,000	$15,125
McDaniel Hardwood Products	$168,000	X	0.25	+	$28,000	X	0	=	$42,000	$43,750
Mountain State Machine Tool	$42,000	X	0.25	+	$10,500	X	0	=	$10,500	$13,365
Plethora Technology	$72,000	X	0.25	+	$18,000	X	0	=	$18,000	$18,989
PROSystems Inc.	$67,200	X	0.25	+	$16,800	X	0	=	$16,800	$20,695
R.A.I.	$61,600	X	0.25	+	$15,400	X	0	=	$15,400	$16,625
Royal Vendors, Inc.	$128,000	X	0.25	+	$32,000	X	0	=	$32,000	$34,825
Schonstedt Instruments	$58,000	X	0.25	+	$15,400	X	0	=	$14,500	$15,850
Specialized Engineering	$51,000	X	0.25	+	$12,750	X	0	=	$12,750	$15,755
Summit Point Motor Sports Park	$4,000	X	0.25	+	$2,000	X	0	=	$1,000	$4,250
Universal Forest Products	$60,000	X	0.25	+	$30,000	X	0	=	$15,000	$17,250
U.S. Customs & Border Protection	$38,000	X	0.25	+	$9,500	X	0	=	$9,500	$10,465

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0.25	+	$5,500	X	0	=	$5,500	$7,950
U.S. Fish & Wildlife Service	$180,000	X	0.25	+	$45,000	X	0	=	$45,000	$47,875
United States Geological Survey	$26,000	X	0.25	+	$6,500	X	0	=	$6,500	$10,175
Wal-Mart	$109,600	X	0.25	+	$27,400	X	0	=	$27,400	$31,250
WVU Tree Fruit Research & Ed. Center	$80,000	X	0.25	+	$40,000	X	0	=	$20,000	$22,525
Hampton Inn	$65,000	X	0.25	+	$10,000	X	0	=	$16,250	$25,100
Holiday Inn Express	$80,000	X	0.25	+	$12,000	X	0	=	$20,000	$33,550
Inn at Charles Town	$55,000	X	0.25	+	$8,000	X	0	=	$13,750	$21,400
Windmill Crossing Shopping Center	$500,000	X	0.25	+	$150,000	X	0	=	$125,000	$155,000
Southern States	$13,000	X	0.25	+	$1,200	X	0	=	$3,250	$5,460
Stasis Engineering	$12,288	X	0.25	+	$1,536	X	0	=	$3,072	$5,322
Bakerton Post Office	$3,800	X	0.25	+	$950	X	0	=	$950	$1,525
Charles Town Post Office	$4,800	X	0.25	+	$1,200	X	0	=	$1,200	$2,050
Halltown Post Office	$1,800	X	0.25	+	$900	X	0	=	$450	$875
Harpers Ferry Post Office	$2,000	X	0.25	+	$1,000	X	0	=	$500	$985
Kearneysville Post Office	$3,820	X	0.25	+	$955	X	0	=	$955	$1,480
Ranson Post Office	$3,000	X	0.25	+	$1,500	X	0	=	$750	$1,325
Rippon Post Office	$2,100	X	0.25	+	$525	X	0	=	$525	$740
Shenandoah Junction Post Office	$3,600	X	0.25	+	$600	X	0	=	$900	$1,125
Shepherdstown Post Office	$6,000	X	0.25	+	$750	X	0	=	$1,500	$1,750
Summit Point Post Office	$710	X	0.25	+	$355	X	0	=	$178	$1,053
Bolivar/Harpers Ferry Public Library	$3,840	X	0.25	+	$480	X	0	=	$960	$3,860
Old Charles Town Library	$1,600	X	0.25	+	$800	X	0	=	$400	$2,650
Shepherdstown Public Library	$8,000	X	0.25	+	$1,000	X	0	=	$2,000	$5,950

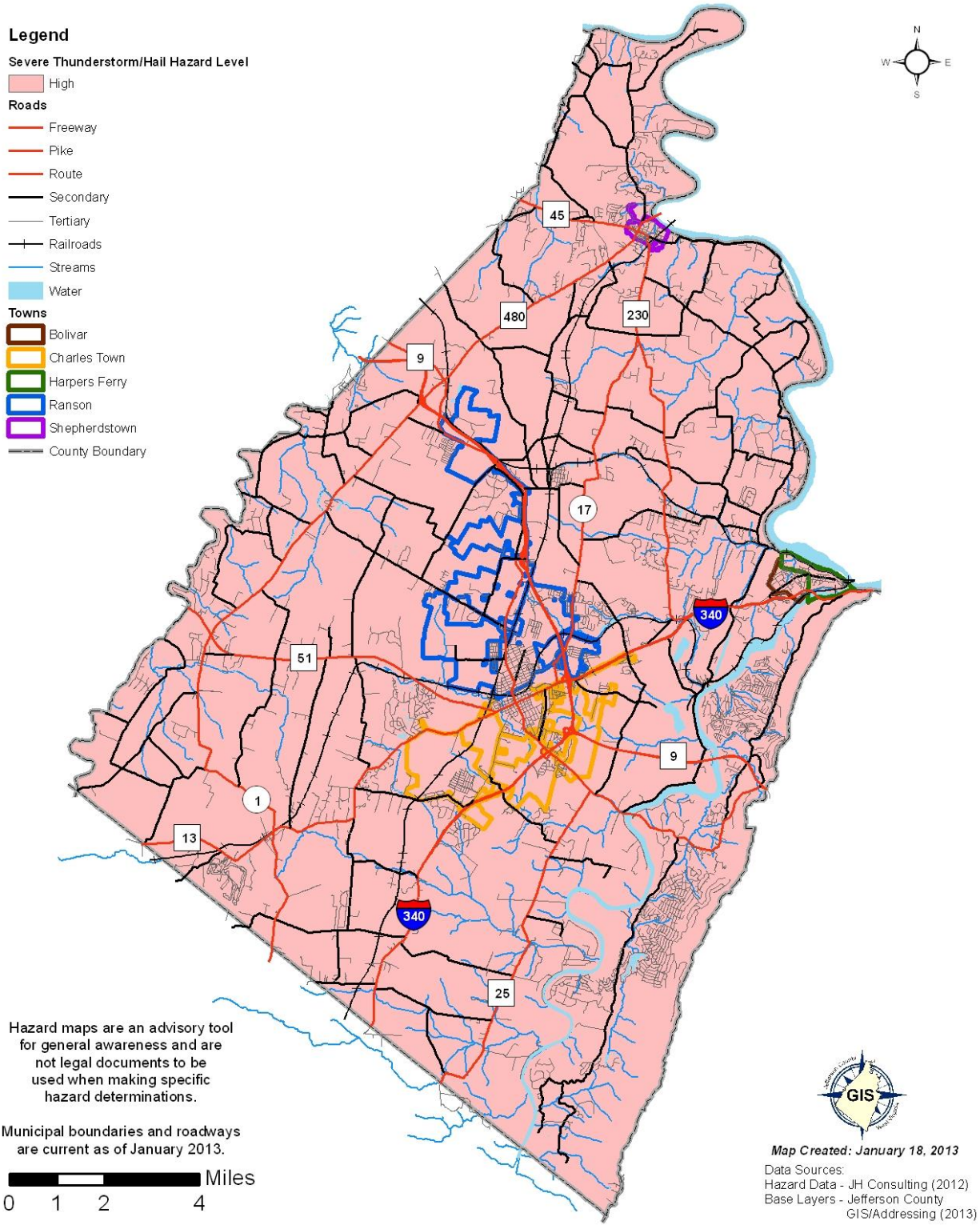
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0.25	+	$745	X	0	=	$1,118	$4,193
Scarborough Library @ Shepherd University	$6,800	X	0.25	+	$850	X	0	=	$1,700	$4,450
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$475
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$550
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$1,275
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$975
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$825
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$2,250
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$2,500
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$2,125
Bower Building	$0	X	0	+	$0	X	0	=	$0	$1,825
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$625
Barleywood	$0	X	0	+	$0	X	0	=	$0	$675
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$825
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$2,000
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$5,000
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$1,750
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$450
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$1,550
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$2,075
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$1,375
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$2,413
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$1,100
Bellevue	$0	X	0	+	$0	X	0	=	$0	$1,775
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$1,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$825
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$1,600

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$1,075
Beverly	$0	X	0	+	$0	X	0	=	$0	$975
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$2,950
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$575
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$1,475
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$2,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$1,228
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$1,325
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$2,150
Blakeley	$0	X	0	+	$0	X	0	=	$0	$1,325
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$3,425
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$5,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$725
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$2,000
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$1,325
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$75
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$475
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$75
Media Farm	$0	X	0	+	$0	X	0	=	$0	$1,750
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$3,750
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$575
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$2,750
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$1,325
New Opera House	$0	X	0	+	$0	X	0	=	$0	$1,475
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$2,325
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$1,975

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$3,375
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$325
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$475
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$1,875
Shipley School	$0	X	0	+	$0	X	0	=	$0	$1,225
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$550
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$1,750
Storer College	$0	X	0	+	$0	X	0	=	$0	$1,975
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$825
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$550
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$475
York Hill	$0	X	0	+	$0	X	0	=	$0	$2,188
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$1,100
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$1,125
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$975
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$425
Piedmont	$0	X	0	+	$0	X	0	=	$0	$775
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$825
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$575
Rellim	$0	X	0	+	$0	X	0	=	$0	$425
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$1,325
Rockland	$0	X	0	+	$0	X	0	=	$0	$700
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$75
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$150
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$300
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$40

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$375
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$300
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$825
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$975
Winward	$0	X	0	+	$0	X	0	=	$0	$490
Woodbury	$0	X	0	+	$0	X	0	=	$0	$700
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$3,250
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$2,250
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$338
							Total Loss to Structure Use & Function		$1,105,802	$1,899,094

2.2 PROFILING HAZARDS: SEVERE THUNDERSTORM/HAIL MAP



2.2 PROFILING HAZARDS

2.2.9. Severe Wind/Tornado

Wind storms are destructive wind events that occur with or without the presence of other storm events, such as tornados or severe thunderstorms.

A tornado is a violently rotating column of air extending from a super-cell thunderstorm to the ground.

INTRODUCTION

A windstorm is a storm with high winds or violent gusts, sometimes called a wind shear or microburst, but with little or no rain. A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one (1) mile wide and 50 miles long.

Period of Occurrence:	At any time – Primarily during March through August.
Number of Events to Date (1955 – 2011):	5 tornados & 12 high wind events.
Probability of Event:	Infrequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, and damaged or destroyed critical facilities. Impacts human life, health, and public safety.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	Days to weeks or more.

Figure 2.9a

Several methods of research identified severe wind and tornadoes as natural hazards in Jefferson County. General severe wind and tornado information was obtained from the following sources:

- FEMA *State and Local Mitigation Planning How-to-Guide: Understanding Your Risks.*
- National Climatic Data Center (NCDC) – Event Records.
- Jefferson County Homeland Security and Emergency Management (JCHSEM)

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Jefferson County has a moderate probability, and moderate impact to severe wind and tornadoes. The hazard of severe wind and tornadoes is not targeted to any specific portion of Jefferson County.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.9b

HAZARD IDENTIFICATION

Tornadoes are among the most unpredictable of weather phenomena. Tornadoes can occur in any state in the United States but are more frequent in the Midwest, Southeast, and Southwest. West Virginia is positioned geographically on the eastern-most edge of what has come to be known as “tornado alley” and is no stranger to tornado sightings.

The nature of tornadoes is they strike at random. While it is known that some areas of the country experience tornadoes more than others, predicting exactly what parts of Jefferson County have a greater chance of being struck by a tornado is difficult. The best predictor of future tornadoes is the occurrence of previous tornadoes which are discussed below.

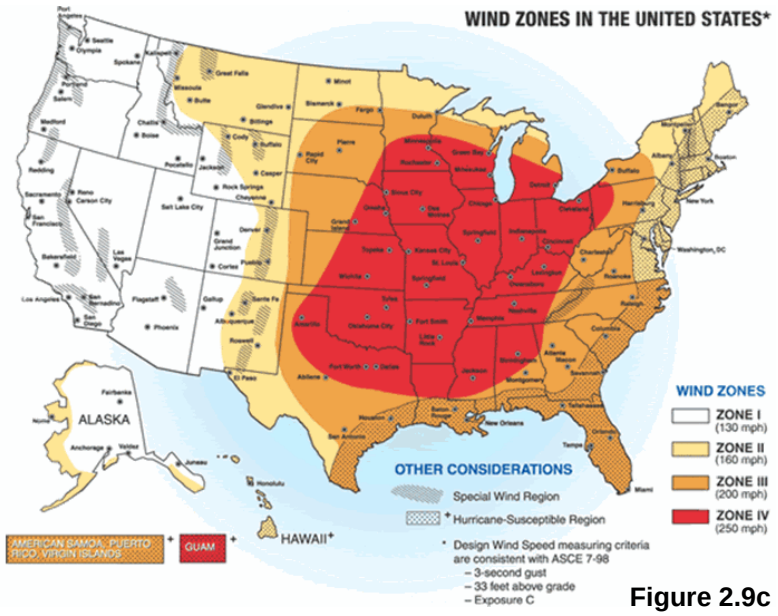


Figure 2.9c

Most sources have only been recording tornado activity since 1950. Northeastern West Virginia falls into the “moderate” category for tornado risk, and the second highest category for wind zones in the United States, which is illustrated in figure 2.9c above. Jefferson County falls within the zone III, wind zone. According to county and National Weather Service (NWS) records there have been five (5) recorded tornado events in Jefferson County over the past 57 years. The largest of these tornadoes was characterized as an F2 on the Enhanced Fujita Tornado Measurement Scale.

The Enhanced Fujita Damage scale is illustrated in table 2.9a. The Enhanced Fujita Scale (EF Scale) rates the strength of tornadoes in the United States based on the damage they cause.

SCALE	WIND SPEED mph	RELATIVE FREQUENCY	POTENTIAL DAMAGE
EF0	65-85	53.5%	*Minor or no damage.* Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	31.6%	*Moderate damage.* Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	*Considerable damage.* Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	*Severe damage*. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	0.7%	*Extreme damage.* Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	<0.1%	*Total destruction.* Strong framed, well built houses leveled off foundations and swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations.

Table 2.9a

Implemented in place of the Fujita scale introduced in 1971 by Ted Fujita, it began operational use on February 1, 2007. The scale has the same basic design as the original Fujita scale, six (6) categories from zero (0) to five (5) representing increasing degrees of damage. It was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. Better standardizing and elucidating what was previously subjective and ambiguous, it also adds more types of structures, vegetation, expands degrees of damage, and better accounts for variables such as differences in construction quality.

It was developed from 2000 to 2004 by the Fujita Scale Enhancement Project of the Wind Science and Engineering Research Center at Texas Tech University, which

brought together dozens of expert meteorologists and civil engineers in addition to its own resources.

HISTORY OF EVENTS

According to Event Records from the National Climatic Data Center (NCDC) there have been five (5) tornadoes in Jefferson County between 1955 and 2012. The most recent tornado occurred in September of 2004.

JEFFERSON COUNTY TORNADOES (1955 – 2012)			
Location	**Date**	**Mag.**	**Description**
Unknown	August 26, 1965	F1	Wind speeds ranged between 73 and 112 mph.
Unknown	November 16, 1989	F2	Wind speeds were between 113 and 206 mph, the damage path was four (4) miles long, and 100 yards wide. The tornado resulted in three (3) injuries, and the property damage was estimated at $100,000.
Unknown	July 2, 1997	F0	A severe thunderstorm and tornado event caused heavy rains and other damages in the southwestern portion of the county that lead to four (4) injuries. The total damages from this event were $250,000.
Summit Point	July 9, 2003	F0	Winds from the tornado estimated up to 70 mph downed several trees and a handful of power lines along its path as well as damaging an outbuilding and removing siding from a house.
Unknown	September 17, 2004	F1	Wind speeds were between 86 and 110 mph. The intermittent damage path was approximately two (2) miles long. Estimated property damage was $250,000.

Table 2.9b

Jefferson County has also experienced high windstorms not associated with tornado events in the past, and can expect wind-related problems in the future. According to the materials provided by the National Weather Service (NWS), the county has experienced 12 high wind events within the past 14 years.

- July 21, 1998: A windstorm damaged an electric power substation in Millville causing power outages in Millville, Shepherdstown, and Bolivar.
- April 28, 2002: High winds reported at the Charlie Adams farm in Rippon.
- September 18-20, 2003: Hurricane Isabel made landfall on the North Carolina Coast. It moved northwest across Virginia and by 5 am on September 19, the center was over the heart of the eastern panhandle of West Virginia. Fortunately the storm had greatly weakened by this point. The heaviest rains appear to have been on the left side of the center track of the storm with the greater wind damage was to the right side. While sustained winds were no longer strong enough to do damage, the storm was still producing wind gusts in the 50 to 60 mph range. Previous rains had softened the soil and trees still had a full sail of

leaves. Numerous trees uprooted onto power lines, roads, cars and houses. In Jefferson County 9,600 customers were without power Friday evening and many roads were blocked by trees and downed wires. About 30 to 40 trees fell in Harpers Ferry, one of which caused major damage to a house. A couple trees also fell on houses in Shepherdstown doing substantial damage. Total property and crop damage for the Eastern Panhandle was $1,070,000.

- November 24, 2005: A large low pressure system along with a strong cold front moved across the region on Thanksgiving Day. The system caused a prolonged period of strong winds in many parts of the region. Widespread power outages were reported on Thanksgiving afternoon in the Shepherdstown, WV area. Nearly 150 residents lost power, mostly in the Deer Mountain Estates area. Martinsburg Airport, which is nearby, reported a wind gust of 37 knots (43 mph). Property damage totals were $100,000.
- January 14, 2006: Very strong winds developed on the 14th due to a strengthening low pressure system off the Mid Atlantic Coast and a fast moving cold front that passed through the region early in the day. Widespread damages and power outages occurred during this event, with newspaper reports indicating tens of thousands without power for an extended period of time. Total property damage for the Eastern Panhandle was $640,000.
- December 1, 2006: An outbuilding was damaged due to the strong winds in Charles Town, WV at 2:15 pm. Total property damage was $10,000.
- February 10, 2008: Wind gusts in excess of 60 mph were measured in some locations, with several hours of wind gusts in excess of 40 mph. This downed trees and power lines across the region. JCHSEM reported a roof being blown off of a house just west of Harpers Ferry as well as downed trees. Total property damage was reported at $25,000.
- June 29, 2012: A widespread, long lived, straight line wind storm associated with a band of severe thunderstorms, known as a Derecho, moved through the region causing widespread damage and leaving scores without power for several days. The tin roof of the Jefferson County Commission Office building was blown off during this event.
- October 30, 2012: Hurricane Sandy produced winds and heavy rain as it moved over Jefferson County and later became a Super Storm dumping record snowfall in the Central Mountains of West Virginia, downing trees and electric lines,

resulting in mass power outages throughout the state. The Jefferson County EOC was activated in anticipation of Superstorm Sandy and remained open for three (3) days and nights. The highlight of this activation was the predicted record flooding by the NWS which prompted an evacuation order along the Opequon Creek. None of Jefferson County's rivers crested at the predicted levels, due in part to the heavy snows that were experienced in the mountainous regions to the West of the Eastern Panhandle.

HAZARD IMPACT

While tornadoes are relatively short lived in duration, they are intensely focused, making them one of the most destructive forces in nature. As previously discussed above, Jefferson County is located in the "Zone III" wind zone. This wind zone places Jefferson County in a category that could experience severe tornadoes with 160-200 mph wind speeds. Such winds would cause significant damage to structures, such as roofs torn off frame houses, mobile homes demolished, and boxcars pushed over.

Jefferson County has endured an F2 tornado in the past. An F2 tornado is considered a significant tornado with wind speeds well in excess of 110 mph, and these types of tornados leave behind significant destruction. Damages from F2 tornados can include the roofs of well-constructed houses blown off; trains overturned; trees uprooted; heavy cars lifted off the ground and thrown; structures with weak foundations can be badly damaged. Localized geographic conditions can exacerbate the damages from high winds and cause increases in wind intensity.

Severe wind events can cause a variety of secondary, or cascading, hazard events. For instance, wind may blow limbs from trees down knocking out electric power or blocking roadways. Wind often results in damages to roofs and other home finishings (such as siding, etc.). Damage and loss of life could be severe and overwhelm the ability of local responders to address the emergency.

PAST MITIGATION EFFORTS

Past mitigation efforts to reduce losses associated with severe wind and tornadoes have included the development and distribution of public awareness materials utilizing social media (i.e., facebook, twitter, etc.) about natural hazard risks, preparedness, and mitigation, established a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and Jefferson County

Homeland Security and Emergency Management, conducted a tabletop exercise with local law enforcement, emergency managers, city and county officials, and other disaster response agencies, and continued to conduct National Weather Service Storm Spotter classes.

Hazard: Severe Wind/Tornado

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	9,954	45%	$2,433,090,000	$1,216,545	0.05%	53,498	31,029	58%
Commercial	1,640	492	30%	$492,000,000	$196,800	0.04%	6,560	3,083	47%
Industrial	562	169	30%	$196,700,000	$59,010	0.03%	2,810	1,293	46%
Agricultural	546	235	43%	$81,900,000	$40,950	0.05%	182	95	52%
Religious/Non-Profit	30	9	30%	$10,610,000	$5,305	0.05%	300	135	45%
Government	80	25	31%	$68,333,360	$27,333	0.04%	3,633	1,526	42%
Education	44	13	30%	$165,000,000	$49,500	0.03%	1,701	663	39%
Utilities	41	13	31%	$145,550,000	$29,110	0.02%	62	26	42%
Total	25,062	10,910	44%	$3,593,183,360	$1,624,553	<1%	68,746	37,850	55%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		X
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Wind / Tornado

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0.10%	=	$2,115	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0.10%	=	$3,026	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0.10%	=	$2,534	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0.10%	=	$4,233	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0.10%	=	$2,851	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0.10%	=	$2,225	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0.10%	=	$1,005	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0.10%	=	$6,213	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0.10%	=	$1,425	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0.10%	=	$5,725	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0.10%	=	$6,520	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0.10%	=	$4,000	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0.10%	=	$1,750	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	0.10%	=	$2,225	$5,450,000	X	0%	=	$0
Shenandoah Junction Water System	$1,000,000	X	0.10%	=	$1,000	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0.10%	=	$750	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0.10%	=	$825	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0.10%	=	$125	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0.50%	=	$3,575	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0.50%	=	$4,750	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0.50%	=	$3,625	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0.50%	=	$6,250	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0.50%	=	$5,750	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0.50%	=	$1,575	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0.50%	=	$1,050	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0.50%	=	$4,875	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0.10%	=	$7,500	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0.00%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0.10%	=	$725	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0.10%	=	$850	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0.50%	=	$475	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0.50%	=	$2,525	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0.50%	=	$3,060	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0.50%	=	$2,125	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0.50%	=	$1,975	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0.10%	=	$845	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0.10%	=	$900	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0.50%	=	$650	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0.50%	=	$550	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0.50%	=	$1,525	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0.10%	=	$1,560	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0.50%	=	$425	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0.50%	=	$450	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0.50%	=	$1,125	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0.50%	=	$4,025	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0.05%	=	$24,113	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0.50%	=	$7,750	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0.50%	=	$1,100	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0.50%	=	$1,550	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0.50%	=	$2,500	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0.50%	=	$1,875	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0.50%	=	$2,875	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0.10%	=	$20,725	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0.10%	=	$3,850	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0.10%	=	$6,850	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0.10%	=	$2,150	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0.10%	=	$2,000	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0.10%	=	$3,075	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0.10%	=	$7,500	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0.10%	=	$16,850	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0.10%	=	$2,150	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0.10%	=	$1,965	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0.10%	=	$2,985	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0.10%	=	$1,855	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0.10%	=	$2,865	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0.10%	=	$3,000	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0.10%	=	$4,000	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0.10%	=	$3,995	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0.10%	=	$8,650	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0.10%	=	$55,550	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0.10%	=	$2,650	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0.10%	=	$17,995	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0.10%	=	$6,555	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0.10%	=	$3,225	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0.10%	=	$5,350	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0.10%	=	$1,500	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0.10%	=	$2,750	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0.10%	=	$2,250	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0.50%	=	$9,250	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0.50%	=	$4,925	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0.50%	=	$2,750	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0.50%	=	$8,975	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0.50%	=	$9,250	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0.50%	=	$4,475	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0.50%	=	$7,500	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0.10%	=	$15,650	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0.10%	=	$10,855	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0.50%	=	$6,250	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0.50%	=	$3,250	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0.50%	=	$2,275	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0.50%	=	$8,925	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0.50%	=	$6,380	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0.50%	=	$5,575	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0.10%	=	$12,560	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0.50%	=	$12,750	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0.50%	=	$7,250	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0.50%	=	$6,125	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0.50%	=	$3,125	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0.50%	=	$9,250	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0.50%	=	$4,975	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0.50%	=	$4,250	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0.50%	=	$4,750	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0.50%	=	$2,125	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0.50%	=	$8,750	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0.50%	=	$14,325	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0.50%	=	$4,945	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0.10%	=	$3,895	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0.50%	=	$6,125	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0.10%	=	$5,650	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0.50%	=	$6,750	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0.10%	=	$3,005	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0.50%	=	$3,250	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0.50%	=	$11,250	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0.50%	=	$4,825	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0.50%	=	$12,250	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0.10%	=	$2,875	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0.10%	=	$3,675	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0.10%	=	$3,850	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0.50%	=	$12,625	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0.10%	=	$8,850	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0.10%	=	$13,550	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0.10%	=	$7,650	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0.10%	=	$30,000	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0.10%	=	$2,210	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0.50%	=	$2,250	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0.50%	=	$2,875	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0.50%	=	$4,250	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0.50%	=	$2,125	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0.50%	=	$2,425	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0.50%	=	$2,625	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0.50%	=	$2,875	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0.50%	=	$1,075	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0.50%	=	$1,125	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0.50%	=	$1,250	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0.50%	=	$875	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0.50%	=	$2,900	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0.50%	=	$2,250	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0.50%	=	$3,950	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0.50%	=	$3,075	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0.50%	=	$2,750	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0.50%	=	$475	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0.50%	=	$550	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0.50%	=	$1,275	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0.50%	=	$975	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0.50%	=	$8,250	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0.50%	=	$2,250	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0.50%	=	$2,500	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0.50%	=	$2,125	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0.50%	=	$1,825	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0.50%	=	$625	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0.50%	=	$675	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0.50%	=	$825	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0.10%	=	$2,000	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0.50%	=	$5,000	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0.50%	=	$1,750	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0.50%	=	$450	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0.50%	=	$1,550	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0.50%	=	$2,075	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0.50%	=	$1,375	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0.50%	=	$4,825	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0.50%	=	$1,100	$0	X	0%	=	$0
Bellevue	$355,000	X	0.50%	=	$1,775	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0.50%	=	$10,000	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0.50%	=	$825	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0.50%	=	$1,600	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0.50%	=	$1,075	$50,000	X	0%	=	$0
Beverly	$195,000	X	0.50%	=	$975	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0.50%	=	$2,950	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0.50%	=	$575	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0.50%	=	$1,475	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0.10%	=	$4,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0.10%	=	$2,455	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0.50%	=	$1,325	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0.50%	=	$2,150	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0.50%	=	$1,325	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0.50%	=	$3,425	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0.10%	=	$10,000	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0.50%	=	$725	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0.50%	=	$2,000	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0.50%	=	$1,325	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
Cool Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Media Farm	$350,000	X	0.50%	=	$1,750	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0.10%	=	$1,500	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0.50%	=	$575	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0.50%	=	$2,750	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0.50%	=	$1,325	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0.50%	=	$1,475	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0.50%	=	$2,325	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0.50%	=	$1,975	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0.50%	=	$3,375	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0.50%	=	$325	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0.10%	=	$3,750	$0	X	0%	=	$0
Shipley School	$245,000	X	0.50%	=	$1,225	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0.50%	=	$550	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0.50%	=	$1,750	$95,000	X	0%	=	$0
Storer College	$395,000	X	0.50%	=	$1,975	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0.50%	=	$825	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0.50%	=	$550	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0.50%	=	$475	$0	X	0%	=	$0
York Hill	$875,000	X	0.50%	=	$4,375	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0.50%	=	$1,100	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0.50%	=	$1,125	$0	X	0%	=	$0
The Hermitage	$195,000	X	0.50%	=	$975	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0.50%	=	$425	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0.50%	=	$775	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0.50%	=	$825	$0	X	0%	=	$0
Prato Rio	$115,000	X	0.50%	=	$575	$65,000	X	0%	=	$0
Rellim	$85,000	X	0.50%	=	$425	$0	X	0%	=	$0
Rion Hall	$265,000	X	0.50%	=	$1,325	$45,000	X	0%	=	$0
Rockland	$140,000	X	0.50%	=	$700	$0	X	0%	=	$0
Rock Spring	$15,000	X	0.50%	=	$75	$0	X	0%	=	$0
Rosebrake	$30,000	X	0.50%	=	$150	$0	X	0%	=	$0
Rose Hill	$60,000	X	0.50%	=	$300	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0.50%	=	$40	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0.50%	=	$375	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0.50%	=	$300	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0.50%	=	$825	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0.50%	=	$975	$33,000	X	0%	=	$0
Winward	$98,000	X	0.50%	=	$490	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0.50%	=	$700	$15,000	X	0%	=	$0
Woodlawn	$0	X	0.00%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0.50%	=	$3,250	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0.50%	=	$2,250	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0.50%	=	$338	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.05%	=	$1,216,545	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$2,089,031				**Total Loss to Contents**	$0

Hazard: Severe Wind / Tornado

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	1	+	$750	X	0	=	$6,000	$8,115
Charles Town City Hall	$4,800	X	1	+	$1,200	X	0	=	$4,800	$7,826
Harpers Ferry Town Hall	$6,600	X	1	+	$825	X	0	=	$6,600	$9,134
Jefferson County Courthouse	$10,000	X	1	+	$2,500	X	0	=	$10,000	$14,233
Ranson City Hall	$3,600	X	1	+	$900	X	0	=	$3,600	$6,451
Shepherdstown Town	$7,000	X	1	+	$875	X	0	=	$7,000	$9,225
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	1	+	$1,700	X	0	=	$53,100	$54,105
Charles Town City Water System	$3,840	X	1	+	$480	X	0	=	$3,840	$10,053
Frontier Communications	$48,000	X	1	+	$12,000	X	0	=	$48,000	$49,425
Harpers Ferry Job Corps	$2,800	X	1	+	$350	X	0	=	$2,800	$8,525
Jefferson County PSD	$6,120	X	1	+	$765	X	0	=	$6,120	$12,640
Jefferson County Solid Waste Authority	$4,480	X	1	+	$560	X	0	=	$4,480	$8,480
Meadowbrook Water System	$2,400	X	1	+	$300	X	0	=	$2,400	$4,150
Shepherdstown Water System	$3,600	X	1	+	$450	X	0	=	$3,600	$5,825
Shenandoah Junction Water System	$3,400	X	1	+	$425	X	0	=	$3,400	$4,400
Tuscawilla Utilities	$2,400	X	1	+	$300	X	0	=	$2,400	$3,150
Walnut Grove Utilities	$2,400	X	1	+	$300	X	0	=	$2,400	$3,225
Hollywood Casino WTP	$2,560	X	1	+	$320	X	0	=	$2,560	$2,685
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$3,575
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$4,750
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$3,625

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$6,250
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$5,750
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$1,575
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$1,050
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$4,875
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$7,500
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$725
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$850
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$475
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$2,525
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$3,060
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$2,125
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$1,975
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$845
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$900
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$650
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$550
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$1,525
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$1,560
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$425
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$450
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$1,125

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$4,025
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$24,113
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$7,750
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$1,100
Allegheny Optical Medical Building	$5,760	X	1	+	$720	X	0	=	$5,760	$7,310
Jefferson County Health Department	$20,480	X	1	+	$2,680	X	0	=	$20,480	$22,980
Women's Imaging Center	$11,520	X	1	+	$1,440	X	0	=	$11,520	$13,395
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$2,875
American Public University	$53,000	X	1	+	$26,500	X	0	=	$53,000	$73,725
Blue Ridge Elementary	$5,600	X	1	+	$2,800	X	0	=	$5,600	$9,450
Charles Town Middle	$22,000	X	1	+	$5,500	X	0	=	$22,000	$28,850
Claymont Children's School	$8,800	X	1	+	$2,200	X	0	=	$8,800	$10,950
Country Day School of Jefferson County	$10,800	X	1	+	$2,700	X	0	=	$10,800	$12,800
CW Shipley Elementary	$12,400	X	1	+	$3,100	X	0	=	$12,400	$15,475
Harpers Ferry Middle	$34,400	X	1	+	$4,300	X	0	=	$34,400	$41,900
Jefferson High School	$38,000	X	1	+	$9,500	X	0	=	$38,000	$54,850
Kingsway Christian Academy	$12,000	X	1	+	$3,000	X	0	=	$12,000	$14,150
Morgan Academy	$11,600	X	1	+	$2,900	X	0	=	$11,600	$13,565
North Jefferson Elementary	$16,200	X	1	+	$2,700	X	0	=	$16,200	$19,185
Opportunity Learning Center	$13,200	X	1	+	$2,200	X	0	=	$13,200	$15,055
Page Jackson Elementary	$12,400	X	1	+	$3,100	X	0	=	$12,400	$15,265
Blue Ridge Primary	$13,440	X	1	+	$1,680	X	0	=	$13,440	$16,440
Ranson Elementary	$14,000	X	1	+	$3,500	X	0	=	$14,000	$18,000

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	1	+	$3,450	X	0	=	$27,600	$31,595
Shepherdstown Middle	$36,000	X	1	+	$4,500	X	0	=	$36,000	$44,650
Shepherd University	$280,000	X	1	+	$35,000	X	0	=	$280,000	$335,550
T.A. Lowery Elementary	$12,400	X	1	+	$3,100	X	0	=	$12,400	$15,050
Washington High	$44,000	X	1	+	$11,000	X	0	=	$44,000	$61,995
Wildwood Middle	$16,000	X	1	+	$4,000	X	0	=	$16,000	$22,555
Wright Denny Elementary	$14,400	X	1	+	$3,600	X	0	=	$14,400	$17,625
Jefferson County BOE	$19,460	X	1	+	$4,865	X	0	=	$19,460	$24,810
The Joy of Learning Montessori	$11,520	X	1	+	$1,440	X	0	=	$11,520	$13,020
South Jefferson Elementary	$11,500	X	1	+	$1,437	X	0	=	$11,500	$14,250
Driswood Elementary	$10,000	X	1	+	$1,250	X	0	=	$10,000	$12,250
Aggregate Industries/Millville Quarry	$38,000	X	1	+	$9,500	X	0	=	$38,000	$47,250
Arcadia Building Company	$44,800	X	1	+	$11,200	X	0	=	$44,800	$49,725
Automated Merchandising System	$42,000	X	1	+	$10,500	X	0	=	$42,000	$44,750
Bavarian Inn	$38,000	X	1	+	$9,500	X	0	=	$38,000	$46,975
Bolivar Community Center	$7,800	X	1	+	$1,300	X	0	=	$7,800	$17,050
Burch Wood Products	$93,600	X	1	+	$15,600	X	0	=	$93,600	$98,075
Business Technology Source	$74,000	X	1	+	$18,500	X	0	=	$74,000	$81,500
Hollywood Casino at Charles Town Races	$200,000	X	1	+	$50,000	X	0	=	$200,000	$215,650
Clarion Hotel & Conference Center	$60,000	X	1	+	$15,000	X	0	=	$60,000	$70,855
Comcast	$55,000	X	1	+	$13,750	X	0	=	$55,000	$61,250
Concert Technology	$59,400	X	1	+	$14,850	X	0	=	$59,400	$62,650
DALB, Inc.	$100,000	X	1	+	$25,000	X	0	=	$100,000	$102,275

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	1	+	$35,000	X	0	=	$140,000	$148,925
Halltown Paperboard Company	$105,000	X	1	+	$17,500	X	0	=	$105,000	$111,380
Harpers Ferry Family Medicine Center	$96,000	X	1	+	$16,000	X	0	=	$96,000	$101,575
Hilldale Shopping Center	$113,600	X	1	+	$28,400	X	0	=	$113,600	$126,160
Home Depot	$50,000	X	1	+	$12,500	X	0	=	$50,000	$62,750
Jefferson Asphalt Products	$40,000	X	1	+	$10,000	X	0	=	$40,000	$47,250
Jefferson County Chamber of Commerce	$22,800	X	1	+	$5,700	X	0	=	$22,800	$28,925
Jefferson County Fairgrounds	$0	X	1	+	$0	X	0	=	$0	$3,125
Jefferson Rental	$62,000	X	1	+	$15,500	X	0	=	$62,000	$71,250
Jefferson County Council on Aging	$17,000	X	1	+	$4,250	X	0	=	$17,000	$21,975
KOA Campgrounds	$62,800	X	1	+	$7,850	X	0	=	$62,800	$67,050
KRM Associates Inc.	$44,000	X	1	+	$11,000	X	0	=	$44,000	$48,750
Lowe Products	$52,000	X	1	+	$13,000	X	0	=	$52,000	$54,125
McDaniel Hardwood Products	$168,000	X	1	+	$28,000	X	0	=	$168,000	$176,750
Mountain State Machine Tool	$42,000	X	1	+	$10,500	X	0	=	$42,000	$56,325
Plethora Technology	$72,000	X	1	+	$18,000	X	0	=	$72,000	$76,945
PROSystems Inc.	$67,200	X	1	+	$16,800	X	0	=	$67,200	$71,095
R.A.I.	$61,600	X	1	+	$15,400	X	0	=	$61,600	$67,725
Royal Vendors, Inc.	$128,000	X	1	+	$32,000	X	0	=	$128,000	$133,650
Schonstedt Instruments	$58,000	X	1	+	$15,400	X	0	=	$58,000	$64,750
Specialized Engineering	$51,000	X	1	+	$12,750	X	0	=	$51,000	$54,005
Summit Point Motor Sports Park	$4,000	X	1	+	$2,000	X	0	=	$4,000	$7,250
Universal Forest Products	$60,000	X	1	+	$30,000	X	0	=	$60,000	$71,250
U.S. Customs & Border Protection	$38,000	X	1	+	$9,500	X	0	=	$38,000	$42,825

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	1	+	$5,500	X	0	=	$22,000	$34,250
U.S. Fish & Wildlife Service	$180,000	X	1	+	$45,000	X	0	=	$180,000	$182,875
United States Geological Survey	$26,000	X	1	+	$6,500	X	0	=	$26,000	$29,675
Wal-Mart	$109,600	X	1	+	$27,400	X	0	=	$109,600	$113,450
WVU Tree Fruit Research & Ed. Center	$80,000	X	1	+	$40,000	X	0	=	$80,000	$92,625
Hampton Inn	$65,000	X	1	+	$10,000	X	0	=	$65,000	$73,850
Holiday Inn Express	$80,000	X	1	+	$12,000	X	0	=	$80,000	$93,550
Inn at Charles Town	$55,000	X	1	+	$8,000	X	0	=	$55,000	$62,650
Windmill Crossing Shopping Center	$500,000	X	1	+	$150,000	X	0	=	$500,000	$530,000
Southern States	$13,000	X	1	+	$1,200	X	0	=	$13,000	$15,210
Stasis Engineering	$12,288	X	1	+	$1,536	X	0	=	$12,288	$14,538
Bakerton Post Office	$3,800	X	1	+	$950	X	0	=	$3,800	$6,675
Charles Town Post Office	$4,800	X	1	+	$1,200	X	0	=	$4,800	$9,050
Halltown Post Office	$1,800	X	1	+	$900	X	0	=	$1,800	$3,925
Harpers Ferry Post Office	$2,000	X	1	+	$1,000	X	0	=	$2,000	$4,425
Kearneysville Post Office	$3,820	X	1	+	$955	X	0	=	$3,820	$6,445
Ranson Post Office	$3,000	X	1	+	$1,500	X	0	=	$3,000	$5,875
Rippon Post Office	$2,100	X	1	+	$525	X	0	=	$2,100	$3,175
Shenandoah Junction Post Office	$3,600	X	1	+	$600	X	0	=	$3,600	$4,725
Shepherdstown Post Office	$6,000	X	1	+	$750	X	0	=	$6,000	$7,250
Summit Point Post Office	$710	X	1	+	$355	X	0	=	$710	$1,585
Bolivar/Harpers Ferry Public Library	$3,840	X	1	+	$480	X	0	=	$3,840	$6,740
Old Charles Town Library	$1,600	X	1	+	$800	X	0	=	$1,600	$3,850
Shepherdstown Public Library	$8,000	X	1	+	$1,000	X	0	=	$8,000	$11,950

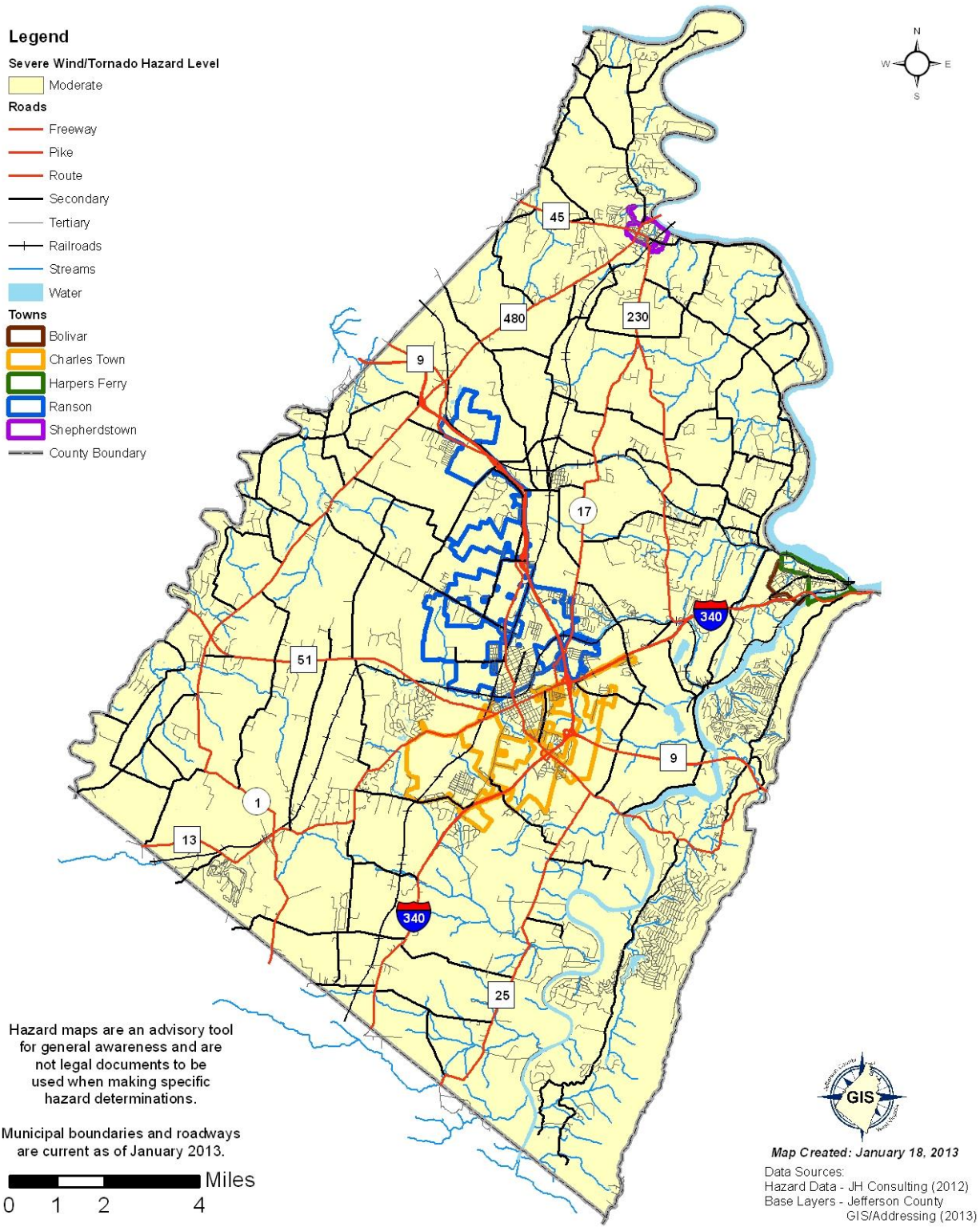
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	1	+	$745	X	0	=	$4,470	$7,545
Scarborough Library @ Shepherd University	$6,800	X	1	+	$850	X	0	=	$6,800	$9,550
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$475
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$550
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$1,275
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$975
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$8,250
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$2,250
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$2,500
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$2,125
Bower Building	$0	X	0	+	$0	X	0	=	$0	$1,825
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$625
Barleywood	$0	X	0	+	$0	X	0	=	$0	$675
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$825
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$2,000
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$5,000
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$1,750
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$450
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$1,550
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$2,075
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$1,375
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$4,825
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$1,100
Bellevue	$0	X	0	+	$0	X	0	=	$0	$1,775
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$10,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$825
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$1,600

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$1,075
Beverly	$0	X	0	+	$0	X	0	=	$0	$975
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$2,950
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$575
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$1,475
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$4,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$2,455
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$1,325
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$2,150
Blakeley	$0	X	0	+	$0	X	0	=	$0	$1,325
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$3,425
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$10,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$725
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$2,000
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$1,325
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$75
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$475
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$75
Media Farm	$0	X	0	+	$0	X	0	=	$0	$1,750
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$1,500
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$575
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$2,750
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$1,325
New Opera House	$0	X	0	+	$0	X	0	=	$0	$1,475
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$2,325
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$1,975

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$3,375
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$325
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$475
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$3,750
Shipley School	$0	X	0	+	$0	X	0	=	$0	$1,225
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$550
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$1,750
Storer College	$0	X	0	+	$0	X	0	=	$0	$1,975
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$825
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$550
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$475
York Hill	$0	X	0	+	$0	X	0	=	$0	$4,375
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$1,100
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$1,125
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$975
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$425
Piedmont	$0	X	0	+	$0	X	0	=	$0	$775
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$825
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$575
Rellim	$0	X	0	+	$0	X	0	=	$0	$425
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$1,325
Rockland	$0	X	0	+	$0	X	0	=	$0	$700
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$75
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$150
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$300
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$40

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$375
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$300
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$825
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$975
Winward	$0	X	0	+	$0	X	0	=	$0	$490
Woodbury	$0	X	0	+	$0	X	0	=	$0	$700
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$3,250
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$2,250
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$338
Total Loss to Structure Use & Function									$4,538,408	$6,627,439

2.2 PROFILING HAZARDS: SEVERE WIND/TORNADO MAP



2.2 PROFILING HAZARDS

2.2.10. Severe Winter Storm

A winter storm is a type of storm in which the dominant varieties of precipitation are forms that only occur at cold temperatures such as snow or sleet, or a rainstorm where ground temperatures are cold enough to allow ice to form.

INTRODUCTION

One or more of the following characterizes a winter storm: heavy snow, ice storms, strong winds, extreme cold, and, in certain areas, coastal flooding and beach erosion. Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chills. There are three (3) categories of winter storms. A blizzard is the most dangerous of all winter storms. It combines low temperatures, heavy snowfall, and winds of at least 35 miles per hour (mph) and reduce visibility to only a few yards. A heavy snowstorm is one that drops four (4) or more inches of snow in a 12-hour period. An ice storm occurs when moisture falls and freezes immediately upon impact.

Period of Occurrence:	Winter season.
Number of Events to Date (1993 – 2012):	41
Probability of Event:	Likely.
Warning Time:	Snow – Days. Ice – Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, damaged critical facilities. Can cause severe transportation problems and make travel extremely dangerous. Power outages, which result in loss of electrical power and potentially loss of heat. Extreme cold temperatures may lead to frozen water mains and pipes, damaged car engines, and prolonged exposure to cold resulting in frostbite.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days.

Figure 2.10a

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that all of Jefferson County is equally at risk from severe winter storm events. Several methods of research identified winter storm as a hazard in Jefferson County, including reviews of newspaper coverage, reviews of past disaster declarations, public input, and reviews of the National Climatic Data Center (NCDC) Event Record database.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.10b

HAZARD IDENTIFICATION

Jefferson County is highly vulnerable to the wide-ranging effects of snowstorms, blizzards, ice storms, and severe cold snaps due to its location with respect to the Appalachian and Shenandoah Mountains.

HISTORY OF EVENTS

Jefferson County has had several severe winter storms reported to the NCDC. In total, the NCDC indicates that 18 snow and ice events have occurred over the past 18 years, resulting in approximately $7.63 million in property damage. Some of the worst winter storms of record in Jefferson County have occurred within the last decade. Severe winter storms are common in this part of the state due to its extreme northeastern location and proximity to higher elevations.

- March 13, 1993: A winter storm resulted in road closures and damages to 25 structures. School and government facilities were also forced to close. There were five (5) reported injuries and an estimated $30,000 of damages to public facilities.
- January 6-13, 1996: The Blizzard of 1996 produced 22-40 inches of snow throughout the county, gale-force winds, and five (5)-eight (8) foot snow drifts. Power outages, felled trees, and blocked roads were also reported.
- December 11, 2002: An ice storm with freezing rain caused damages countywide including downed trees, power and other utilities cables and poles, and the disruption of power for over 4,000 customers.
- February 14, 2003: A complex storm system produced copious amounts of wintry precipitation across the Eastern Panhandle of West Virginia between the evening of the 14th and midday on the 18th. The first batch of precipitation fell between the evening of the 14th and the evening of the 15th in the form of light to moderate snow or rain. The second batch of precipitation fell between midnight on the 16th through midday on the 17th in the form of heavy snow or sleet. The third batch of precipitation on the back side of the storm fell between the evening

of the 17th and midday on the 18th in the form of scattered snow showers. After the precipitation came to an end, record breaking snow and sleet accumulations of 20 to 37 inches were reported, with the highest amounts falling above 2,500 feet. Nicknamed the President's Weekend Snowstorm of 2003, this storm will go down in history as one of the top five regional snowstorms since records began in the late 1800s. This massive storm took a heavy toll on residents, structures, transportation systems, emergency responders, businesses, livestock, and travelers. Officials asked people to stay off the roads during the height of the storm between the morning of the 16th and the morning of the 17th because they were covered by deep snow and sleet and were nearly impassable. Airports in the region were shut down on the 16th, stranding travelers. Emergency personnel and those needing emergency transport had to be taken to their destinations in 4-wheel drive or military vehicles during the storm. Main highways were partially cleared by the 18th but it took up to five (5) days to reach some secondary and residential roads. Area schools were closed up to a week after the storm ended. Heavy accumulations weighed down on buildings in the region and several structural collapses occurred. The agricultural community was hardest hit. In Jefferson County, the roofs of 4 trailers and one house collapsed. A barn in Shenandoah Junction also caved in. Total damage for the Eastern Panhandle was $7,600,000.

- February 2-10, 2010: A blizzard affected the area as a result of a series of major storm systems that dumped over a total of 40 inches of snow in the region and produced wind gusts in excess of 40 miles per hour (mph). There were numerous power outages around the county. Many roads were closed off for an extended period. The Jefferson County Emergency Operations Center (EOC) was activated for 10 days.

HAZARD IMPACT

A severe winter storm could affect the entire county at the same time, virtually bringing all county operations to a standstill. This type of hazard creates a difficult emergency response effort due to adverse road conditions which impede or prohibit vehicle movement. Driving is treacherous during winter storms as roadways freeze and become covered with snow and slush. These adverse driving conditions may lead to additional property damage. According to a *FEMA Winter Storm Fact Sheet*, the leading

cause of death during winter storms is from automobile or other transportation accidents. During severe winter storms, heavy snow may cause property damage and power outages. Roads are sometimes blocked, stranding rural residents from the incorporated areas where medical and other emergency services are located. Heavy snowfall and blizzards can trap motorists in their cars. Attempting to walk for help in a blizzard can be a deadly decision. Disorientation and confusion come quickly in blowing snow. Risks associated and identified with severe winter storms include but are not limited to the following:

- Emergency medical evacuation of the sick, elderly, and infirmed to shelters.
- Power outages to those on life support systems.
- Communications interruptions and/or outages.
- Loss of the ability to heat homes.
- Interruption of the delivery of home supplies and food.

Health hazards stemming from severe winter storms include frostbite and hypothermia. Frostbite is a severe reaction to cold exposure that can permanently damage its victims. A loss of feeling and a white or pale appearance in fingers, toes, the nose, and/or ear lobes are symptoms of frostbite.

Hypothermia is a condition brought on when the body temperature drops to less than 95 degrees Fahrenheit. Symptoms of hypothermia include uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness, and exhaustion.

PAST MITIGATION EFFORTS

One of the most common impacts from severe weather is the loss of commercial power. Since many other services rely on power for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from winter storms. Other mitigation efforts that have been conducted include the development and distribution of public awareness materials via facebook and twitter about natural hazard risks, utilizing the media for the distribution and publication of hazard information, and updating the county website to provide hazard related information that is easily accessible.

Jefferson County Homeland Security and Emergency Management (JCHSEM) has actively been collecting Prime Power Surveys for critical infrastructure. These surveys have information about whether or not the facility has a generator, what size and

kind of generator is needed, as well as whether the building is wired to have a generator hooked up, etc.

Hazard: Severe Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	22,119	100%	$2,433,090,000	$3,163,017	0.13%	53,498	53,498	100%
Commercial	1,640	1,640	100%	$492,000,000	$639,600	0.13%	6,560	6,560	100%
Industrial	562	562	100%	$196,700,000	$255,710	0.13%	2,810	2,810	100%
Agricultural	546	546	100%	$81,900,000	$106,470	0.13%	182	182	100%
Religious/Non-Profit	30	30	100%	$10,610,000	$21,220	0.20%	300	300	100%
Government	80	80	100%	$68,333,360	$109,333	0.16%	3,633	3,633	100%
Education	44	44	100%	$165,000,000	$196,875	0.12%	1,701	1,701	100%
Utilities	41	41	100%	$145,550,000	$72,775	0.05%	62	62	100%
Total	25,062	25,062	100%	$3,593,183,360	$4,565,000	<1%	68,746	68,746	100%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Winter Storm

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0.10%	=	$2,115	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0.10%	=	$3,026	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0.10%	=	$2,534	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0.10%	=	$4,233	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0.10%	=	$2,851	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0.10%	=	$2,225	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0.10%	=	$1,005	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0.10%	=	$6,213	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	0.10%	=	$1,425	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0.10%	=	$5,725	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0.10%	=	$6,520	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0.10%	=	$4,000	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0.10%	=	$1,750	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	0.10%	=	$2,225	$5,450,000	X	0%	=	$0
Shenandoah Junction Water System	$1,000,000	X	0.10%	=	$1,000	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0.10%	=	$750	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0.10%	=	$825	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0.10%	=	$125	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0.30%	=	$2,145	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0.30%	=	$2,850	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0.30%	=	$2,175	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0.30%	=	$3,750	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0.30%	=	$3,450	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0.30%	=	$945	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0.30%	=	$630	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0.30%	=	$2,925	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0.10%	=	$7,500	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0.30%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0.10%	=	$725	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0.10%	=	$850	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0.30%	=	$285	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0.10%	=	$505	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0.30%	=	$1,836	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0.30%	=	$1,275	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0.10%	=	$395	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0.30%	=	$2,535	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0.10%	=	$900	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0.30%	=	$390	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0.30%	=	$330	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0.10%	=	$305	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0.10%	=	$1,560	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0.30%	=	$255	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0.30%	=	$270	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0.30%	=	$675	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0.10%	=	$805	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0.05%	=	$24,113	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0.10%	=	$1,550	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0.10%	=	$220	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0.10%	=	$310	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0.10%	=	$500	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0.30%	=	$1,125	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0.10%	=	$575	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0.10%	=	$20,725	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0.10%	=	$3,850	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0.10%	=	$6,850	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0.10%	=	$2,150	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0.10%	=	$2,000	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0.10%	=	$3,075	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0.10%	=	$7,500	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0.10%	=	$16,850	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0.10%	=	$2,150	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0.10%	=	$1,965	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0.10%	=	$2,985	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0.10%	=	$1,855	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0.10%	=	$2,865	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0.10%	=	$3,000	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0.10%	=	$4,000	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0.10%	=	$3,995	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0.10%	=	$8,650	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0.10%	=	$55,550	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0.10%	=	$2,650	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0.10%	=	$17,995	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0.10%	=	$6,555	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0.10%	=	$3,225	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0.10%	=	$5,350	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0.10%	=	$1,500	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0.10%	=	$2,750	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0.10%	=	$2,250	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0.30%	=	$5,550	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0.30%	=	$2,955	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0.10%	=	$550	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0.30%	=	$5,385	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0.30%	=	$5,550	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0.30%	=	$2,685	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0.10%	=	$1,500	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0.10%	=	$15,650	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0.10%	=	$10,855	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0.10%	=	$1,250	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0.10%	=	$650	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0.30%	=	$1,365	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0.30%	=	$5,355	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0.30%	=	$3,828	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0.10%	=	$1,115	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0.10%	=	$12,560	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0.10%	=	$2,550	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0.30%	=	$4,350	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0.10%	=	$1,225	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0.30%	=	$1,875	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0.30%	=	$5,550	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0.10%	=	$995	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0.30%	=	$2,550	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0.30%	=	$2,850	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0.30%	=	$1,275	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0.30%	=	$5,250	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0.30%	=	$8,595	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0.10%	=	$989	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0.10%	=	$3,895	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0.30%	=	$3,675	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0.10%	=	$5,650	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0.10%	=	$1,350	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0.10%	=	$3,005	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0.30%	=	$1,950	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0.10%	=	$2,250	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0.10%	=	$965	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0.10%	=	$2,450	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0.10%	=	$2,875	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0.10%	=	$3,675	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0.10%	=	$3,850	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0.30%	=	$7,575	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0.10%	=	$8,850	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0.10%	=	$13,550	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0.10%	=	$7,650	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0.10%	=	$30,000	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0.10%	=	$2,210	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0.30%	=	$1,350	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0.10%	=	$575	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0.10%	=	$850	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0.10%	=	$425	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0.10%	=	$485	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0.10%	=	$525	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0.10%	=	$575	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0.10%	=	$215	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0.10%	=	$225	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0.10%	=	$250	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0.10%	=	$175	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0.30%	=	$1,740	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0.30%	=	$1,350	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0.30%	=	$2,370	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0.30%	=	$1,845	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0.30%	=	$1,650	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0.30%	=	$285	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0.30%	=	$330	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0.30%	=	$765	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0.30%	=	$585	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0.30%	=	$1,350	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0.30%	=	$1,500	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0.30%	=	$1,275	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0.30%	=	$1,095	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0.30%	=	$375	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0.30%	=	$405	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0.30%	=	$495	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0.25%	=	$5,000	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0.30%	=	$3,000	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0.30%	=	$1,050	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0.30%	=	$270	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0.30%	=	$930	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0.30%	=	$1,245	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0.30%	=	$825	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0.30%	=	$2,895	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0.30%	=	$660	$0	X	0%	=	$0
Bellevue	$355,000	X	0.30%	=	$1,065	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0.30%	=	$6,000	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0.30%	=	$495	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0.30%	=	$960	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0.30%	=	$645	$50,000	X	0%	=	$0
Beverly	$195,000	X	0.30%	=	$585	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0.30%	=	$1,770	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0.30%	=	$345	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0.30%	=	$885	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0.25%	=	$10,000	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0.25%	=	$6,138	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0.30%	=	$795	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0.30%	=	$1,290	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0.30%	=	$795	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0.30%	=	$2,055	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0.25%	=	$25,000	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0.30%	=	$435	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0.30%	=	$1,200	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0.30%	=	$795	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0.30%	=	$45	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0.30%	=	$285	$0	X	0%	=	$0
Cool Spring	$15,000	X	0.30%	=	$45	$0	X	0%	=	$0
Media Farm	$350,000	X	0.30%	=	$1,050	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0.25%	=	$3,750	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0.30%	=	$345	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0.30%	=	$1,650	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0.30%	=	$795	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0.30%	=	$885	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0.30%	=	$1,395	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0.30%	=	$1,185	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0.30%	=	$2,025	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0.30%	=	$195	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0.30%	=	$285	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0.25%	=	$9,375	$0	X	0%	=	$0
Shipley School	$245,000	X	0.10%	=	$245	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0.30%	=	$330	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0.30%	=	$1,050	$95,000	X	0%	=	$0
Storer College	$395,000	X	0.30%	=	$1,185	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0.30%	=	$495	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0.30%	=	$330	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0.30%	=	$285	$0	X	0%	=	$0
York Hill	$875,000	X	0.30%	=	$2,625	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0.30%	=	$660	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0.30%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0.30%	=	$675	$0	X	0%	=	$0
The Hermitage	$195,000	X	0.30%	=	$585	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0.30%	=	$255	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0.30%	=	$465	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0.30%	=	$495	$0	X	0%	=	$0
Prato Rio	$115,000	X	0.30%	=	$345	$65,000	X	0%	=	$0
Rellim	$85,000	X	0.30%	=	$255	$0	X	0%	=	$0
Rion Hall	$265,000	X	0.30%	=	$795	$45,000	X	0%	=	$0
Rockland	$140,000	X	0.30%	=	$420	$0	X	0%	=	$0
Rock Spring	$15,000	X	0.30%	=	$45	$0	X	0%	=	$0
Rosebrake	$30,000	X	0.30%	=	$90	$0	X	0%	=	$0
Rose Hill	$60,000	X	0.30%	=	$180	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0.30%	=	$24	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0.30%	=	$225	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0.30%	=	$180	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0.30%	=	$495	$35,000	X	0%	=	$0
Vinton	$0	X	0.30%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0.30%	=	$585	$33,000	X	0%	=	$0
Winward	$98,000	X	0.30%	=	$294	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0.30%	=	$420	$15,000	X	0%	=	$0
Woodlawn	$0	X	0.30%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0.30%	=	$1,950	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0.30%	=	$1,350	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0.30%	=	$203	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.08%	=	$1,946,472	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$2,617,287				**Total Loss to Contents**	$0

Hazard: Severe Winter Storm

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	3	+	$750	X	0	=	$18,000	$20,115
Charles Town City Hall	$4,800	X	3	+	$1,200	X	0	=	$14,400	$17,426
Harpers Ferry Town Hall	$6,600	X	3	+	$825	X	0	=	$19,800	$22,334
Jefferson County Courthouse	$10,000	X	3	+	$2,500	X	0	=	$30,000	$34,233
Ranson City Hall	$3,600	X	3	+	$900	X	0	=	$10,800	$13,651
Shepherdstown Town	$7,000	X	3	+	$875	X	0	=	$21,000	$23,225
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	3	+	$1,700	X	0	=	$159,300	$160,305
Charles Town City Water System	$3,840	X	3	+	$480	X	0	=	$11,520	$17,733
Frontier Communications	$48,000	X	3	+	$12,000	X	0	=	$144,000	$145,425
Harpers Ferry Job Corps	$2,800	X	3	+	$350	X	0	=	$8,400	$14,125
Jefferson County PSD	$6,120	X	3	+	$765	X	0	=	$18,360	$24,880
Jefferson County Solid Waste Authority	$4,480	X	3	+	$560	X	0	=	$13,440	$17,440
Meadowbrook Water System	$2,400	X	3	+	$300	X	0	=	$7,200	$8,950
Shepherdstown Water System	$3,600	X	3	+	$450	X	0	=	$10,800	$13,025
Shenandoah Junction Water System	$3,400	X	3	+	$425	X	0	=	$10,200	$11,200
Tuscawilla Utilities	$2,400	X	3	+	$300	X	0	=	$7,200	$7,950
Walnut Grove Utilities	$2,400	X	3	+	$300	X	0	=	$7,200	$8,025
Hollywood Casino WTP	$2,560	X	3	+	$320	X	0	=	$7,680	$7,805
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$2,145
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$2,850
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$2,175

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$3,750
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$3,450
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$945
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$630
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$2,925
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$7,500
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$725
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$850
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$285
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$505
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$1,836
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$1,275
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$395
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$2,535
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$900
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$390
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$330
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$305
Eastern Panhandle Free Clinic	$12,800	X	3	+	$3,200	X	0	=	$38,400	$39,960
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$255
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$270
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$675

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$805
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$24,113
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$1,550
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$220
Allegheny Optical Medical Building	$5,760	X	3	+	$720	X	0	=	$17,280	$17,590
Jefferson County Health Department	$20,480	X	3	+	$2,680	X	0	=	$61,440	$61,940
Women's Imaging Center	$11,520	X	3	+	$1,440	X	0	=	$34,560	$35,685
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$575
American Public University	$53,000	X	3	+	$26,500	X	0	=	$159,000	$179,725
Blue Ridge Elementary	$5,600	X	3	+	$2,800	X	0	=	$16,800	$20,650
Charles Town Middle	$22,000	X	3	+	$5,500	X	0	=	$66,000	$72,850
Claymont Children's School	$8,800	X	3	+	$2,200	X	0	=	$26,400	$28,550
Country Day School of Jefferson County	$10,800	X	3	+	$2,700	X	0	=	$32,400	$34,400
CW Shipley Elementary	$12,400	X	3	+	$3,100	X	0	=	$37,200	$40,275
Harpers Ferry Middle	$34,400	X	3	+	$4,300	X	0	=	$103,200	$110,700
Jefferson High School	$38,000	X	3	+	$9,500	X	0	=	$114,000	$130,850
Kingsway Christian Academy	$12,000	X	3	+	$3,000	X	0	=	$36,000	$38,150
Morgan Academy	$11,600	X	3	+	$2,900	X	0	=	$34,800	$36,765
North Jefferson Elementary	$16,200	X	3	+	$2,700	X	0	=	$48,600	$51,585
Opportunity Learning Center	$13,200	X	3	+	$2,200	X	0	=	$39,600	$41,455
Page Jackson Elementary	$12,400	X	3	+	$3,100	X	0	=	$37,200	$40,065
Blue Ridge Primary	$13,440	X	3	+	$1,680	X	0	=	$40,320	$43,320
Ranson Elementary	$14,000	X	3	+	$3,500	X	0	=	$42,000	$46,000

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	3	+	$3,450	X	0	=	$82,800	$86,795
Shepherdstown Middle	$36,000	X	3	+	$4,500	X	0	=	$108,000	$116,650
Shepherd University	$280,000	X	3	+	$35,000	X	0	=	$840,000	$895,550
T.A. Lowery Elementary	$12,400	X	3	+	$3,100	X	0	=	$37,200	$39,850
Washington High	$44,000	X	3	+	$11,000	X	0	=	$132,000	$149,995
Wildwood Middle	$16,000	X	3	+	$4,000	X	0	=	$48,000	$54,555
Wright Denny Elementary	$14,400	X	3	+	$3,600	X	0	=	$43,200	$46,425
Jefferson County BOE	$19,460	X	3	+	$4,865	X	0	=	$58,380	$63,730
The Joy of Learning Montessori	$11,520	X	3	+	$1,440	X	0	=	$34,560	$36,060
South Jefferson Elementary	$11,500	X	3	+	$1,437	X	0	=	$34,500	$37,250
Driswood Elementary	$10,000	X	3	+	$1,250	X	0	=	$30,000	$32,250
Aggregate Industries/Millville Quarry	$38,000	X	3	+	$9,500	X	0	=	$114,000	$119,550
Arcadia Building Company	$44,800	X	3	+	$11,200	X	0	=	$134,400	$137,355
Automated Merchandising System	$42,000	X	3	+	$10,500	X	0	=	$126,000	$126,550
Bavarian Inn	$38,000	X	3	+	$9,500	X	0	=	$114,000	$119,385
Bolivar Community Center	$7,800	X	3	+	$1,300	X	0	=	$23,400	$28,950
Burch Wood Products	$93,600	X	3	+	$15,600	X	0	=	$280,800	$283,485
Business Technology Source	$74,000	X	3	+	$18,500	X	0	=	$222,000	$223,500
Hollywood Casino at Charles Town Races	$200,000	X	3	+	$50,000	X	0	=	$600,000	$615,650
Clarion Hotel & Conference Center	$60,000	X	3	+	$15,000	X	0	=	$180,000	$190,855
Comcast	$55,000	X	3	+	$13,750	X	0	=	$165,000	$166,250
Concert Technology	$59,400	X	3	+	$14,850	X	0	=	$178,200	$178,850
DALB, Inc.	$100,000	X	3	+	$25,000	X	0	=	$300,000	$301,365

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	3	+	$35,000	X	0	=	$420,000	$425,355
Halltown Paperboard Company	$105,000	X	3	+	$17,500	X	0	=	$315,000	$318,828
Harpers Ferry Family Medicine Center	$96,000	X	3	+	$16,000	X	0	=	$288,000	$289,115
Hilldale Shopping Center	$113,600	X	3	+	$28,400	X	0	=	$340,800	$353,360
Home Depot	$50,000	X	3	+	$12,500	X	0	=	$150,000	$152,550
Jefferson Asphalt Products	$40,000	X	3	+	$10,000	X	0	=	$120,000	$124,350
Jefferson County Chamber of Commerce	$22,800	X	3	+	$5,700	X	0	=	$68,400	$69,625
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$1,875
Jefferson Rental	$62,000	X	3	+	$15,500	X	0	=	$186,000	$191,550
Jefferson County Council on Aging	$17,000	X	3	+	$4,250	X	0	=	$51,000	$51,995
KOA Campgrounds	$62,800	X	3	+	$7,850	X	0	=	$188,400	$190,950
KRM Associates Inc.	$44,000	X	3	+	$11,000	X	0	=	$132,000	$134,850
Lowe Products	$52,000	X	3	+	$13,000	X	0	=	$156,000	$157,275
McDaniel Hardwood Products	$168,000	X	3	+	$28,000	X	0	=	$504,000	$509,250
Mountain State Machine Tool	$42,000	X	3	+	$10,500	X	0	=	$126,000	$134,595
Plethora Technology	$72,000	X	3	+	$18,000	X	0	=	$216,000	$216,989
PROSystems Inc.	$67,200	X	3	+	$16,800	X	0	=	$201,600	$205,495
R.A.I.	$61,600	X	3	+	$15,400	X	0	=	$184,800	$188,475
Royal Vendors, Inc.	$128,000	X	3	+	$32,000	X	0	=	$384,000	$389,650
Schonstedt Instruments	$58,000	X	3	+	$15,400	X	0	=	$174,000	$175,350
Specialized Engineering	$51,000	X	3	+	$12,750	X	0	=	$153,000	$156,005
Summit Point Motor Sports Park	$4,000	X	3	+	$2,000	X	0	=	$12,000	$13,950
Universal Forest Products	$60,000	X	3	+	$30,000	X	0	=	$180,000	$182,250
U.S. Customs & Border Protection	$38,000	X	3	+	$9,500	X	0	=	$114,000	$114,965

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	3	+	$5,500	X	0	=	$66,000	$68,450
U.S. Fish & Wildlife Service	$180,000	X	3	+	$45,000	X	0	=	$540,000	$542,875
United States Geological Survey	$26,000	X	3	+	$6,500	X	0	=	$78,000	$81,675
Wal-Mart	$109,600	X	3	+	$27,400	X	0	=	$328,800	$332,650
WVU Tree Fruit Research & Ed. Center	$80,000	X	3	+	$40,000	X	0	=	$240,000	$247,575
Hampton Inn	$65,000	X	3	+	$10,000	X	0	=	$195,000	$203,850
Holiday Inn Express	$80,000	X	3	+	$12,000	X	0	=	$240,000	$253,550
Inn at Charles Town	$55,000	X	3	+	$8,000	X	0	=	$165,000	$172,650
Windmill Crossing Shopping Center	$500,000	X	3	+	$150,000	X	0	=	$1,500,000	$1,530,000
Southern States	$13,000	X	3	+	$1,200	X	0	=	$39,000	$41,210
Stasis Engineering	$12,288	X	3	+	$1,536	X	0	=	$36,864	$38,214
Bakerton Post Office	$3,800	X	3	+	$950	X	0	=	$11,400	$11,975
Charles Town Post Office	$4,800	X	3	+	$1,200	X	0	=	$14,400	$15,250
Halltown Post Office	$1,800	X	3	+	$900	X	0	=	$5,400	$5,825
Harpers Ferry Post Office	$2,000	X	3	+	$1,000	X	0	=	$6,000	$6,485
Kearneysville Post Office	$3,820	X	3	+	$955	X	0	=	$11,460	$11,985
Ranson Post Office	$3,000	X	3	+	$1,500	X	0	=	$9,000	$9,575
Rippon Post Office	$2,100	X	3	+	$525	X	0	=	$6,300	$6,515
Shenandoah Junction Post Office	$3,600	X	3	+	$600	X	0	=	$10,800	$11,025
Shepherdstown Post Office	$6,000	X	3	+	$750	X	0	=	$18,000	$18,250
Summit Point Post Office	$710	X	3	+	$355	X	0	=	$2,130	$2,305
Bolivar/Harpers Ferry Public Library	$3,840	X	3	+	$480	X	0	=	$11,520	$13,260
Old Charles Town Library	$1,600	X	3	+	$800	X	0	=	$4,800	$6,150
Shepherdstown Public Library	$8,000	X	3	+	$1,000	X	0	=	$24,000	$26,370

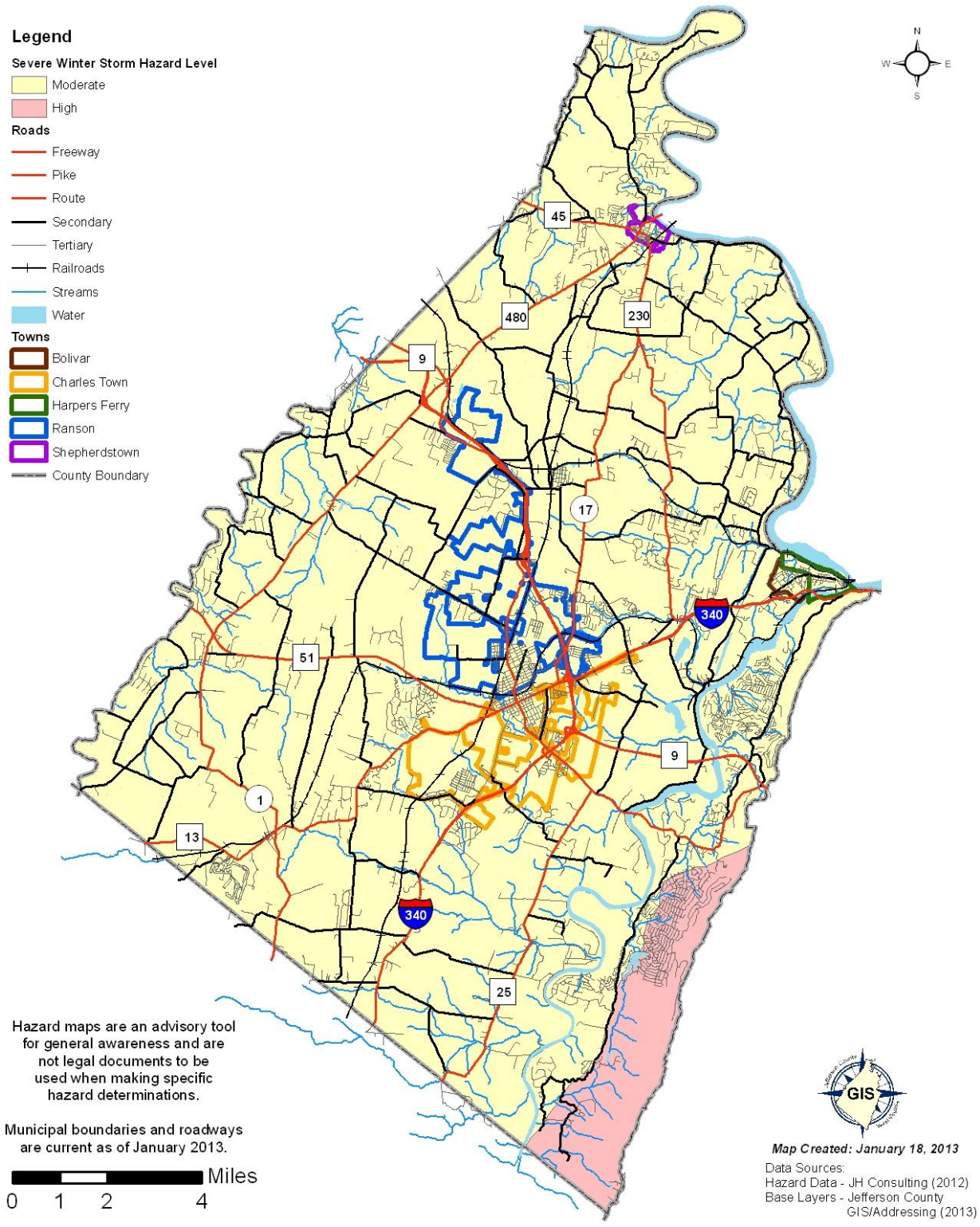
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	3	+	$745	X	0	=	$13,410	$15,255
Scarborough Library @ Shepherd University	$6,800	X	3	+	$850	X	0	=	$20,400	$22,050
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$285
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$330
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$765
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$585
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$1,350
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$1,500
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$1,275
Bower Building	$0	X	0	+	$0	X	0	=	$0	$1,095
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$375
Barleywood	$0	X	0	+	$0	X	0	=	$0	$405
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$495
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$5,000
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$3,000
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$1,050
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$270
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$930
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$1,245
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$825
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$2,895
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$660
Bellevue	$0	X	0	+	$0	X	0	=	$0	$1,065
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$6,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$495
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$960

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$645
Beverly	$0	X	0	+	$0	X	0	=	$0	$585
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$1,770
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$345
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$885
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$10,000
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$6,138
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$795
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$1,290
Blakeley	$0	X	0	+	$0	X	0	=	$0	$795
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$2,055
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$25,000
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$435
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$1,200
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$795
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$45
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$285
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$45
Media Farm	$0	X	0	+	$0	X	0	=	$0	$1,050
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$3,750
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$345
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$1,650
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$795
New Opera House	$0	X	0	+	$0	X	0	=	$0	$885
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$1,395
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$1,185

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$2,025
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$195
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$285
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$9,375
Shipley School	$0	X	0	+	$0	X	0	=	$0	$245
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$330
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$1,050
Storer College	$0	X	0	+	$0	X	0	=	$0	$1,185
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$495
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$330
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$285
York Hill	$0	X	0	+	$0	X	0	=	$0	$2,625
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$660
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$675
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$585
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$255
Piedmont	$0	X	0	+	$0	X	0	=	$0	$465
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$495
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$345
Rellim	$0	X	0	+	$0	X	0	=	$0	$255
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$795
Rockland	$0	X	0	+	$0	X	0	=	$0	$420
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$45
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$90
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$180
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$24

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$225
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$180
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$495
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$585
Winward	$0	X	0	+	$0	X	0	=	$0	$294
Woodbury	$0	X	0	+	$0	X	0	=	$0	$420
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$1,950
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$1,350
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$203
							Total Loss to Structure Use & Function		$13,653,624	$16,270,911

2.2 PROFILING HAZARDS: SEVERE WINTER STORM MAP



2.2 PROFILING HAZARDS

2.2.11. Terrorism

Terrorism is the use of force or violence, including threats of force or violence, against persons or property in violation of the criminal laws of the United States for the purposes of intimidate, coercion, or ransom.

INTRODUCTION

Terrorism is a form of violence aimed at a public audience. The Federal Bureau of Investigation (FBI) defines terrorism as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof in furtherance of political or social objections." More importantly, it is necessary to understand that the objective of terrorism is not destruction or death; it is the psychological impact to the targeted population and world opinion. Disruption to public services, economies, and social patterns, or a feeling of insecurity is the desired goal.

Period of Occurrence:	At any time.
Number of Events to Date:	0
Probability of Event:	Infrequent.
Warning Time:	Minimal – Depends on the presence of a threat.
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	Days to weeks or more.

Figure 2.11a

Terrorist incidents are at the forefront of everyone's consciousness as the war on terror continues. We, as a society, have realized how vulnerable we are to such actions. Jefferson County is not immune from terrorist activity. Terrorist attacks can be focused on government or the civilian population. Several methods of research identified terrorism as a hazard in Jefferson County, including public input, the West Virginia State Police (WVSP), and reviews of the Federal Bureau of Investigation (FBI) website, Federal Emergency Management Agency (FEMA) website, and Department of Homeland Security (DHS) website.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a low probability and high impact risk with regards to terrorism. The larger municipalities of Jefferson County are at greater risk, due to the fact that cities house the most likely targets, and have higher concentrated populations.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.11b

HAZARD IDENTIFICATION

This profile is intentionally generalized. Jefferson County Homeland Security and Emergency Management (JCHSEM) have identified a number of potential terrorist-related targets throughout the county and maintain files of such information separately from this document.

Terrorism can be categorized as either domestic or international. Domestic terrorism incidents are acts conceived of and carried out by U.S. citizens within the U.S. borders. Examples of domestic terrorism include environmental groups like the Animal Liberation Front (ALF), groups opposing abortion, animal rights groups opposing the fur trade, or the Oklahoma City bombing of the Murrah Building. International terrorism originates from groups based outside the U.S. and may be perpetrated against U.S. interests abroad or within the territorial boundaries of the U.S. Examples would be Al-Qaeda and sympathizer groups.

Terrorism is not always accomplished on a “grand scale”, as is the case with international terrorists who are attempting to coerce the federal government. Such terrorism, while technically a hazard in Jefferson County, is more unlikely than what is known as “domestic terrorism”. Domestic terrorism can involve disgruntled employees (in the case of large industrial plants), angry parents (at schools), upset citizens (at government facilities), etc. Domestic terrorists may often only intend to harm a single individual or a small group of individuals, but the threat of their actions can be highly disruptive.

Terrorist targets tend to be located in urban areas such as the Washington D.C. metro area; seats of government, stadiums, and public meeting places are high-value targets that produce substantial news coverage. Contrary to this, there is some evidence that terrorist organizations prefer rural safe houses from which to operate that are similar to that of Jefferson County. The rural environment offers an environment for the terrorists that are more difficult to observe.

HISTORY OF EVENTS

The U.S. population has largely been spared the impacts of international terrorism until recently. The devastation which occurred at the World Trade Center in New York City and the Alfred Murrah Building in Oklahoma City illustrates the need to plan for potential threats within our own communities. Domestically, the distribution of anthrax spores using the United States Postal System as a delivery mechanism caused concern nationwide for several weeks. The bomb detonated at the Atlanta Olympics in (1996) resulted in an investigation/manhunt that lasted years. Richard Reid (a.k.a., the shoe bomber) disrupted air travel and changed security measures in airports.

HAZARD IMPACT

"Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail." (FEMA)

Biological terrorist incidents have a somewhat low probability of occurring in Jefferson County. These incidents include the release of diseases such as smallpox into the general population for destructive purposes. Biological events have an extremely high risk associated with them, as the affects of such an event can exceed the capabilities of the healthcare facilities located in Jefferson County and the loss of human life can be disastrous. While preparedness is improving, Jefferson County is not equipped on the local level to cope with a large-scale terrorist incident.

Chemical terrorist incidents are comparable to biological incidents in that they have a relatively low probability of occurring, yet are associated with an extremely high risk. Chemical incidents include the use of weapons that subject the general population to toxic chemicals similar to those that could be released during a hazardous materials incident. Chemical incidents are capable of subsequent losses to large percentages of the population. Jefferson County does contain public water systems, which makes the threat of small-scale biological and chemical attacks plausible.

Events involving explosive Weapons of Mass Destruction (WMDs) also have a relatively low probability of occurring in Jefferson County. However, in the event that a nuclear or other large explosive device was to discharge in or near the county, the inherent loss of life could be catastrophic. A WMD threat is ever present and the reduction of such threat is dependent upon the actions of other countries, which are unpredictable. As long as there are weapons, and the capability to deliver those weapons, the threat will remain. The Department of Defense estimates that as many as 26 nations may possess chemical agents and/or weapons and an additional 12 may be seeking to develop them.

Railroad facilities are another example of potential terrorist targets. Dams and water and sewage treatment facilities are likewise potential targets. Facilities in neighboring counties may also be susceptible to WMD-type attacks and may affect Jefferson County indirectly.

PAST MITIGATION EFFORTS

While some legislation and operational countermeasures have existed for some time, the events of September 11, 2001 have accelerated terrorism mitigation efforts. Broadly, grants have been awarded to local first responders since 1998 for the purchase of important response equipment; national and local exercises of plans and procedures conducted; powers given or broadened for law enforcement regarding surveillance; and the consolidation of several agencies into the U.S. Department of Homeland Security have been completed.

Equipment grants for decontamination, detection, and protective gear for first responders have been available to local first responders since 1998. These grants and supplemental grants have provided millions of dollars in increased capabilities. As these capabilities have improved, the definition of first responder has been broadened from fire and police to now include hospital personnel and facilities, public works and emergency medical responders.

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	221	1%	$2,433,090,000	$0	0%	53,498	535	1%
Commercial	1,640	16	1%	$492,000,000	$984,000	0.20%	6,560	328	5%
Industrial	562	6	1%	$196,700,000	$393,400	0.20%	2,810	141	5%
Agricultural	546	0	0%	$81,900,000	$0	0%	182	0	0%
Religious/Non-Profit	30	0	0%	$10,610,000	$0	0%	300	0	0%
Government	80	55	69%	$68,333,360	$2,050,000	3%	3,633	2,906	80%
Education	44	6	13%	$165,000,000	$4,950,000	3%	1,701	1,140	67%
Utilities	41	21	51%	$145,550,000	$4,366,500	3%	62	50	80%
Total	25,062	325	1%	$3,593,183,360	$12,743,900	<1%	68,746	5,100	7%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Terrorism

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	10%	=	$211,500	$225,000	X	20%	=	$45,000
Charles Town City Hall	$3,025,700	X	10%	=	$302,570	$450,000	X	20%	=	$90,000
Harpers Ferry Town Hall	$2,534,000	X	10%	=	$253,400	$225,000	X	20%	=	$45,000
Jefferson County Courthouse	$4,232,887	X	10%	=	$423,289	$875,000	X	20%	=	$175,000
Ranson City Hall	$2,850,645	X	10%	=	$285,065	$375,000	X	20%	=	$75,000
Shepherdstown Town	$2,225,000	X	10%	=	$222,500	$225,000	X	20%	=	$45,000
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	5%	=	$310,650	$13,750,000	X	10%	=	$1,375,000
Frontier Communications	$1,425,000	X	0%	=	$0	$425,000	X	0%	=	$0
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	5%	=	$326,000	$10,550,000	X	10%	=	$1,055,000
Jefferson County Solid Waste Authority	$4,000,000	X	5%	=	$200,000	$8,750,225	X	10%	=	$875,023
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	5%	=	$111,250	$5,450,000	X	10%	=	$545,000
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	5%	=	$6,250	$60,000	X	10%	=	$6,000
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	0%	=	$0	$845,000	X	0%	=	$0
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	5%	=	$375,000	$600,000	X	10%	=	$60,000
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	5%	=	$36,250	$200,000	X	10%	=	$20,000
Jefferson County Sheriff's Department	$850,000	X	10%	=	$85,000	$100,000	X	20%	=	$20,000
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	10%	=	$90,000	$80,000	X	20%	=	$16,000
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	0%	=	$0	$65,000	X	0%	=	$0
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	0%	=	$0	$235,000	X	0%	=	$0
Shepherdstown Middle	$8,650,000	X	0%	=	$0	$295,000	X	0%	=	$0
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	0%	=	$0	$210,000	X	0%	=	$0
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	0%	=	$0	$40,000	X	0%	=	$0
Burch Wood Products	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	10%	=	$1,565,000	$1,250,000	X	20%	=	$250,000
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	0%	=	$0	$650,000	X	0%	=	$0
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	0%	=	$0	$355,000	X	0%	=	$0
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	0%	=	$0	$115,000	X	0%	=	$0
Universal Forest Products	$2,250,000	X	0%	=	$0	$4,000,000	X	0%	=	$0
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	0%	=	$0	$3,000,000	X	0%	=	$0
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	10%	=	$85,000	$125,000	X	20%	=	$25,000
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	10%	=	$48,500	$100,000	X	20%	=	$20,000
Kearneysville Post Office	$525,000	X	10%	=	$52,500	$110,000	X	20%	=	$22,000
Ranson Post Office	$575,000	X	10%	=	$57,500	$150,000	X	20%	=	$30,000
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	10%	=	$25,000	$60,000	X	20%	=	$12,000
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	0%	=	$0	$200,000	X	0%	=	$0
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	0%	=	$0	$35,000	X	0%	=	$0
Aspen Hill	$195,000	X	0%	=	$0	$60,000	X	0%	=	$0
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	0%	=	$0	$40,000	X	0%	=	$0
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	0%	=	$0	$85,000	X	0%	=	$0
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	0%	=	$0	$112,000	X	0%	=	$0
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0%	=	$0	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	0%	=	$0	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	0%	=	$0	$50,000	X	0%	=	$0
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0%	=	$0	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	0%	=	$0	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	0%	=	$0	$0	X	0%	=	$0
Tackley Farm	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	0%	=	$0	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0%	=	$0	$486,618,000	X	0%	=	$0
				Total Loss to Structure	$5,072,223				Total Loss to Contents	$4,806,023

Hazard: Terrorism

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	14	+	$750	X	1	=	$84,750	$341,250
Charles Town City Hall	$4,800	X	14	+	$1,200	X	1	=	$68,400	$460,970
Harpers Ferry Town Hall	$6,600	X	14	+	$825	X	1	=	$93,225	$391,625
Jefferson County Courthouse	$10,000	X	14	+	$2,500	X	1	=	$142,500	$740,789
Ranson City Hall	$3,600	X	14	+	$900	X	1	=	$51,300	$411,365
Shepherdstown Town	$7,000	X	14	+	$875	X	1	=	$98,875	$366,375
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$0
Charles Town City Water System	$3,840	X	7	+	$480	X	0	=	$26,880	$1,712,530
Frontier Communications	$48,000	X	0	+	$12,000	X	0	=	$0	$0
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	7	+	$765	X	0	=	$42,840	$1,423,840
Jefferson County Solid Waste Authority	$4,480	X	7	+	$560	X	0	=	$31,360	$1,106,383
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	7	+	$450	X	0	=	$25,200	$681,450
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$0
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	7	+	$320	X	0	=	$17,920	$30,170
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$0
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$0
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$435,000
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$56,250
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$105,000
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$0
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$0
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$0
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$106,000
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$0
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									Structure + Contents + Function Loss
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$0
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	0	+	$2,800	X	0	=	$0	$0
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$0
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	0	+	$4,300	X	0	=	$0	$0
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	0	+	$3,450	X	0	=	$0	$0
Shepherdstown Middle	$36,000	X	0	+	$4,500	X	0	=	$0	$0
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$0
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	0	+	$4,000	X	0	=	$0	$0
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	0	=	$0	$0
Burch Wood Products	$93,600	X	0	+	$15,600	X	0	=	$0	$0
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	14	+	$50,000	X	1	=	$2,850,000	$4,665,000
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$0
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	0	+	$17,500	X	0	=	$0	$0
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	0	=	$0	$0
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	0	+	$28,000	X	0	=	$0	$0
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	0	+	$2,000	X	0	=	$0	$0
Universal Forest Products	$60,000	X	0	+	$30,000	X	0	=	$0	$0
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	0	+	$40,000	X	0	=	$0	$0
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	14	+	$1,200	X	1	=	$68,400	$178,400
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	14	+	$1,000	X	1	=	$29,000	$97,500
Kearneysville Post Office	$3,820	X	14	+	$955	X	1	=	$54,435	$128,935
Ranson Post Office	$3,000	X	14	+	$1,500	X	1	=	$43,500	$131,000
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	14	+	$750	X	1	=	$84,750	$121,750
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	0	+	$480	X	0	=	$0	$0
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$0
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$0
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$0
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$0
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$0
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$0
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$0
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$0
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$0
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$0
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$0
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$0
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$0
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$0
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$0
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$0
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$0
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$0
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$0
Total Loss to Structure Use & Function									$3,813,335	$13,691,581

2.2 PROFILE HAZARDS

2.2.12. Wildfire

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

INTRODUCTION

Several methods of research identified wildfire as a hazard in Jefferson County, including discussions with local representatives. Wildfire information was also obtained from the following sources.

- Local media research,
- NCDC Event Records
- WFAS-MAPS
- National Interagency Fire Center
- US Forest Service
- US Fire Administration

Period of Occurrence:	At any time – Primarily summer
Number of Events to Date (1950– 2011):	0
Probability of Event:	Infrequent
Warning Time:	Minimal
Potential Impacts:	Impacts human life, health, and public safety. Loss of wildlife habitat, increased soil erosion, and degraded water quality. Utility damage and outages, infrastructure damage (transportation and communication systems), and damaged or destroyed critical facilities.
Cause Injury or Death:	Injury and risk death
Potential Facility Shutdown:	Days to weeks or more

Figure 2.12a

Wildfires often begin unnoticed and spread quickly. They are usually signaled by dense smoke that fills the area for miles around. Grasses, bushes, trees, and other vegetation supply fuel for the wildfire. The size of a wildfire is dependant on the amount of fuel available, weather conditions, and wind speed and

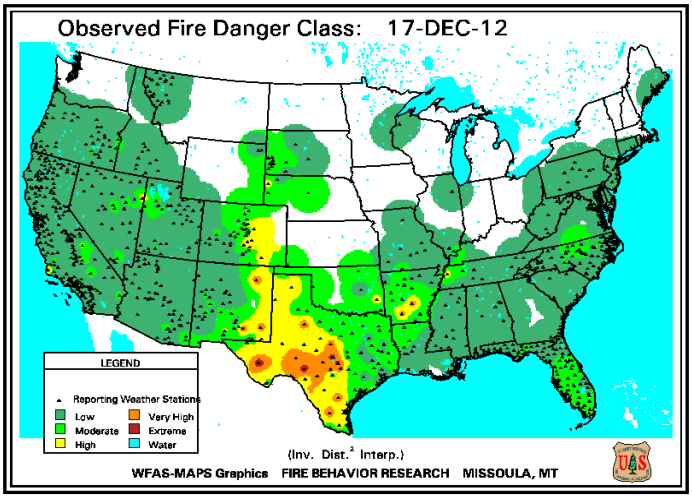


Figure 2.12b

direction. In a map from WFAS-MAPS, Fire Behavior Research (see figure 2.12b above), the majority of Jefferson County was labeled as being at low to moderate risk for wildfires. The National Interagency Fire Center also indicates that Jefferson County is at a low to moderate risk of wildfires. According to the National Climatic Data Center (NCDC) there have not been any wildfires reported in Jefferson County from April, 2006 to the present.

Fires do not generally call for region wide attention unless the fire migrates to adjoining buildings, homes, or property or is determined to have the potential to do so. Fast-spreading structure fires can quickly threaten a large amount of people, as well as tax the resources of local fire-fighting jurisdictions.

Jefferson County is at risk from three (3) types of fire threats: structure, wildland, and wildland-urban interface fires. These threats are typically defined as:

- Structure Fire – a fire of natural or human-caused origin that results in the uncontrolled destruction of homes, businesses, and other structures in populated, urban or suburban areas.
- Wildland Fire – a fire of natural or human-caused origin that results in the uncontrolled destruction of forests, field crops and grasslands.
- Wildland-Urban Interface – a fire of natural or human-caused origin that occurs in or near forest or grassland areas where isolated homes, subdivisions, and small communities are also located.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Jefferson County has a low probability and moderate impact risk with regards to wildfire. The risk of wildfire is more prominent in areas of the county that are forested with steep slopes.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.12c

HAZARD IDENTIFICATION

A fire needs three (3) elements in the right combination to ignite and grow – a heat source, fuel, and oxygen. How a fire behaves primarily depends on the characteristics of available fuel, weather conditions, and terrain. Fuels can include ignition sources like poor wiring or unattended candles, lighter fuels like grasses and leaves, heavier fuels like tree branches and logs, and hazard trees that may be diseased or dying.

Weather also plays a role in the forms of wind, low precipitation, and lightning. As a result, strong, dry east winds in late summer and early fall can produce extreme fire conditions. Drought, snow pack, and local weather conditions can also expand the length of the fire season. Terrain is an additional factor, as the topography of a region or local area influences the amount and moisture of available fuel. Other elements like barriers and land elevation also need to be taken into account as highways and lakes can affect spread of fire, as can an uphill/downhill orientation, as fire spreads more easily as it moves uphill.

The recent significant population growth is important to consider with regards to the fire risk as people themselves can add to the fire risk. Examples include: carelessness; residents increase the probability of electrical fires in their homes by improperly using appliances and overloading outlets; many people enjoy fireplaces in their homes; and a larger population will require more vehicles which could result in more frequent motor vehicle accidents and vehicle fires.

According to the West Virginia Division of Forestry, there are several factors that can contribute to the starting of wildfires in Jefferson County, including arson, equipment fires, campfires, and lightning. Approximately 10,000 forest fires are started each year by lightning.

Members of volunteer fire departments confirm that small brush fires are a common occurrence during the dry summer months, in what is typically known as the “burning season.” These small brush fires are usually handled by the local fire departments and often do not cause damage to structures. However, the threat is present that these bush fires could burn out of control and consume many structures, as well as forestland that exists in Jefferson County.

The “urban/wildland” interface that Jefferson County is currently experiencing also contributes to the fire risk. As the county’s population grows and more housing opportunities are needed, populated areas will encroach upon wild areas or, in some

instances, wild areas will be cleared to make way for population growth. In any event, a population residing near a "wildland area" will have to shoulder more responsibility for fire protection (e.g., brush will likely need to be cleared from around homes). During the spring and fall seasons when wildfires are most likely to occur (because of dry dead foliage covering the ground), populations in and near heavily wooded areas are at a greater risk. A quickly-spreading wildfire could consume many houses before firefighters could respond. This risk is compounded when the population most at risk is located a significant distance from its first-due fire company's station.

As shown in Figure 2.12d, West Virginia is currently marked as having a "low" fire class rating. However, this can change with climatic conditions. A large period of drought and high heat may dry up many areas of the county and add them to the amount of fuel for a potentially destructive wildfire. Wildfires are dependent on the amount of fuel available, weather conditions, and wind speed and direction.

Jefferson County, as mentioned below, falls into the classes of (R) or light fuel land and herbaceous plants with regard to fuel types. This class is considered to be a low hazard in terms of wildfires. With climatic changes over prolonged periods, the fuel that is not normally considered to be dangerous could become dry and increase the potential for a large-scale wildfire event. The dollar amount of damage will fluctuate according to where the fire occurs. If, for some reason, the area affected by a wildfire interfaced a municipality, the amount of damage could be greatly increased. However, most historical events have not consumed much land or property.

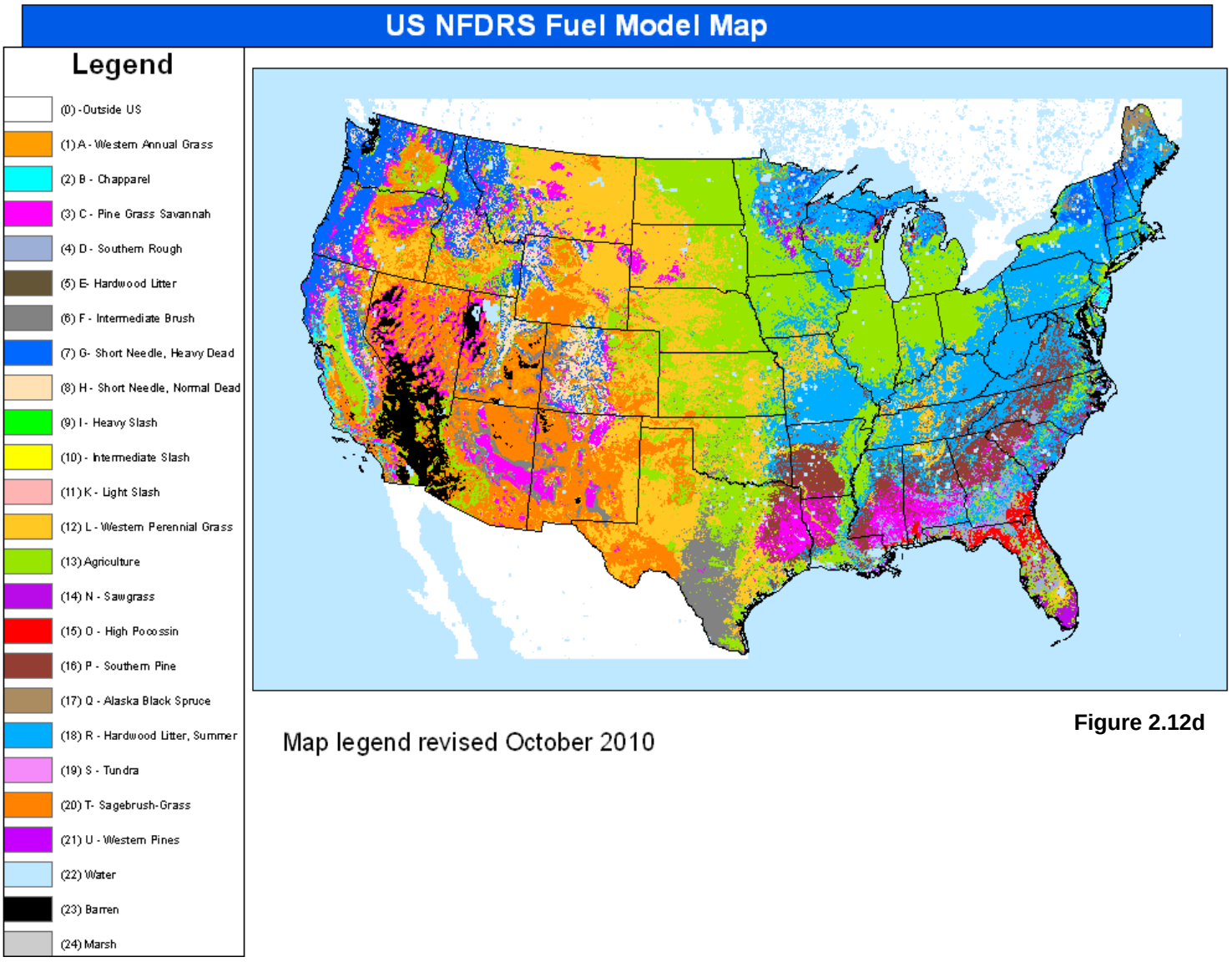


Figure 2.12d

Wildfire hazard severity can be determined using the fire hazard severity table below. The table takes into consideration the degree of the slope, due to the fact that the steeper the slope of the land the faster a fire can spread, fuel classification, as well as the average number of critical fire weather days that occur per year. This is a set of weather conditions, usually in a combination with low relative humidity and wind, whose effects on fire behavior make control difficult and threaten firefighter safety. According to the USGS, Jefferson County's percent slope is between 41-60%. The National Weather Service indicates that there are on average between two (2) to seven (7) critical fire

weather days per year, and the county is located in a light fire fuel area. Therefore, Jefferson County has a fire hazard severity of moderate.

Critical Fire Weather Frequency									
Fuel Classification	<1 Day/Year			2 to 7 Days/year			>8 Days/year		
	Slope (%)			Slope (%)			Slope (%)		
	<40	41-60	>61	<40	41-60	>61	<40	41-60	>61
Light Fuel	M	M	M	M	***M***	M	M	M	H
Medium Fuel	M	M	H	H	H	H	E	E	E
Heavy Fuel	H	H	H	H	E	E	E	E	E

Source: Urban Wildland Interface Code: 2000 **Table 2.12a**

M = Moderate hazard H = High hazard E = Extreme hazard

HISTORY OF EVENTS

There have been no historical reports of wildfires in Jefferson County. Extensive and exhaustive research indicates that there have been unspecified limited large-scale brushfire events in the county since this plan was originally adopted in 2003. As information becomes available a more comprehensive and detailed analysis can be developed.

HAZARD IMPACT

Depending upon temperature, wind, topography, and other factors, wildland fires can spread rapidly and may require thousands of firefighters working several weeks to extinguish. Wildland fires can create their own winds and weather, and generating hurricane force winds of up to 120 miles per hour. Fires can also heat fuels in their path, drying them out, and making them easier to ignite and burn.

Jefferson County contains a great deal of forested land, with recreational campsites and other attractions in designated areas such as Harpers Ferry National Historic Park and the KOA Campgrounds. With a large influx of people, forested areas such as the state forest are extremely susceptible to wildfires would be catastrophic to the local economy, as agriculture, tourism, recreation, and the timber industry are playing an important role.

The monetary amount of damage will fluctuate according to where the fire occurs. If, for some reason, the area affected by a wildfire interfaced a municipality, the amount of damage could be greatly increased. However, most historical events have not consumed significant land or property. Most wildland fires are usually extinguished in their initial stages being less than one acre in area.

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	22,119	1,770	8%	$2,433,090,000	$12,165,450	0.50%	53,498	8,025	15%
Commercial	1,640	49	3%	$492,000,000	$590,400	0.12%	6,560	197	3%
Industrial	562	17	3%	$196,700,000	$275,380	0.14%	2,810	84	3%
Agricultural	546	109	20%	$81,900,000	$1,638,000	2%	182	36	20%
Religious/Non-Profit	30	3	10%	$10,610,000	$35,013	0.33%	300	30	10%
Government	80	2	3%	$68,333,360	$88,833	0.13%	3,633	109	3%
Education	44	2	5%	$165,000,000	$181,500	0.11%	1,701	85	5%
Utilities	41	2	5%	$145,550,000	$174,660	0.12%	62	3	5%
Total	25,062	1,954	8%	$3,593,183,360	$15,149,236	<1%	68,746	8,569	12%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Wildfire

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Bolivar Town Hall	$2,115,000	X	0%	=	$0	$225,000	X	0%	=	$0
Charles Town City Hall	$3,025,700	X	0%	=	$0	$450,000	X	0%	=	$0
Harpers Ferry Town Hall	$2,534,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Courthouse	$4,232,887	X	0%	=	$0	$875,000	X	0%	=	$0
Ranson City Hall	$2,850,645	X	0%	=	$0	$375,000	X	0%	=	$0
Shepherdstown Town	$2,225,000	X	0%	=	$0	$225,000	X	0%	=	$0
Bridges	$235,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$195,000,000	X	0%	=	$0	$0	X	0%	=	$0
Roads	$1,215,000,000	X	0%	=	$0	$0	X	0%	=	$0
Potomac Edison	$1,005,000	X	0%	=	$0	$159,000	X	0%	=	$0
Charles Town City Water System	$6,213,000	X	0%	=	$0	$13,750,000	X	0%	=	$0
Frontier Communications	$1,425,000	X	10%	=	$142,500	$425,000	X	20%	=	$85,000
Harpers Ferry Job Corps	$5,725,000	X	0%	=	$0	$9,000,000	X	0%	=	$0
Jefferson County PSD	$6,520,000	X	0%	=	$0	$10,550,000	X	0%	=	$0
Jefferson County Solid Waste Authority	$4,000,000	X	0%	=	$0	$8,750,225	X	0%	=	$0
Meadowbrook Water System	$1,750,000	X	0%	=	$0	$5,225,000	X	0%	=	$0
Shepherdstown Water System	$2,225,000	X	0%	=	$0	$5,450,000	X	0%	=	$0
Shenandoah Junction Water System	$1,000,000	X	0%	=	$0	$2,850,000	X	0%	=	$0
Tuscawilla Utilities	$750,000	X	0%	=	$0	$1,850,000	X	0%	=	$0
Walnut Grove Utilities	$825,000	X	0%	=	$0	$1,425,000	X	0%	=	$0
Hollywood Casino WTP	$125,000	X	0%	=	$0	$60,000	X	0%	=	$0
Bakerton Fire	$715,000	X	0%	=	$0	$1,115,000	X	0%	=	$0
Blue Ridge Mtn. VFD	$950,000	X	10%	=	$95,000	$845,000	X	20%	=	$169,000
Charles Town Police Department	$725,000	X	0%	=	$0	$325,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Citizens VFD	$1,250,000	X	0%	=	$0	$1,025,000	X	0%	=	$0
Friendship VFD	$1,150,000	X	0%	=	$0	$725,000	X	0%	=	$0
Harpers Ferry National Park Service Police	$315,000	X	0%	=	$0	$75,000	X	0%	=	$0
Harpers Ferry Police Department	$210,000	X	0%	=	$0	$105,000	X	0%	=	$0
Independent VFD	$975,000	X	0%	=	$0	$890,000	X	0%	=	$0
JCECC	$7,500,000	X	0%	=	$0	$600,000	X	0%	=	$0
Jefferson County EOC	$0	X	0%	=	$0	$0	X	0%	=	$0
JCHSEM	$725,000	X	0%	=	$0	$200,000	X	0%	=	$0
Jefferson County Sheriff's Department	$850,000	X	0%	=	$0	$100,000	X	0%	=	$0
Ryneal Ambulance Service	$95,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Chapter ARC	$505,000	X	0%	=	$0	$125,000	X	0%	=	$0
Ranson Police Dept.	$612,000	X	0%	=	$0	$189,000	X	0%	=	$0
Shepherdstown Police Department	$425,000	X	0%	=	$0	$198,000	X	0%	=	$0
Shepherdstown University Police	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown VFD	$845,000	X	0%	=	$0	$115,000	X	0%	=	$0
West Virginia State Police	$900,000	X	0%	=	$0	$80,000	X	0%	=	$0
Middleway Fire Department	$130,000	X	0%	=	$0	$200,000	X	0%	=	$0
Blue Ridge Mtn. EMS	$110,000	X	15%	=	$16,500	$65,000	X	25%	=	$16,250
Canterbury of Shepherdstown	$305,000	X	0%	=	$0	$75,000	X	0%	=	$0
Eastern Panhandle Free Clinic	$1,560,000	X	0%	=	$0	$145,000	X	0%	=	$0
Friendship Fire EMS	$85,000	X	0%	=	$0	$55,000	X	0%	=	$0
Independent Fire EMS	$90,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown EMS	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
JCESA	$805,000	X	0%	=	$0	$105,000	X	0%	=	$0
Jefferson Memorial Hospital	$48,225,000	X	0%	=	$0	$15,150,000	X	0%	=	$0
Jefferson Urgent Care	$1,550,000	X	0%	=	$0	$325,000	X	0%	=	$0
Willow Tree Manor Nursing Home	$220,000	X	0%	=	$0	$50,000	X	0%	=	$0
Allegheny Optical Medical Building	$310,000	X	0%	=	$0	$80,000	X	0%	=	$0
Jefferson County Health Department	$500,000	X	0%	=	$0	$110,000	X	0%	=	$0
Women's Imaging Center	$375,000	X	0%	=	$0	$85,000	X	0%	=	$0
WVU Urgent Care	$575,000	X	0%	=	$0	$250,000	X	0%	=	$0
American Public University	$20,725,000	X	0%	=	$0	$895,000	X	0%	=	$0
Blue Ridge Elementary	$3,850,000	X	10%	=	$385,000	$225,000	X	20%	=	$45,000
Charles Town Middle	$6,850,000	X	0%	=	$0	$315,000	X	0%	=	$0
Claymont Children's School	$2,150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Country Day School of Jefferson County	$2,000,000	X	0%	=	$0	$70,000	X	0%	=	$0
CW Shipley Elementary	$3,075,000	X	0%	=	$0	$105,000	X	0%	=	$0
Harpers Ferry Middle	$7,500,000	X	10%	=	$750,000	$225,000	X	20%	=	$45,000
Jefferson High School	$16,850,000	X	0%	=	$0	$450,000	X	0%	=	$0
Kingsway Christian Academy	$2,150,000	X	0%	=	$0	$95,000	X	0%	=	$0
Morgan Academy	$1,965,000	X	0%	=	$0	$75,000	X	0%	=	$0
North Jefferson Elementary	$2,985,000	X	0%	=	$0	$135,000	X	0%	=	$0
Opportunity Learning Center	$1,855,000	X	0%	=	$0	$68,000	X	0%	=	$0
Page Jackson Elementary	$2,865,000	X	0%	=	$0	$120,000	X	0%	=	$0
Blue Ridge Primary	$3,000,000	X	0%	=	$0	$200,000	X	0%	=	$0
Ranson Elementary	$4,000,000	X	0%	=	$0	$210,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Shepherdstown Elementary	$3,995,000	X	10%	=	$399,500	$235,000	X	20%	=	$47,000
Shepherdstown Middle	$8,650,000	X	10%	=	$865,000	$295,000	X	20%	=	$59,000
Shepherd University	$55,550,000	X	0%	=	$0	$950,000	X	0%	=	$0
T.A. Lowery Elementary	$2,650,000	X	0%	=	$0	$135,000	X	0%	=	$0
Washington High	$17,995,000	X	0%	=	$0	$305,000	X	0%	=	$0
Wildwood Middle	$6,555,000	X	10%	=	$655,500	$210,000	X	20%	=	$42,000
Wright Denny Elementary	$3,225,000	X	0%	=	$0	$145,000	X	0%	=	$0
Jefferson County BOE	$5,350,000	X	0%	=	$0	$165,000	X	0%	=	$0
The Joy of Learning Montessori	$1,500,000	X	0%	=	$0	$175,000	X	0%	=	$0
South Jefferson Elementary	$2,750,000	X	0%	=	$0	$215,000	X	0%	=	$0
Driswood Elementary	$2,250,000	X	0%	=	$0	$195,000	X	0%	=	$0
Aggregate Industries/Millville Quarry	$1,850,000	X	0%	=	$0	$355,000	X	0%	=	$0
Arcadia Building Company	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Automated Merchandising System	$550,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bavarian Inn	$1,795,000	X	0%	=	$0	$250,000	X	0%	=	$0
Bolivar Community Center	$1,850,000	X	10%	=	$185,000	$40,000	X	20%	=	$8,000
Burch Wood Products	$895,000	X	15%	=	$134,250	$350,000	X	25%	=	$87,500
Business Technology Source	$1,500,000	X	0%	=	$0	$225,000	X	0%	=	$0
Hollywood Casino at Charles Town Races	$15,650,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Clarion Hotel & Conference Center	$10,855,000	X	0%	=	$0	$315,000	X	0%	=	$0
Comcast	$1,250,000	X	0%	=	$0	$220,000	X	0%	=	$0
Concert Technology	$650,000	X	0%	=	$0	$110,000	X	0%	=	$0
DALB, Inc.	$455,000	X	0%	=	$0	$215,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Dr. Pepper	$1,785,000	X	0%	=	$0	$310,000	X	0%	=	$0
Halltown Paperboard Company	$1,276,000	X	15%	=	$191,400	$650,000	X	25%	=	$162,500
Harpers Ferry Family Medicine Center	$1,115,000	X	0%	=	$0	$675,000	X	0%	=	$0
Hilldale Shopping Center	$12,560,000	X	0%	=	$0	$4,555,000	X	0%	=	$0
Home Depot	$2,550,000	X	0%	=	$0	$450,000	X	0%	=	$0
Jefferson Asphalt Products	$1,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
Jefferson County Chamber of Commerce	$1,225,000	X	0%	=	$0	$150,000	X	0%	=	$0
Jefferson County Fairgrounds	$625,000	X	0%	=	$0	$65,000	X	0%	=	$0
Jefferson Rental	$1,850,000	X	0%	=	$0	$2,400,000	X	0%	=	$0
Jefferson County Council on Aging	$995,000	X	0%	=	$0	$65,000	X	0%	=	$0
KOA Campgrounds	$850,000	X	15%	=	$127,500	$1,500,000	X	25%	=	$375,000
KRM Associates Inc.	$950,000	X	0%	=	$0	$325,000	X	0%	=	$0
Lowe Products	$425,000	X	0%	=	$0	$298,000	X	0%	=	$0
McDaniel Hardwood Products	$1,750,000	X	10%	=	$175,000	$355,000	X	20%	=	$71,000
Mountain State Machine Tool	$2,865,000	X	0%	=	$0	$665,000	X	0%	=	$0
Plethora Technology	$989,000	X	0%	=	$0	$225,000	X	0%	=	$0
PROSystems Inc.	$3,895,000	X	0%	=	$0	$645,000	X	0%	=	$0
R.A.I.	$1,225,000	X	0%	=	$0	$450,000	X	0%	=	$0
Royal Vendors, Inc.	$5,650,000	X	0%	=	$0	$956,000	X	0%	=	$0
Schonstedt Instruments	$1,350,000	X	0%	=	$0	$745,000	X	0%	=	$0
Specialized Engineering	$3,005,000	X	0%	=	$0	$425,000	X	0%	=	$0
Summit Point Motor Sports Park	$650,000	X	10%	=	$65,000	$115,000	X	20%	=	$23,000
Universal Forest Products	$2,250,000	X	10%	=	$225,000	$4,000,000	X	20%	=	$800,000
U.S. Customs & Border Protection	$965,000	X	0%	=	$0	$98,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
U.S. Department of Agriculture	$2,450,000	X	0%	=	$0	$225,000	X	0%	=	$0
U.S. Fish & Wildlife Service	$2,875,000	X	0%	=	$0	$1,000,000	X	0%	=	$0
United States Geological Survey	$3,675,000	X	0%	=	$0	$250,000	X	0%	=	$0
Wal-Mart	$3,850,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
WVU Tree Fruit Research & Ed. Center	$2,525,000	X	10%	=	$252,500	$3,000,000	X	25%	=	$750,000
Hampton Inn	$8,850,000	X	0%	=	$0	$1,250,000	X	0%	=	$0
Holiday Inn Express	$13,550,000	X	0%	=	$0	$1,500,000	X	0%	=	$0
Inn at Charles Town	$7,650,000	X	0%	=	$0	$900,000	X	0%	=	$0
Windmill Crossing Shopping Center	$30,000,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
Southern States	$2,210,000	X	0%	=	$0	$1,922,345	X	0%	=	$0
Stasis Engineering	$450,000	X	0%	=	$0	$95,000	X	0%	=	$0
Bakerton Post Office	$575,000	X	0%	=	$0	$75,000	X	0%	=	$0
Charles Town Post Office	$850,000	X	0%	=	$0	$125,000	X	0%	=	$0
Halltown Post Office	$425,000	X	0%	=	$0	$80,000	X	0%	=	$0
Harpers Ferry Post Office	$485,000	X	0%	=	$0	$100,000	X	0%	=	$0
Kearneysville Post Office	$525,000	X	0%	=	$0	$110,000	X	0%	=	$0
Ranson Post Office	$575,000	X	0%	=	$0	$150,000	X	0%	=	$0
Rippon Post Office	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Shenandoah Junction Post Office	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Shepherdstown Post Office	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Summit Point Post Office	$175,000	X	0%	=	$0	$65,000	X	0%	=	$0
Bolivar/Harpers Ferry Public Library	$580,000	X	15%	=	$87,000	$200,000	X	25%	=	$50,000
Old Charles Town Library	$450,000	X	0%	=	$0	$220,000	X	0%	=	$0
Shepherdstown Public Library	$790,000	X	0%	=	$0	$255,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
South Jefferson Public Library	$615,000	X	0%	=	$0	$220,000	X	0%	=	$0
Scarborough Library @ Shepherd University	$550,000	X	0%	=	$0	$250,000	X	0%	=	$0
Allemong Christian	$95,000	X	0%	=	$0	$25,000	X	0%	=	$0
Allstadt House and Ordinary	$110,000	X	0%	=	$0	$50,000	X	0%	=	$0
Altona Farm	$255,000	X	15%	=	$38,250	$35,000	X	25%	=	$8,750
Aspen Hill	$195,000	X	15%	=	$29,250	$60,000	X	25%	=	$15,000
B&O Railroad Potomac River Crossing	$1,650,000	X	0%	=	$0	$0	X	0%	=	$0
Beall-Air Building	$450,000	X	0%	=	$0	$100,000	X	0%	=	$0
Belvedere Building	$500,000	X	0%	=	$0	$95,000	X	0%	=	$0
Brook Manor	$425,000	X	15%	=	$63,750	$65,000	X	25%	=	$16,250
Bower Building	$365,000	X	0%	=	$0	$75,000	X	0%	=	$0
Burr, Peter House	$125,000	X	10%	=	$12,500	$40,000	X	20%	=	$8,000
Barleywood	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Cedar Lawn Building	$165,000	X	0%	=	$0	$60,000	X	0%	=	$0
Charles Town Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Town Mining Company Building	$1,000,000	X	0%	=	$0	$225,000	X	0%	=	$0
Claymont Court	$350,000	X	0%	=	$0	$110,000	X	0%	=	$0
Cold Spring Building	$90,000	X	0%	=	$0	$20,000	X	0%	=	$0
Duffields Depot	$310,000	X	0%	=	$0	$65,000	X	0%	=	$0
Entler Hotel	$415,000	X	0%	=	$0	$125,000	X	0%	=	$0
Elmwood Building	$275,000	X	10%	=	$27,500	$85,000	X	20%	=	$17,000
Falling Spring Complex	$965,000	X	0%	=	$0	$225,000	X	0%	=	$0
Fruit Hill	$220,000	X	15%	=	$33,000	$0	X	25%	=	$0
Bellevue	$355,000	X	0%	=	$0	$150,000	X	0%	=	$0
Gap View Farm District	$2,000,000	X	10%	=	$200,000	$0	X	25%	=	$0
Gibson-Todd House	$165,000	X	0%	=	$0	$30,000	X	0%	=	$0
Glenburnie Building	$320,000	X	0%	=	$0	$135,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Grand View School Building	$215,000	X	0%	=	$0	$50,000	X	0%	=	$0
Beverly	$195,000	X	0%	=	$0	$65,000	X	0%	=	$0
Halltown Colored Free School	$590,000	X	0%	=	$0	$50,000	X	0%	=	$0
Halltown Memorial	$115,000	X	0%	=	$0	$40,000	X	0%	=	$0
Harewood Building	$295,000	X	10%	=	$29,500	$112,000	X	20%	=	$22,400
Harpers Ferry Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Harpers Ferry National Historic Park	$2,455,000	X	0.50%	=	$12,275	$0	X	0%	=	$0
Happy Retreat	$265,000	X	0%	=	$0	$110,000	X	0%	=	$0
Hazelfield Building	$430,000	X	0%	=	$0	$90,000	X	0%	=	$0
Blakeley	$265,000	X	0%	=	$0	$0	X	0%	=	$0
Hopewell Building	$685,000	X	0%	=	$0	$125,000	X	0%	=	$0
Hydroelectric Power Plant (Potomac Power Plant)	$10,000,000	X	0%	=	$0	$6,000,000	X	0%	=	$0
Boisestone's Place	$145,000	X	0%	=	$0	$30,000	X	0%	=	$0
Jefferson County Alms House	$400,000	X	0%	=	$0	$135,000	X	0%	=	$0
Lee-Longsworth House	$265,000	X	0%	=	$0	$95,000	X	0%	=	$0
Linden Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Bolivar Heights - Schoolhouse Ridge	$95,000	X	15%	=	$14,250	$0	X	0%	=	$0
Cool Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Media Farm	$350,000	X	15%	=	$52,500	$0	X	0%	=	$0
Middleway Historic District	$1,500,000	X	0%	=	$0	$0	X	0%	=	$0
Miller's Tavern	$115,000	X	0%	=	$0	$15,000	X	0%	=	$0
Morgan's Grove District	$550,000	X	0%	=	$0	$0	X	0%	=	$0
Nash-Bradley Farm	$265,000	X	15%	=	$39,750	$50,000	X	25%	=	$12,500
New Opera House	$295,000	X	0%	=	$0	$100,000	X	0%	=	$0
Richwood Hall	$465,000	X	0%	=	$0	$0	X	0%	=	$0
Rippon Lodge	$395,000	X	0%	=	$0	$65,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Scrabble Historic District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherd's Mill	$65,000	X	0%	=	$0	$0	X	0%	=	$0
Shepherdstown Boundary Increase	$95,000	X	10%	=	$9,500	$0	X	0%	=	$0
Shepherdstown Historic District	$3,750,000	X	0.50%	=	$18,750	$0	X	0%	=	$0
Shipley School	$245,000	X	0%	=	$0	$0	X	0%	=	$0
St. George's Chapel	$110,000	X	0%	=	$0	$0	X	0%	=	$0
St. Peter's Roman Catholic Church	$350,000	X	0%	=	$0	$95,000	X	0%	=	$0
Storer College	$395,000	X	0%	=	$0	$110,000	X	0%	=	$0
Strider Farm	$165,000	X	15%	=	$24,750	$0	X	0%	=	$0
Tattersall Property	$110,000	X	0%	=	$0	$0	X	0%	=	$0
Elmwood-on-the-Opequon	$95,000	X	0%	=	$0	$0	X	0%	=	$0
York Hill	$875,000	X	10%	=	$87,500	$0	X	0%	=	$0
Rock Spring Child Learning Center	$220,000	X	0%	=	$0	$0	X	0%	=	$0
Wee Disciples Christian Enrichment Program	$0	X	0%	=	$0	$0	X	0%	=	$0
Grubb Farm	$225,000	X	0%	=	$0	$0	X	0%	=	$0
The Hermitage	$195,000	X	0%	=	$0	$50,000	X	0%	=	$0
Little Elmington	$85,000	X	0%	=	$0	$20,000	X	0%	=	$0
Piedmont	$155,000	X	0%	=	$0	$35,000	X	0%	=	$0
Potomac Mill's/Boteler's Cement Mill	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Prato Rio	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Rellim	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Rion Hall	$265,000	X	0%	=	$0	$45,000	X	0%	=	$0
Rockland	$140,000	X	10%	=	$14,000	$0	X	0%	=	$0
Rock Spring	$15,000	X	0%	=	$0	$0	X	0%	=	$0
Rosebrake	$30,000	X	0%	=	$0	$0	X	0%	=	$0
Rose Hill	$60,000	X	15%	=	$9,000	$0	X	0%	=	$0
Shannondale Springs	$8,000	X	0%	=	$0	$0	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Sunnyside Farm	$75,000	X	15%	=	$11,250	$0	X	0%	=	$0
Tackley Farm	$60,000	X	15%	=	$9,000	$0	X	0%	=	$0
Traveler's Rest - National Historic Lanmark	$165,000	X	0%	=	$0	$35,000	X	0%	=	$0
Vinton	$0	X	0%	=	$0	$0	X	0%	=	$0
White House	$195,000	X	0%	=	$0	$33,000	X	0%	=	$0
Winward	$98,000	X	0%	=	$0	$20,000	X	0%	=	$0
Woodbury	$140,000	X	0%	=	$0	$15,000	X	0%	=	$0
Woodlawn	$0	X	0%	=	$0	$0	X	0%	=	$0
Downtown Charles Town Historic District	$650,000	X	0%	=	$0	$0	X	0%	=	$0
Bollman Bridge, Wernwag or Latrobe's	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Niswarner Tract	$67,500	X	15%	=	$10,125	$0	X	0%	=	$0
Residential	$2,433,090,000	X	0.08%	=	$1,946,472	$486,618,000	X	0.10%	=	$486,618
			Total Loss to Structure		$7,444,522			**Total Loss to Contents**		$3,421,768

Hazard: Wildfire

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Bolivar Town Hall	$6,000	X	0	+	$750	X	0	=	$0	$0
Charles Town City Hall	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Harpers Ferry Town Hall	$6,600	X	0	+	$825	X	0	=	$0	$0
Jefferson County Courthouse	$10,000	X	0	+	$2,500	X	0	=	$0	$0
Ranson City Hall	$3,600	X	0	+	$900	X	0	=	$0	$0
Shepherdstown Town	$7,000	X	0	+	$875	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Roads	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Edison	$53,100	X	0	+	$1,700	X	0	=	$0	$0
Charles Town City Water System	$3,840	X	0	+	$480	X	0	=	$0	$0
Frontier Communications	$48,000	X	1	+	$12,000	X	7	=	$132,000	$359,500
Harpers Ferry Job Corps	$2,800	X	0	+	$350	X	0	=	$0	$0
Jefferson County PSD	$6,120	X	0	+	$765	X	0	=	$0	$0
Jefferson County Solid Waste Authority	$4,480	X	0	+	$560	X	0	=	$0	$0
Meadowbrook Water System	$2,400	X	0	+	$300	X	0	=	$0	$0
Shepherdstown Water System	$3,600	X	0	+	$450	X	0	=	$0	$0
Shenandoah Junction Water System	$3,400	X	0	+	$425	X	0	=	$0	$0
Tuscawilla Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Walnut Grove Utilities	$2,400	X	0	+	$300	X	0	=	$0	$0
Hollywood Casino WTP	$2,560	X	0	+	$320	X	0	=	$0	$0
Bakerton Fire	$2,600	X	0	+	$650	X	0	=	$0	$0
Blue Ridge Mtn. VFD	$0	X	0	+	$0	X	0	=	$0	$264,000
Charles Town Police Department	$5,120	X	0	+	$1,280	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Citizens VFD	$4,000	X	0	+	$1,000	X	0	=	$0	$0
Friendship VFD	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Park Service Police	$3,600	X	0	+	$450	X	0	=	$0	$0
Harpers Ferry Police Department	$7,000	X	0	+	$875	X	0	=	$0	$0
Independent VFD	$0	X	0	+	$0	X	0	=	$0	$0
JCECC	$2,880	X	0	+	$720	X	0	=	$0	$0
Jefferson County EOC	$0	X	0	+	$0	X	0	=	$0	$0
JCHSEM	$2,200	X	0	+	$550	X	0	=	$0	$0
Jefferson County Sheriff's Department	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Ryneal Ambulance Service	$3,200	X	0	+	$560	X	0	=	$0	$0
Eastern Panhandle Chapter ARC	$2,600	X	0	+	$650	X	0	=	$0	$0
Ranson Police Dept.	$3,000	X	0	+	$750	X	0	=	$0	$0
Shepherdstown Police Department	$4,000	X	0	+	$500	X	0	=	$0	$0
Shepherdstown University Police	$1,800	X	0	+	$225	X	0	=	$0	$0
Shepherdstown VFD	$0	X	0	+	$0	X	0	=	$0	$0
West Virginia State Police	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Middleway Fire Department	$4,800	X	0	+	$600	X	0	=	$0	$0
Blue Ridge Mtn. EMS	$5,600	X	0	+	$2,800	X	0	=	$0	$32,750
Canterbury of Shepherdstown	$5,200	X	0	+	$650	X	0	=	$0	$0
Eastern Panhandle Free Clinic	$12,800	X	0	+	$3,200	X	0	=	$0	$0
Friendship Fire EMS	$2,400	X	0	+	$600	X	0	=	$0	$0
Independent Fire EMS	$3,400	X	0	+	$850	X	0	=	$0	$0
Shepherdstown EMS	$12,800	X	0	+	$1,600	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									Structure + Contents + Function Loss
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	
JCESA	$6,000	X	0	+	$1,500	X	0	=	$0	$0
Jefferson Memorial Hospital	$416,000	X	0	+	$104,000	X	0	=	$0	$0
Jefferson Urgent Care	$16,800	X	0	+	$4,200	X	0	=	$0	$0
Willow Tree Manor Nursing Home	$9,600	X	0	+	$1,200	X	0	=	$0	$0
Allegheny Optical Medical Building	$5,760	X	0	+	$720	X	0	=	$0	$0
Jefferson County Health Department	$20,480	X	0	+	$2,680	X	0	=	$0	$0
Women's Imaging Center	$11,520	X	0	+	$1,440	X	0	=	$0	$0
WVU Urgent Care	$20,480	X	0	+	$2,560	X	0	=	$0	$0
American Public University	$53,000	X	0	+	$26,500	X	0	=	$0	$0
Blue Ridge Elementary	$5,600	X	3	+	$2,800	X	7	=	$36,400	$466,400
Charles Town Middle	$22,000	X	0	+	$5,500	X	0	=	$0	$0
Claymont Children's School	$8,800	X	0	+	$2,200	X	0	=	$0	$0
Country Day School of Jefferson County	$10,800	X	0	+	$2,700	X	0	=	$0	$0
CW Shipley Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Harpers Ferry Middle	$34,400	X	3	+	$4,300	X	7	=	$133,300	$928,300
Jefferson High School	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Kingsway Christian Academy	$12,000	X	0	+	$3,000	X	0	=	$0	$0
Morgan Academy	$11,600	X	0	+	$2,900	X	0	=	$0	$0
North Jefferson Elementary	$16,200	X	0	+	$2,700	X	0	=	$0	$0
Opportunity Learning Center	$13,200	X	0	+	$2,200	X	0	=	$0	$0
Page Jackson Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Blue Ridge Primary	$13,440	X	0	+	$1,680	X	0	=	$0	$0
Ranson Elementary	$14,000	X	0	+	$3,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Shepherdstown Elementary	$27,600	X	3	+	$3,450	X	7	=	$106,950	$553,450
Shepherdstown Middle	$36,000	X	3	+	$4,500	X	7	=	$139,500	$1,063,500
Shepherd University	$280,000	X	0	+	$35,000	X	0	=	$0	$0
T.A. Lowery Elementary	$12,400	X	0	+	$3,100	X	0	=	$0	$0
Washington High	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Wildwood Middle	$16,000	X	3	+	$4,000	X	7	=	$76,000	$773,500
Wright Denny Elementary	$14,400	X	0	+	$3,600	X	0	=	$0	$0
Jefferson County BOE	$19,460	X	0	+	$4,865	X	0	=	$0	$0
The Joy of Learning Montessori	$11,520	X	0	+	$1,440	X	0	=	$0	$0
South Jefferson Elementary	$11,500	X	0	+	$1,437	X	0	=	$0	$0
Driswood Elementary	$10,000	X	0	+	$1,250	X	0	=	$0	$0
Aggregate Industries/Millville Quarry	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Arcadia Building Company	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Automated Merchandising System	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Bavarian Inn	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Bolivar Community Center	$7,800	X	0	+	$1,300	X	7	=	$9,100	$202,100
Burch Wood Products	$93,600	X	3	+	$15,600	X	10	=	$436,800	$658,550
Business Technology Source	$74,000	X	0	+	$18,500	X	0	=	$0	$0
Hollywood Casino at Charles Town Races	$200,000	X	0	+	$50,000	X	0	=	$0	$0
Clarion Hotel & Conference Center	$60,000	X	0	+	$15,000	X	0	=	$0	$0
Comcast	$55,000	X	0	+	$13,750	X	0	=	$0	$0
Concert Technology	$59,400	X	0	+	$14,850	X	0	=	$0	$0
DALB, Inc.	$100,000	X	0	+	$25,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Dr. Pepper	$140,000	X	0	+	$35,000	X	0	=	$0	$0
Halltown Paperboard Company	$105,000	X	3	+	$17,500	X	10	=	$490,000	$843,900
Harpers Ferry Family Medicine Center	$96,000	X	0	+	$16,000	X	0	=	$0	$0
Hilldale Shopping Center	$113,600	X	0	+	$28,400	X	0	=	$0	$0
Home Depot	$50,000	X	0	+	$12,500	X	0	=	$0	$0
Jefferson Asphalt Products	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Jefferson County Chamber of Commerce	$22,800	X	0	+	$5,700	X	0	=	$0	$0
Jefferson County Fairgrounds	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson Rental	$62,000	X	0	+	$15,500	X	0	=	$0	$0
Jefferson County Council on Aging	$17,000	X	0	+	$4,250	X	0	=	$0	$0
KOA Campgrounds	$62,800	X	0	+	$7,850	X	10	=	$78,500	$581,000
KRM Associates Inc.	$44,000	X	0	+	$11,000	X	0	=	$0	$0
Lowe Products	$52,000	X	0	+	$13,000	X	0	=	$0	$0
McDaniel Hardwood Products	$168,000	X	3	+	$28,000	X	7	=	$700,000	$946,000
Mountain State Machine Tool	$42,000	X	0	+	$10,500	X	0	=	$0	$0
Plethora Technology	$72,000	X	0	+	$18,000	X	0	=	$0	$0
PROSystems Inc.	$67,200	X	0	+	$16,800	X	0	=	$0	$0
R.A.I.	$61,600	X	0	+	$15,400	X	0	=	$0	$0
Royal Vendors, Inc.	$128,000	X	0	+	$32,000	X	0	=	$0	$0
Schonstedt Instruments	$58,000	X	0	+	$15,400	X	0	=	$0	$0
Specialized Engineering	$51,000	X	0	+	$12,750	X	0	=	$0	$0
Summit Point Motor Sports Park	$4,000	X	3	+	$2,000	X	7	=	$26,000	$114,000
Universal Forest Products	$60,000	X	3	+	$30,000	X	7	=	$390,000	$1,415,000
U.S. Customs & Border Protection	$38,000	X	0	+	$9,500	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
U.S. Department of Agriculture	$22,000	X	0	+	$5,500	X	0	=	$0	$0
U.S. Fish & Wildlife Service	$180,000	X	0	+	$45,000	X	0	=	$0	$0
United States Geological Survey	$26,000	X	0	+	$6,500	X	0	=	$0	$0
Wal-Mart	$109,600	X	0	+	$27,400	X	0	=	$0	$0
WVU Tree Fruit Research & Ed. Center	$80,000	X	3	+	$40,000	X	7	=	$520,000	$1,522,500
Hampton Inn	$65,000	X	0	+	$10,000	X	0	=	$0	$0
Holiday Inn Express	$80,000	X	0	+	$12,000	X	0	=	$0	$0
Inn at Charles Town	$55,000	X	0	+	$8,000	X	0	=	$0	$0
Windmill Crossing Shopping Center	$500,000	X	0	+	$150,000	X	0	=	$0	$0
Southern States	$13,000	X	0	+	$1,200	X	0	=	$0	$0
Stasis Engineering	$12,288	X	0	+	$1,536	X	0	=	$0	$0
Bakerton Post Office	$3,800	X	0	+	$950	X	0	=	$0	$0
Charles Town Post Office	$4,800	X	0	+	$1,200	X	0	=	$0	$0
Halltown Post Office	$1,800	X	0	+	$900	X	0	=	$0	$0
Harpers Ferry Post Office	$2,000	X	0	+	$1,000	X	0	=	$0	$0
Kearneysville Post Office	$3,820	X	0	+	$955	X	0	=	$0	$0
Ranson Post Office	$3,000	X	0	+	$1,500	X	0	=	$0	$0
Rippon Post Office	$2,100	X	0	+	$525	X	0	=	$0	$0
Shenandoah Junction Post Office	$3,600	X	0	+	$600	X	0	=	$0	$0
Shepherdstown Post Office	$6,000	X	0	+	$750	X	0	=	$0	$0
Summit Point Post Office	$710	X	0	+	$355	X	0	=	$0	$0
Bolivar/Harpers Ferry Public Library	$3,840	X	3	+	$480	X	10	=	$16,320	$153,320
Old Charles Town Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Shepherdstown Public Library	$8,000	X	0	+	$1,000	X	0	=	$0	$0

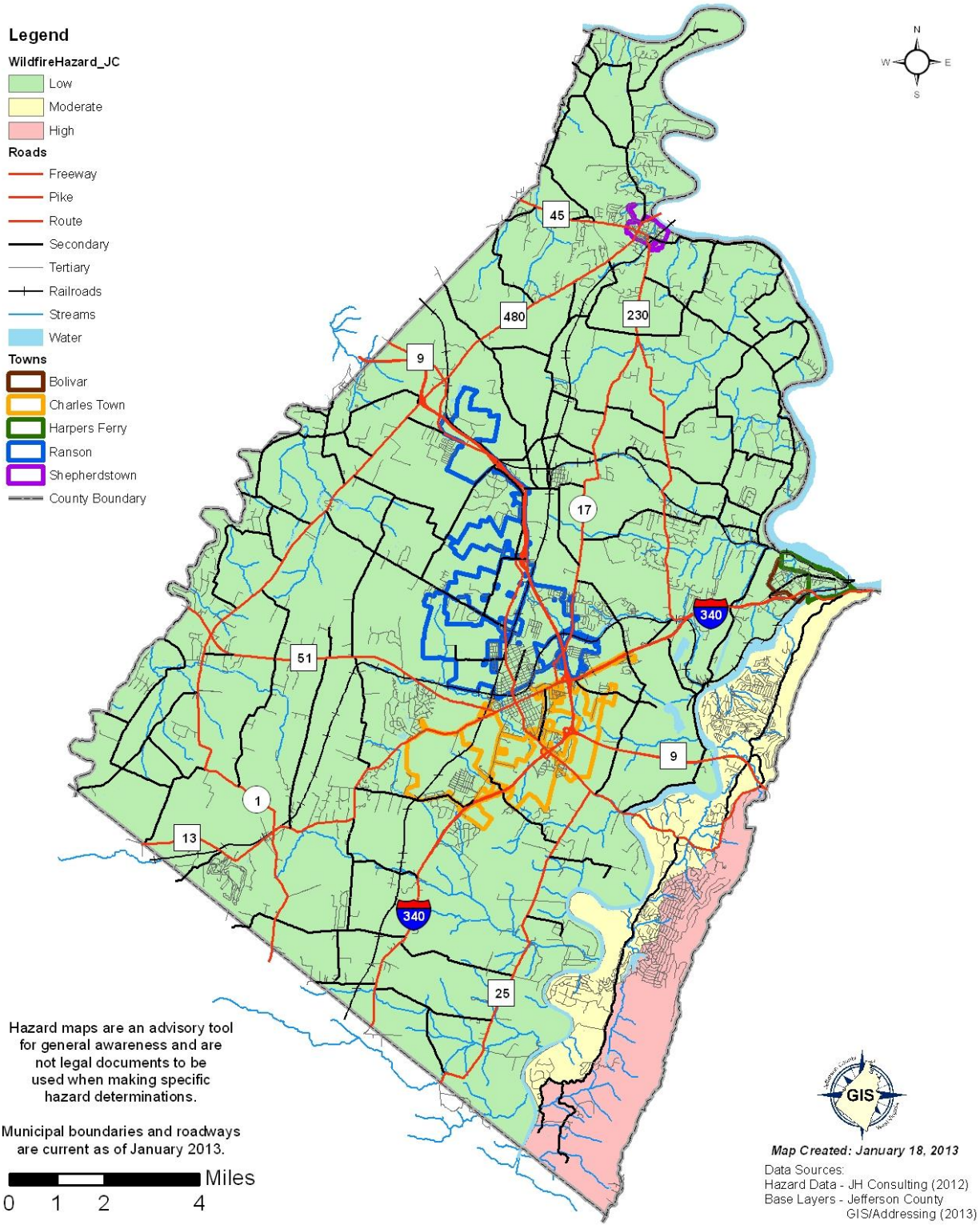
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
South Jefferson Public Library	$4,470	X	0	+	$745	X	0	=	$0	$0
Scarborough Library @ Shepherd University	$6,800	X	0	+	$850	X	0	=	$0	$0
Allemong Christian	$0	X	0	+	$0	X	0	=	$0	$0
Allstadt House and Ordinary	$0	X	0	+	$0	X	0	=	$0	$0
Altona Farm	$0	X	0	+	$0	X	0	=	$0	$47,000
Aspen Hill	$0	X	0	+	$0	X	0	=	$0	$44,250
B&O Railroad Potomac River Crossing	$0	X	0	+	$0	X	0	=	$0	$0
Beall-Air Building	$0	X	0	+	$0	X	0	=	$0	$0
Belvedere Building	$0	X	0	+	$0	X	0	=	$0	$0
Brook Manor	$0	X	0	+	$0	X	0	=	$0	$80,000
Bower Building	$0	X	0	+	$0	X	0	=	$0	$0
Burr, Peter House	$0	X	0	+	$0	X	0	=	$0	$20,500
Barleywood	$0	X	0	+	$0	X	0	=	$0	$0
Cedar Lawn Building	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Town Mining Company Building	$0	X	0	+	$0	X	0	=	$0	$0
Claymont Court	$0	X	0	+	$0	X	0	=	$0	$0
Cold Spring Building	$0	X	0	+	$0	X	0	=	$0	$0
Duffields Depot	$0	X	0	+	$0	X	0	=	$0	$0
Entler Hotel	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood Building	$0	X	0	+	$0	X	0	=	$0	$44,500
Falling Spring Complex	$0	X	0	+	$0	X	0	=	$0	$0
Fruit Hill	$0	X	0	+	$0	X	0	=	$0	$33,000
Bellevue	$0	X	0	+	$0	X	0	=	$0	$0
Gap View Farm District	$0	X	0	+	$0	X	0	=	$0	$200,000
Gibson-Todd House	$0	X	0	+	$0	X	0	=	$0	$0
Glenburnie Building	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Grand View School Building	$0	X	0	+	$0	X	0	=	$0	$0
Beverly	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Colored Free School	$0	X	0	+	$0	X	0	=	$0	$0
Halltown Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Harewood Building	$0	X	0	+	$0	X	0	=	$0	$51,900
Harpers Ferry Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Harpers Ferry National Historic Park	$0	X	0	+	$0	X	0	=	$0	$12,275
Happy Retreat	$0	X	0	+	$0	X	0	=	$0	$0
Hazelfield Building	$0	X	0	+	$0	X	0	=	$0	$0
Blakeley	$0	X	0	+	$0	X	0	=	$0	$0
Hopewell Building	$0	X	0	+	$0	X	0	=	$0	$0
Hydroelectric Power Plant (Potomac Power Plant)	$0	X	0	+	$0	X	0	=	$0	$0
Boisestone's Place	$0	X	0	+	$0	X	0	=	$0	$0
Jefferson County Alms House	$0	X	0	+	$0	X	0	=	$0	$0
Lee-Longsworth House	$0	X	0	+	$0	X	0	=	$0	$0
Linden Spring	$0	X	0	+	$0	X	0	=	$0	$0
Bolivar Heights - Schoolhouse Ridge	$0	X	0	+	$0	X	0	=	$0	$14,250
Cool Spring	$0	X	0	+	$0	X	0	=	$0	$0
Media Farm	$0	X	0	+	$0	X	0	=	$0	$52,500
Middleway Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Miller's Tavern	$0	X	0	+	$0	X	0	=	$0	$0
Morgan's Grove District	$0	X	0	+	$0	X	0	=	$0	$0
Nash-Bradley Farm	$0	X	0	+	$0	X	0	=	$0	$52,250
New Opera House	$0	X	0	+	$0	X	0	=	$0	$0
Richwood Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rippon Lodge	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Scrabble Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Shepherd's Mill	$0	X	0	+	$0	X	0	=	$0	$0
Shepherdstown Boundary Increase	$0	X	0	+	$0	X	0	=	$0	$9,500
Shepherdstown Historic District	$0	X	0	+	$0	X	0	=	$0	$18,750
Shipley School	$0	X	0	+	$0	X	0	=	$0	$0
St. George's Chapel	$0	X	0	+	$0	X	0	=	$0	$0
St. Peter's Roman Catholic Church	$0	X	0	+	$0	X	0	=	$0	$0
Storer College	$0	X	0	+	$0	X	0	=	$0	$0
Strider Farm	$0	X	0	+	$0	X	0	=	$0	$24,750
Tattersall Property	$0	X	0	+	$0	X	0	=	$0	$0
Elmwood-on-the-Opequon	$0	X	0	+	$0	X	0	=	$0	$0
York Hill	$0	X	0	+	$0	X	0	=	$0	$87,500
Rock Spring Child Learning Center	$0	X	0	+	$0	X	0	=	$0	$0
Wee Disciples Christian Enrichment Program	$0	X	0	+	$0	X	0	=	$0	$0
Grubb Farm	$0	X	0	+	$0	X	0	=	$0	$0
The Hermitage	$0	X	0	+	$0	X	0	=	$0	$0
Little Elmington	$0	X	0	+	$0	X	0	=	$0	$0
Piedmont	$0	X	0	+	$0	X	0	=	$0	$0
Potomac Mill's/Boteler's Cement Mill	$0	X	0	+	$0	X	0	=	$0	$0
Prato Rio	$0	X	0	+	$0	X	0	=	$0	$0
Rellim	$0	X	0	+	$0	X	0	=	$0	$0
Rion Hall	$0	X	0	+	$0	X	0	=	$0	$0
Rockland	$0	X	0	+	$0	X	0	=	$0	$14,000
Rock Spring	$0	X	0	+	$0	X	0	=	$0	$0
Rosebrake	$0	X	0	+	$0	X	0	=	$0	$0
Rose Hill	$0	X	0	+	$0	X	0	=	$0	$9,000
Shannondale Springs	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Sunnyside Farm	$0	X	0	+	$0	X	0	=	$0	$11,250
Tackley Farm	$0	X	0	+	$0	X	0	=	$0	$9,000
Traveler's Rest - National Historic Lanmark	$0	X	0	+	$0	X	0	=	$0	$0
Vinton	$0	X	0	+	$0	X	0	=	$0	$0
White House	$0	X	0	+	$0	X	0	=	$0	$0
Winward	$0	X	0	+	$0	X	0	=	$0	$0
Woodbury	$0	X	0	+	$0	X	0	=	$0	$0
Woodlawn	$0	X	0	+	$0	X	0	=	$0	$0
Downtown Charles Town Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Bollman Bridge, Wernwag or Latrobe's	$0	X	0	+	$0	X	0	=	$0	$0
Niswarner Tract	$0	X	0	+	$0	X	0	=	$0	$10,125
							Total Loss to Structure Use & Function		$3,290,870	$14,157,160

2.2 PROFILING HAZARDS: WILDFIRE MAP



APPENDIX 2: CALCULATION METHODOLOGIES

The purpose of this appendix is to provide insight as to the specific calculation methodologies employed throughout the creation of this plan. This information has been moved to an appendix so as not to hinder the readability and usability of the plan sections above. The following calculations are described: Worksheet #3a, municipal designations and calculations in Worksheet #3b, and Worksheet #4. Notes on Worksheet #4 are further divided by hazard.

Worksheet #3a

The purpose of Worksheet #3a is to give an overview of the numbers of structures and people as well as the potential values of structures within a particular hazard area. In this sense, Worksheet #3a does not represent a "loss estimate". The percentages were broadly estimated based on the coverage of hazard profile mapping that was denoted as a higher risk. For Worksheet #3a, the estimating process was not quantitative.

Further, risk was a factor of the hazard itself (e.g., on a map with both low and moderate risk areas depicted, a percentage was determined for the moderate risk area only. On a map with only moderate and high areas, the percentage represents "high". Finally, on maps with low, moderate, *and* high areas, the percentage represents "moderate" plus "high"). In such cases as the "thunderstorm" hazard, where the entire county can be said to be at equal risk, 100 percent (100%) of the values, structures, and people were considered to be in the hazard area.

Worksheet #3b

Worksheet #3b contains a composite list for the entire county as well as subsets for each participating governmental jurisdiction. Calculations were necessary to obtain accuracy on the jurisdictional subsets. For individual assets (i.e., a single facility), the entire value contained on the composite county list was transferred to the subset corresponding to the jurisdiction in which the facility is located.

Other values, though, were "group" values. These assets included *Bridges*, *Railroads*, *Residential*, and "*Roads*". The *Residential* figure could be determined based on the number of housing units in each jurisdiction per US Census data. The

jurisdictional number of housing units was multiplied by the median value of a housing unit (again, from the US Census) to arrive at the jurisdictional *Residential* figure.

From there, the percentage of the total *Residential* figure that the jurisdiction comprised was calculated. For instance, if a Jurisdiction X's *Residential* value was $10,000,000 and the entire county's was $100,000,000, a percentage of 10% was calculated. The other "group" values (listed on the composite county list) were multiplied by this percentage to estimate individual jurisdictional values. For example, using the percentage calculated above for Jurisdiction X and based on a sample value of $500,000,000 for *Roads*, the following calculation was performed:

Jurisdiction X *Roads* Value = $500,000,000 x 10%
Jurisdiction X *Roads* Value = $5,000,000

The same calculation was repeated to determine *Railroad* and *Bridge* values.

Worksheet #4

The basic methodology used to calculate loss estimates is described in Section 2.4. The actual process used to determine damage percentages and displacement days, though, is discussed here.

- *Dam Failure*: Dam failure was considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). Residential assets were identified in the risk area. As such, the composite residential value for the county was multiplied by 0.05%; the contents value was multiplied by 0.02%. No functional loss was considered for residential assets.
- *Drought*: Structural and contents losses were assumed to be 0%. The functional losses were only considered for agricultural assets, and water distribution systems.
- *Earthquake*: Historical records show that earthquake damage is usually light due to the relatively small magnitude of earthquakes that occur in the State of West Virginia. As such, structural losses were set at zero (0). Contents losses were set at 0.25% as small no fastened objects in structures could be damaged or destroyed. Displacement days were set at a maximum of one (1).

- *Flooding*: Flooding was also considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). For specific facilities in the hazard area, a structural damage percentage of 2% was used. For "group" assets (such as *Residential*), an estimated structural percentage of 0.01% was used, based on historical evidence. For specific assets, one (1) to seven (7) displacement days were estimated; one (1) for closure during the event and another for clean-up.
- *Hazmat:* Areas located near major transportation infrastructure, or near fixed facilities that utilize hazardous materials received a contents loss percentage of 0.25%, and structural losses were set at zero (0) as no damage would be sustained to the structure. Functional downtime was estimated at no more than one (1) day.
- *Landslide:* Landslide was also considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). For specific facilities in the hazard area, a structural damage percentage of 2-10% was used. Losses to contents were set at 3-10%, and displacement days were estimated at two (2) to three (3) days.
- *Land Subsidence*: Land Subsidence was also considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). For specific facilities in the hazard area, a structural damage percentage of 2.5-5% was used. Losses to contents were set at 5-10%, and displacement days were estimated at two (2) to five (5) days.
- *Severe Thunderstorm & Hail*: A base structural damage percentage of 0.05 – 0.50% was applied to all assets (derived from historical figures). An estimated contents damage percentage of 0% was applied to all assets. It was assumed that thunderstorms and hail would likely result in minimal functional losses, 0.25 displacements days were estimated.
- *Severe Wind & Tornado*: A base structural damage percentage of 0.10 – 0.50% was applied to all assets (derived from historical figures). An estimated contents percentage of 0% was also applied to all assets. A functional downtime of one (1) day was utilized and was based on historical occurrences of severe wind and tornado events, displacement times were set at zero (0).

- *Severe Winter Storm*: A base structural damage percentage of 0.10 – 0.50% was applied to all assets (derived from historical figures). Contents losses were estimated to be minimal and were thus assigned a 0% figure. A functional downtime of one (1) to three (3) day was utilized and was based on historical occurrences of severe winter storm events, displacement times were set at zero (0).
- *Terrorism*: Terrorism was also considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). Structural damage percentages were set at 5 – 10% if it was likely that a terrorist incident would affect the structure. These assets were also assigned 7 to 14 displacement day. Other facilities, such as municipal offices, where a disgruntled resident or employee presents the greatest risk considered "terrorism", were only assigned a single displacement day.
- *Wildfire*: Wildfire was also considered a "site-specific hazard". As such, if an asset was not deemed vulnerable to the hazard, all percentages and displacement days were set at zero (0). Structural damage percentages were set at 10-15%, and losses to contents were set at 20-25%. Displacement days were estimated at 7 to 10 days, with a functional downtime of three (3) days.

APPENDIX 3: GLOSSARY

This appendix contains definitions of commonly-used terms throughout the *Jefferson County Multi-Jurisdictional All-Hazards Mitigation Plan*. These terms are considered because they are either unique to the mitigation planning process, or used in a different way in a mitigation context as compared to other emergency preparedness contexts. This appendix also contains a list of the acronyms used throughout this document and their corresponding definitions.

Definition of Terms

Asset Inventory: A listing of critical facilities, historical facilities, facilities housing vulnerable populations (e.g., schools, nursing homes, hospitals), large economic assets in the community, and other, community-designated special considerations on which a risk assessment is completed.

Benefit Cost Review: A process by which a community considers both the potential benefits of mitigation projects in comparison with their costs. It is a way to determine if the costs are achievable and feasible based on the benefits that can be realistically anticipated.

Emergency Services Project: Action that protects people and property during, and immediately after, a disaster or hazard event.

Hazard Risk Assessment: The process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from hazards by assessing the vulnerability of people, buildings, and infrastructure to hazards.

Loss Estimate: A mathematical calculation of the potential damage – structural, contents, and functional – a facility and/or community could incur as a result of a specific hazard.

Mitigation: Activities providing a critical foundation in the effort to reduce the loss of life and property from natural and/or man-made disasters, by avoiding or lessening the impact of a disaster, and providing value to the public by creating safer

communities. Mitigation seeks to fix the cycle of disaster damage, reconstruction, and repeated damage. These activities or actions, in most cases, will have a long-term sustained effect.

Natural Resource Protection: Action that, in addition to minimizing hazard losses, also preserves or restores the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Prevention: 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.

Property Protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area.

Public Education and Awareness Project: Action to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

Robert T. Stafford Disaster Relief and Emergency Assistance Act: Section 322 was added as part of the Disaster Mitigation Act (DMA) of 2000 to take a new and revitalized approach to mitigation planning. This new section emphasizes the need for local entities to closely coordinate mitigation planning and implementation efforts. In succinct terms, this is the mandate requiring local communities to compile and adopt a mitigation plan as an eligibility requirement for mitigation funding.

STAPLEE Method: A technique for identifying, evaluating, and prioritizing mitigation actions based on existing local conditions. It advocates an analysis based on the following conditions: social, technical, administrative, political, legal, economic, and environmental.

Structural Project: Action that involves the construction of structures to reduce the impact of a hazard.

Definition of Acronyms

AED – Automated External Defibrillator

ALF – Animal Liberation Front

AP - Action Plan

ARC – American Red Cross

BFE – Base Flood Elevation

CAD – Computer Aided Dispatch

CBD - Central Business District

CDBG - Community Development Block Grant

CERT - Community Emergency Response Team

CFR - Code of Federal Regulations

CFS – Commodity Flow Study

COOP – Continuity of Operations Plan

CPC - Core Planning Committee

CPG 201 - Comprehensive Preparedness Guide 201

CPR – Cardiopulmonary Resuscitation

CRS - Community Rating System

DHS - US Department of Homeland Security

DMA - Disaster Mitigation Act

DOH – Division of Highways

DOT – Department of Transportation

EAS – Emergency Alert System

EHS – Extremely Hazardous Substance

EMPG - Emergency Management Performance Grant

EMS - Emergency Medical Services

EMT – Emergency Medical Technician

EOP – Emergency Operations Plan

EPA – United States Environmental Protection Agency

EPCRA – Emergency Planning and Community Right-to-Know Act

FBI – Federal Bureau of Investigation

FE – Functional Exercise

FEMA - Federal Emergency Management Agency

FIMA – Federal Insurance and Mitigation Administration

FIRM - Flood Insurance Rate Map

GIS - Geographic Information System

HAZUS – Hazards United States

HMEP - Hazardous Materials Emergency Preparedness

HMGP - Hazard Mitigation Grant Program

HMP – Hazard Mitigation Plan

HRA - Hazard Risk Assessment

HSGP - Homeland Security Grant Program

HVAC – Heating, Ventilation and Air Conditioning

ICS – Incident Command System

IJDC – Infrastructure and Jobs Development Council

ISO – Insurance Services Office

JCBOE – Jefferson County Board of Education

JCDA - Jefferson County Development Authority

JCECC – Jefferson County Emergency Communications Center

JCESA - Jefferson County Emergency Services Agency

JCHD – Jefferson County Health Department

JCHS – Jefferson County High School

JCHSEM - Jefferson County Homeland Security and Emergency Management

JCPSD - Jefferson County Public Service District

JIS – Joint Information System

JMH – Jefferson Memorial Hospital

LEPC - Local Emergency Planning Committee

LIDAR – Light Detection and Ranging

MARC – Maryland Area Regional Commuter Train Service

MHI - Median Household Income

MMI – Modified Mercalli Intensity

MOU – Memorandum of Understanding

MSA - Metropolitan Statistical Area

MSDS – Materials Safety Data Sheet

NAACP – National Association for the Advancement of Colored People

NCDC - National Climatic Data Center

NFIP - National Flood Insurance Program

NFPA – National Fire Protection Association

NHMA – Natural Hazard Mitigation Association

NIMS – National Incident Management System

NOAA – National Oceanic Atmospheric Administration

NOS – Non-Organic Substance

NRCS – Natural Resources Conservation Service

NWS - National Weather Service

OSHA – Occupational Safety and Health Administration

PDM – Pre-Disaster Mitigation

PDSI – Palmer Drought Severity Index

PGA – Peak Ground Acceleration

POD – Point of Dispensing

PSD - Public Service District

RD – Rural Development

RESA – Regional Education Service Agencies

RFP – Request for Proposal

SARA – Superfund Amendment and Reauthorization Act

SCBG – Small Community Block Grant

SHMO – State Hazard Mitigation Officer

SIRN – Statewide Interoperable Radio Network

SOG - Standard Operating Guideline

STAPLEE - Social, Technical, Administrative, Political, Legal, Environmental, Economical

TTX – Tabletop Exercise

THIRA - Threat and Hazard Identification and Risk Assessment

UPS – Uninterruptible Power Supply

U.S.C. – United States Code

USDA - United States Department of Agriculture

USGS – United States Geological Survey

VFD – Volunteer Fire Department

WFAS-MAPS – Wildland Fire Assessment System Maps

WMA - Wildlife Management Area

WMD – Weapon of Mass Destruction

WRPMA – Water Resources Protection and Management Act

WTP - Water Treatment Plant

WVC - West Virginia Code

WVDA – West Virginia Department of Agriculture

WVDEP – West Virginia Department of Environmental Protection

WVDHSEM - West Virginia Division of Homeland Security and Emergency Management

WVDMAPS – West Virginia Department of Military Affairs and Public Safety

WVDNR – West Virginia Department of Natural Resources

WVSP – West Virginia State Police

WVU - West Virginia University

WWTP - Waste Water Treatment Plant

APPENDIX 4: EVIDENCE OF PUBLIC INVOLVEMENT

This appendix contains copies of sign-in sheets and advertisements for any meetings held as part of the hazard mitigation planning process. Planning committee meetings were not advertised; consequently, only sign-in sheets are provided for those. All public meetings were advertised.

The Jefferson County Risk Assessment and Mitigation Planning Committee of Jefferson County Homeland Security and Emergency Management meets each June to monitor the progress of this plan. The plan is updated on a 5-year rotation. This report is distributed to the Jefferson County Commission, WV Division of Homeland Security and Emergency Management, and FEMA, Region III.

2012 Annual Review of Risk Assessment & Mitigation Plan

Jefferson County,
West Virginia

Jefferson County Homeland Security and Emergency Management
Risk Assessment & Mitigation Planning Committee
July 24, 2012
Annual Review of Mitigation Plan

Jefferson County Homeland Security and Emergency Management's Risk Assessment and Mitigation Planning Committee met at the Jefferson County EOC on June 24, 2012 at 0900 hours. Present were: Mason Carter, Jefferson County Department of Engineering and Chairman of the Risk Assessment and Mitigation Planning Committee; Barbara Miller, Director, JCHSEM; Terri Mehling, Deputy Director JCHSEM; Sandy Hite, Jefferson County Health Department; and Jennifer Brockman, Director of Jefferson County Planning and Zoning.

Mr. Carter, Risk Assessment Committee Chairman opened the meeting and entertained introductions. He then turned the meeting over to Director Miller.

Motion by Mason Carter, Second by Sandy Hite to accept the minutes of the June, 2011 meeting. All were in favor.

Old/New Business

Ms. Miller explained the purpose of the Risk Assessment and Mitigation Planning Committee annual review of each goal and objective. These projects, which were identified by the committee and adopted along with the plan by the Jefferson County Commission and the Municipalities in Jefferson County, begin on page #10 of the plan. Some of the goals and objectives are not able to be accomplished to due lack of funding. However, many have been accomplished and will be reported on today. Organizations with a responsibility that could not attend today's meeting may send a written report. Also, anyone who thinks of anything additional should submit additional information to Director Miller by email. It was noted that the entire plan can be accessed on-line at:
http://www.jeffersoncountywv.org/uploads/homeland/Complete%20HMP%202008%20Public.pdf

GOAL 1: Protect Jefferson County's agricultural assets and local water supply from the negative effects of drought.

Objective 1.1 Increase the stability of the public drinking water supply in Jefferson County.

Strategy 1.1.1: Provide for an emergency backup power supply at all water treatment facilities in Jefferson County.

2012-Frank Welch, Public Works for Shepherdstown reported that they have installed 20 new valves on their water system, preventing leaks that they have experienced in the past. Additionally, they have a generator on their main pump station now. The Public Service District has generators for most of their facilities at this time. Additional Prime Power Surveys are being encouraged for all public water suppliers in Jefferson County.

2011-Ms. Miller reported that Prime Power Surveys were completed for all facilities within Jefferson County PSD, Charles Town Utilities, and the Corporation of Shepherdstown. These include whether or not they have a generator, the address and lat/long of each facility, facility point of contact and emergency

phone numbers, name of power company, total amp draw, max voltage, service drop type, and size of generator required for each site, length of cable required to complete connection, and if there is staff available to maintain a generator. This information will be used in case of an emergency when the power is out for an extended period of time. While, the state only required (4) Prime power surveys per year, getting them done for all critical infrastructure in the County is the goal by JCHSEM. We still need to get prime power surveys from Corporation of Harpers Ferry and Jefferson Utilities.

2010-Jefferson County PSD was unavailable to report. Ms. Miller noted Charles Town wants to get a grant to put in a generator. After locating a generator they realized it would cost more to have the building wired to accept the generator than the cost of the generator. The State Department of Homeland Security & Emergency Management is now requiring that County Homeland Security and Emergency Management Officers do prime power surveys on all critical infrastructures. That project will be multi year with a requirement of only 4 a year. The first two requirements are the EOC and back up location. The other two will be chosen within the county's inventory of buildings.

Objective 1.2 Increase public awareness as to the agricultural effects of drought, as well as the ramifications to the public water supply.

Strategy 1.2.1: Develop an informational brochure to distribute to local farmers and residents, encouraging citizens to take water saving measures.

2012: See 2011 Comments below. THIS STRATEGY HAS BEEN COMPLETED

2011: Extension Service has some information that is distributed to agricultural entities.

2010- NRCS, Farm Services and USDA distribute information regularly. Public service announcements are also made regularly on local radio stations. USDA was unavailable to report.

Strategy 1.2.2: Consider passing ordinances to prioritize or control water use, particularly for emergency situations such as firefighting.

2012: A copy of the Extension Service's Drought Management Handbook was obtained. The Jefferson County Emergency Operations Plan now has a drought annex.

2011: Jane Tabb of WVU Extension Service reported that former WVU Extension Agent, Craig Yohn, developed a Drought Management Handbook. A copy of the handbook is at JCHSEM, as well as, in the WVU Extension Service office.

2010: Ms. Miller will have to review previous notes.

Goal 2: Reduce the potential effects of earthquakes in Jefferson County

Objective 2.1 Educate the public as to the potential for earthquakes in West Virginia, specifically Jefferson County.

Strategy 2.1.1 Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes

2012: Ms. Miller reported on the Earthquake in August, 2011 near Louisa, Virginia that was felt in Jefferson County. A link to FEMA's earthquake information has been added to the JCHSEM website.

2011: Ms. Miller reported on the Earthquake reports from July 16, 2010 with a 3.6 magnitude and an epicenter 10 miles NW of Rockville, MD that was felt in several places in Jefferson County.

2010: Ms. Miller noted Jefferson County has a possibility of a level 2 earthquake on the Richter scale. Ms. Mehling reviewed the earthquake that took place in Ottawa, Canada that was felt as far as Morgantown and Wheeling, WV. Mr. Sherwood mentioned adding a link onto the county website.

Strategy 2.1.2: Encourage the implementation of structural mitigation techniques such as wall bracing, reinforcing walls with fiber materials, the installation of dampers or vibration isolation bearings in new construction.

2012: Mason Carter, JC Engineering Department will check the International Building Codes, which have been adopted by Jefferson County, to see if there are any specific ordinances. This will be looked at in the 2013 Mitigation Planning process.

2011: According Mason Carter, JC Engineering, we do not have any specific ordinances for earthquakes. The committee encouraged Mason to encourage the Engineering Department to create ordinances.

Goal 3: Reduce the negative effects of flooding in Jefferson County and the Corporation of Shepherdstown

Objective 3.1 Target owners of properties within identified hazard areas for additional outreach regarding mitigation and disaster preparedness.

Strategy 3.1.1: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).

THIS STRATEGY HAS BEEN COMPLETED AND IS ONGOING
2012: Letters continue to go to addresses in the floodplain each year as a part of the CRS. This strategy is ongoing and complete.
2011: Ms. Mehling reported on sending letters to the addresses that are in or near the floodplain. Director Miller reported that since the FEMA flood maps changed, we have some addresses that are in the floodplain now that were not before; and some that were not before that is now.

2010: Ms. Miller reported that Ms. Mehling and Ms. Maggio sent out letters to residents who are in or near a floodplain explaining to them why they should consider flood insurance and mitigation projects. Status Notes from 2008: Completed Yearly, the JCHSEM, as a part of their requirements for the CRS of the National Flood Insurance Program, mails letters of notice to residents with in the floodplain on repetitive loss areas about property protection and flood insurance.

Strategy 3.1.2: Continue to hold local courses on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.

2012: Director Miller reported that a class was taught in September, 2011 for insurance agents as a part of National Preparedness Month.

2011: Director Miller doesn't know if anyone has been appointed to teach those classes since Mr. Sobota left his position. She will check with Kevin Sneed at WVDHSEM to find out if there is anyone to do that.

2010: Ms. Miller noted local courses on National Flood Insurance Program had been held yearly until Richard Sobota of ISO switched careers. A new person has come aboard and JCHSEM is waiting on contact information from Robert Perry so we can move ahead with scheduling classes.

Status Notes from 2008: Ongoing, held yearly, Richard Sobota, of ISO comes to the community, as requested and paid for by the County to teach courses about the NFIP to Insurance Agencies, Real Estate Agents and Banking institutions.

Objective 3.2 Evaluate and update existing floodplain ordinances to meet or exceed the NFIP Standards.

Strategy 3.2.1: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.

2011: THIS STRATEGY HAS BEEN COMPLETED
Director Miller reported that the County's new ordinance is being used as the model ordinance for the state: Upon checking with the WVDHSEM's NFIP department, Richard reported that Bolivar updated—(exact date was not on the form), 2010; Charles Town, updated 12/18/09; Harpers Ferry, updated 12/18/09; Shepherdstown, updated 12/18/09; Ranson, updated 12/18/09

2010: Mr. Carter reported new ordinances were adopted December 18, 2009 by the Jefferson County Commission as well as Shepherdstown and Harpers Ferry. Ranson is currently working on adopting new ordinances.

Strategy 3.3.1: Provide additional training to county and municipal development officials on NFIP Requirements.

THIS STRATEGY HAS BEEN COMPLETED

2011: A workshop for local officials was held in January, 2011, taught by JCHSEM Director, Barbara Miller, Robert Perry, formerly of WVDHSEM, Kevin Sneed, WVDHSEM, and Mari Radford from FEMA. All County and Municipalities in Jefferson and the Eastern Panhandle were invited.

2010: Ms. Miller noted a meeting was held in January regarding new digital maps on FEMA's website. Flood areas have changed. Ms. Miller noted if you think your property is not in the floodplain, you have to do a LOMA (Letter of Map Amendment) which puts the burden of proof on the property owner. Then you pay for an elevation certificate on your structure, and as pay an engineer to complete the study. Mr. Carter noted elevation certificates are running anywhere from $800-$1200.

Strategy 3.4.1: Support Jefferson County's efforts to continue the CRS program.

2012: Director Miller reported that Jefferson County received their plaque in the Spring, 2012 as a Class 8 CRS Community.

2011: Director Miller advised that Jefferson County has been notified that they will advance to a Class 8 Community, resulting in a 10% discount to residents of the unincorporated areas of Jefferson County.

Status Notes from 2008: History: Jefferson County submitted an application to enter the CRS Program in 2005. A letter was received from Tom Brett, indicating that the County was being recommended to FEMA for entry into the program in 2006. County has been named a CRS Community as a Class 9. Governor Joe Manchin presented County Commission with an award as the first County in West Virginia to become a CRS Community in August, 2007. Jefferson County has been named a CRS Community.

Strategy 3.4.2 Provide training to municipalities on the CRS program and encourage them to participate. THIS STRATEGY HAS BEEN COMPLETED, and also on-going.
2011: Jefferson County is being upgraded to a Class 8 Community, for a 10% reduction to flood insurance premiums. CRS was covered in the workshop that was held in January, 2011 in Jefferson County for local officials. Additionally, Director Miller serves as a member of the Board of Directors for the WV Floodplain Managers Association and is the lead for "Encouraging local governments to become a part of the CRS." She gave a presentation to the 2011 WV Floodplain Manager's Conference in Canaan Valley in April, 2011.

2010: Jefferson County is a Class 9, or a 5% reduction Community.

Status Notes from 2008: Robert Perry, NFIP State Coordinator, has been invited to the County to conduct NFIP training. Ms. Miller noted if the municipalities want to go forward with the CRS program we have encouraged them to participate. They must fill out the paperwork and complete the training to become a CRS Community. JCHSEM has given them books and copies of information they need in order to become a CRS Community. As of 2007, there is a 5% reduction for citizens living in unincorporated areas of the County.

Strategy 3.4.3: Obtain updated information on the number of NFIP policyholders in Jefferson County

And its municipalities.

2012: This information is received yearly from the WV Division of Homeland Security and Emergency Management's Mitigation Department.

2011: The 2010 list was updated and sent to the state last year. We have not received the information for the 2011 update. No changes are expected from the last report.

2010: Ms. Miller reported we are waiting for this year's current report for the number of NFIP policyholders in the county and municipalities. The report (AW-242 Form) is generated by Tim Keaton and Robert Perry at WV Department of Homeland Security & Emergency Management yearly.

Strategy 3.5.1: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.

THIS STRATEGY HAS BEEN COMPLETED.

2011: Director Miller and Deputy Director Mehling drove to each of the repetitive loss properties last summer, mapped them, took pictures of them, and gathered additional information about them.

Status Notes from 2008: Conducted yearly. An updated list (January 31, 2003) of repetitive loss properties was obtained from ISO (Insurance Services Office) for properties located in the unincorporated areas of the County: ISO operates the National Flood Insurance Program for FEMA. There are 20 properties identified as repetitive loss properties. Of these, two properties cannot be identified by their descriptions, one no longer has a structure on the property as it was destroyed in the last flood, four owners were offered mitigation, but were not interested, three are not primary residences, three were acquired under HMGP #DR-1168 and are now managed as open space, one was elevated to the Base Flood Elevation (BFE) under HMGP #DR-1168, one owner has shown no interest in mitigation efforts, another was elevated to the BFE, paid for by the property owner. The remaining properties are prime candidates for mitigation if the property owners are interested. Ms. Miller reported we are waiting for this year's report for the number and location of all repetitive loss properties throughout the county. This report is sent once a year by Tim Keaton and Robert Perry of WV Department of Homeland Security & Emergency Management.

Strategy 3.5.2: Develop a database of information on all repetitive loss properties including maps.

2011: THIS STRATEGY HAS BEEN COMPLETED; see comments from 2010.
2010: Ms. Miller reported the GIS Department has completed this task.

Strategy 3.5.3: Identify owners of repetitive loss properties who are interested in participating in future property acquisition and relocation projects.

2012: Director Miller reported that due to the recent storm, HMGP funds will become available statewide for mitigation projects. She indicated that projects would need to be done through the

Engineering Department for the County. The process starts off with a public meeting to see who, if anyone is interested in having their properties mitigated. It is only willing buyer/willing seller. She advised Mason Carter to contact Tim Keaton at WVDHSEM if they are interested in doing a project.

2011: Director Miller reported that one additional property had been mitigated in the past year that was a part of an earlier project that had not been completed when it should have been. That property has now been returned to be natural condition and will be managed as open space. We have not been able to identify any full-time owners who wish to do a mitigation project. Most that are left are second homes or vacation homes.

2010: Ms. Miller reported there is no funding available to complete this strategy.

Objective 3.6 Update flood hazard mapping.

Strategy 3.6.1: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.

2012: Director Miller informed the group that the Map Modernization Program has been replaced with the RISKMAP Program at FEMA. This should be considered as a strategy in the new 2013 Risk Assessment and Mitigation Plan.

2011: THIS STRATEGY HAS BEEN COMPLETED. Director Miller reported that the FEMA mapping had been completed. Some people who were not in the floodplain before are now; some, who were before, now are not.

2010: Ms. Miller reported at this time FEMA is working on the modernization project.

Strategy 3.7.1: Work with WV Division of Highways to identify areas of frequent roadways flooding and develop mitigation strategies.
2011: THIS STRATEGY HAS BEEN COMPLETED.
2010: Ms. Miller noted JCHSEM has identified all roads that are submerged in a flood.

Ms. Miller announced there is now a WV Floodplain Managers Association. Roger Goodwin is the Vice President of that organization and Ms. Miller is on the board. They are looking at issues that are pertinent to the state of WV with flooding.

Goal 4: Lessen hail damage to property and agriculture assets in Jefferson County.

Objective 4.1: Provide local residents with advanced warning of impending hailstorms.

Strategy 4.1.1: Coordinate efforts with the local media to post advance warnings of hailstorms.

Status Notes: We have coordinated with the National Weather Service on this issue.

2012: Strategy is ongoing. The National Weather Service has a new program called Weather Ready Nation that they are launching.

2011: Director Miller noted that this strategy is still on-going. The deputy director sends out weather updates to a large list.

2010: Ms. Miller noted this strategy is ongoing. Jennifer Maggio has worked with the media and posted information on our website, and Facebook.

Strategy 4.1.2: Encourage the use of NOAA weather radios among residents that continuously broadcast National Weather Service (NWS) forecasts and provide direct warnings to the public For natural, technological, and man-made hazards.

2011: Dr. Hoff reported that they have purchased NOAA Weather Radios for the Bus Garage and for the school that was built after the program where we distributed them a few years ago.

Status Notes: Jefferson County utilizes Storm Ready and has weather radios throughout the county. Ms. Miller reported all weather radios in JCHSEM have been replaced. Weather radios have also been placed in local schools. Jefferson County has been reaccredited as a StormReady Community.

Strategy 4.2.1: Encourage the use of laminated glass in window panes during all new construction.
Status Notes: Ongoing, during new construction.

2012: Mr. Carter will look at the building code and use the information for the 2013 planning process.

2011: Mr. Carter reported that the Jefferson County building code does not encourage, or require it.

GOAL 5: Take measures to lessen the probability and severity of hazardous materials incidents in Jefferson County and the Cities of Charles Town and Ransom.

Objective 5.1 Conduct a Hazardous Materials Survey or Commodity Flow Study to better Understand the nature and extent of hazardous materials risks throughout the county.

Strategy 5.1.1: Apply for Hazardous Materials Emergency Preparedness (HMEP) grant from WVDHSEM to finance the development of a Commodity Flow Study to determine what hazardous materials are used, stored, and shipped through the county.

THIS STRATEGY HAS BEEN COMPLETED
2012: Director Miller reported that the Jefferson County LEPC did receive the grant and has completed a new 2012 Commodity Flow Study that has been shared with the Emergency Responder Community.

2011: Director Miller reported that the LEPC is applying for a grant to update the Jefferson County Commodity Flow Study during 2012.

2010: Ms. Miller reported the Commodity Flow Study was completed by the LEPC in 2007 and identified all hazardous materials that have been stored in or traveling through the county. Copies of the study were distributed to all Fire Companies at that time.

Status Notes: The Jefferson County LEPC conducted a countywide Commodity Flow Study in 2007 to identify all hazardous materials that are either stored or traveling through the county and its municipalities.

Strategy 5.1.2: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Jefferson County and the City of Ranson.

2011: THIS STRATEGY HAS BEEN COMPLETED

2010: Ms. Miller noted this study is also included in the Commodity Flow Study of Strategy 5.1.1. The LEPC was concerned with propane tanks and propane storage. JCHSEM currently has the 2008 & 2009 Propane Risk Assessments. The 2008 Propane Risk Assessment looked at larger propane tanks and the 2009 study looked at smaller propane tanks. There is now a better understanding of where propane tanks are located and what areas need to be evacuated if there was an emergency. A propane table top exercise followed in October 2009 with AmeriGas. Ms. Miller reviewed the exercise.

Objective 5.2 Increase public safety and awareness with regards to hazardous materials incidents.

Strategy 5.2.1: Increase education and awareness about shelter-in-place opportunities. Jefferson County LEPC to develop and deliver information to all county residents through community groups and/or Publications, information on how to shelter in place and when it is appropriate to do so.

2011: Need to find the Shelter In Place Brochure and give out at fair and CERT Classes.

2010 Ms. Miller noted JCHSEM hands out pertinent information at the Jefferson County Fair on how to shelter in place and when it is appropriate to do so. The Jefferson County Board of Education has developed a School Crisis Plan for man-made disaster events or acts of God.

Status Notes: The Jefferson County Board of Education has developed a School Crisis Plan for man-made or acts of God disaster events. Two new sections have been added to the Plan-Terrorism and Sheltering in Place. Additionally, they are training school personnel about sheltering in place and have ordered supplies to keep in the schools for such emergencies. An exercise for shelter in place is being held when the teachers and students get back to school in August. Exercises will be held in the fall of 2004 at the schools.

Objective 5.3 Ensure adequate training and resources for emergency organizations and personnel.

Strategy 5.3.1: Teach Community Emergency Response Team (CERT) classes in Jefferson County.

2012: Terri Mehling, CERT Program Coordinator, reported that this is ongoing, with a class to be taught in the fall of 2012.

2011: Terri Mehling, CERT Program Coordinator, reported that approximately 200 people have started the training; about 175 have finished it; and about 50-60 of those are NIMS trained. One class has been taught this year, and another will start in the September/October timeframe. The curriculum has changed and a grant from Volunteer, WV! Will pay to have new instructor and participant guides printed for this year.

2010 Terri Mehling, CERT Program Coordinator reported that approximately 200 people have started the training and about 150 have finished.

Goal 6: Protect Jefferson County's and Harpers Ferry's populations and critical assets from Landslides.

Objective 6.1 Enact ordinances to limit development in areas prone to landslide.

Strategy 6.1.1: Develop ordinances requiring logging companies to clean and replant areas that they log. The ordinance should include the amount of replanting that is expected.

2012: Jennifer Brockman, Director of Planning and Zoning reported that there is a buffer requirement. Also there is an RFQ for stormwater management with the Chesapeake Bay requirements.
2011: Mr. Carter reported that this is covered in the Subdivision Ordinances.

2010: Mr. Cater noted there are no ordinances at this time. Mr. Carter noted there is an ordinance for mountain side logging being developed. Ms. Miller asked Mr. Carter to have Roger Goodwin to review this strategy.

Objective 6.2 Provide information to the public on best methods to protect mountainous properties from landslides.

Strategy 6.2.1: Develop and distribute educational materials concerning erosion and sediment control and slope stabilization to assets located in landslide prone areas, including the proper installation of erosion control blankets, turf reinforcement mats, silt fences, filter bags, channel dikes and dams and turbidity barriers.

2012: Ms. Brockman reported that the Blue Ridge Watershed Coalition was working on some of these issues. There is also an Elk Run Watershed group.
2011: Mr. Carter reported that this is also covered in the County's sub-division ordinance.
2010: Ms. Miller noted this is a new strategy. Ms. Miller asked Mr. Carter to have Roger Goodwin review this strategy.

Goal 7 Reduce the potential for damages as a result of Land Subsidence

Objective 7.1 Protect critical infrastructure.

Strategy 7.1.1: Conduct a detailed vulnerability analysis on the county's infrastructure to see what losses could be incurred during a land subsidence event (in pertinent areas).

2011: Mr. Carter reported that Seth, the new planner is very knowledgeable about this and he will check with him further.
2010: Ms. Miller reported this is a new strategy in the 2008 plan. Funding was never identified.

Strategy 7.1.2: Establish a long-term monitoring program to track the occurrence and distribution of subsidence. Even if groundwater withdrawals were reduced to the level of estimated annual recharge in the near future, primary and residual subsidence would continue for 5 to 10 years.

2012: The committee recommends that this strategy be taken out of the new plan, as no one can recall what this was about.

2011: ?? No one on the committee remembered what this was about??

2010: Ms. Miller noted this was taken over by the GIS Department. Mr. Carter will have to review.

Goal 8 Reduce damages from severe thunderstorms in Jefferson County.

Objective 8.1 Increase public awareness that a severe thunderstorm is imminent.

Strategy 8.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions.

2012: Ms. Miller reported that the National Weather Service has a new program called Weather Ready Nation that will cover some of this.

2011: Ms. Palmer said the Red Cross has information sheets. She will work with the Chamber of Commerce to try to get information to the Chamber newsletter.

2010: Ms. Miller noted this strategy is on going for each risk.

Strategy 8.1.2: Encourage the use of NOAA Weather Radios among residents that continuously broadcast NWS forecasts and provide direct warnings to the public.

Ms. Miller reported earlier on NOAA weather radios.

Strategy 8.1.3: Continue to conduct National Weather Service Storm Spotter classes.

2012: A Flood Storm Spotter Class was held in March, 2012 at Independent Fire Company in Ranson.

2011: A Winter Storm spotter class was held at the Shepherdstown Fire Company in November, 2010 and a Basic Storm spotter class was held in March, 2011. JCHSEM continues to sponsor storm spotter classes as often as the National Weather Service can provide them in our county with their limited number of instructors.

2010: Ms. Miller noted the NWS will only allow us one storms spotter class a year. Our next SkyWarn Winter Storm class will be in November 2010. The class schedule and information will be posted on our website.

Strategy 8.1.4: Ensure that surge protection, such as surge protectors and grounding, has been Installed on all critical electronic equipment owned by county government.

2012: The Committee recommended that this strategy needs to be revisited and possibly add Charlotte to the committee for 2013.
2011: THIS STRATEGY HAS BEEN COMPLETED
2010: Ms. Miller reported this strategy has been completed and will need reviewed.

Objective 8.2 Decrease the probability of utility failures as a direct result of severe thunderstorms.

Strategy 8.2.1: Coordinate with the power company to periodically trim trees near power lines to prevent limb breakage and power failures.

2011: THIS STRATEGY HAS BEEN COMPLETED and will continue to be on-going.

2010: Ms. Miller reported the power company reports they are making all efforts to clear right-a-ways.

Goal 9: Reduce damage from severe wind and tornadoes in Jefferson County

Objective 9.1 Increase public awareness that severe wind and tornadoes are imminent.

Strategy 9.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

2011: THIS STRATEGY HAS BEEN COMPLETED-Dr. Hoff reported that the schools are now required to do tornado drills in the fall.

2010: Ms. Miller noted this strategy is complete and will be ongoing.

Strategy 9.2.1: Reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.

2011: Mr. Carter reported that current building codes require tie downs for mobile homes.

2010: Ms. Miller noted this is a new strategy. Mr. Carter reported the building codes require them to suggest the use of tie-downs with ground anchors appropriate for the soil type. Ms. Miller asked Mr. Carter to highlight the code and send it to her.

Objective 9.3 Evaluate existing shelters to determine adequacy for current and future populations.

Strategy 9.3.1: Ensure that all shelters have adequate emergency power resources.

2012: This strategy has not yet been completed. Recommend to add to the 2013 Risk Assessment and Mitigation Plan.

2011: Ms. Palmer reported that MOUs are with the schools, health department, and emergency management. The Red Cross will be using churches as shelters as much as possible. Go book was updated in 2010 officially. It is now a living document. Red Cross needs to complete Prime Power Surveys for the Red Cross shelter facilities. Dr. Hoff reported that Prime Power Surveys are completed on the schools. Every school is now Points of Distribution for all three agencies.

2010: Ms. Miller will check with Red Cross for shelter surveys.

Status Notes from 2008: Eastern Panhandle Chapter of the American Red Cross updated their "Disaster Services "GO" Book-volumes 1 and 2 in June of
2007. This book's purpose is to provide a guide for the delivery of the disaster services of the Red Cross, including sheltering. Jefferson County schools are the primary shelter sites for ARC. Site Surveys were conducted to observe the dining facilities, bathroom facilities, and kitchens in each identified shelter. The Jefferson County Senior Center, Oakland United Methodist Church, Covenant Baptist Church, and Asbury United Methodist Church have been surveyed and have signed shelter agreements with the ARC. Emergency Power continues to be a shortfall. A large generator has been installed in Jefferson High School as well as in the new Washington High School. The Red Cross has worked with the Jefferson County Board of Education to establish and update agreements for feeding and other assistance in case of a situation such as Pandemic Flu in three additional schools. The Jefferson County Health Department has a Point of Dispensing (POD) site located at T.A. Lowery Elementary and Wildwood Middle Schools.

Strategy 9.3.2: Establish a protocol for the sharing of annual shelter survey information between the Local Red Cross Chapter and the JCHSEM.

2011: THIS STRATEGY HAS BEEN COMPLETED and is on-going. Ms. Palmer indicated that next year they will all be re-done again.
2010: THIS STRATEGY HAS BEEN COMPLETED and is on-going.
Status Notes from 2008: Ongoing and annually, the Eastern Panhandle Chapter of the American Red Cross maintains information on the site of each approved shelter. They also have information on how many people can be housed or fed at the site and availability of back-up power resources/available there. They are prepared to meet with the JCOHSEM on an annual basis if requested.

Goal 10 Reduce the effects of severe winter storms in Jefferson County and the Town of Bolivar.

Objective 10.1 Minimize future damage from severe winter storms throughout Jefferson County by increasing response capabilities.

Strategy 10.1.1.: Coordinate with local private contractors to develop mutual aid agreements for Emergency snow removal, also develop a Debris Management Plan that can be implemented following a disaster occurrence.

2012: Director Miller reported that during/after each event, new resources are added to the County's resource book.

2011: Director Miller reported that during the December 2010 snowstorm, the EOC was able to gather a good list of private local contractors that were willing to move snow. No official MOUs are in place. Two people from Jefferson County have attended Debris Management Training, but so far, no plan exists at either the county or the state level. The laws on Debris Management are very complicated.

2010: Ms. Miller noted this is a new strategy. JCHSEM is waiting for the state to finish their Debris Management Plan before beginning ours.

Objective 10.2 educate the general public on proper procedures to take to prepare for a winter storm.

Strategy 10.2.1: Develop brochures that describe the proper procedures to take to safeguard against and prepare for winter storms.

2012: Director Mehling confirmed that this information is given out at fairs, festivals and events.

2011: Information is given out at all fairs and festivals.

2010: Ms. Miller reported that she; Neal Nilsen and Dave Skeen recently taught 2 Business Continuity Planning Classes in February, 2010. There will be more classes coming up in September, 2010.

Goal 11 Protect the general public in Jefferson County from potential biological, chemical, or Weapons of Mass Destruction (WMD) terrorist events.

Objective 11.1 Increase countywide preparedness for terrorist attacks.

Strategy 11.1.1: Develop and/or enhance terrorist incident response annexes in the county Emergency Operations Plan (EOP).
2011: THIS STRATEGY HAS BEEN COMPLETED.
2010: Ms. Miller noted this strategy is Complete.

Strategy 11.1.2: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.

2012: THIS STRAGEGY HAS BEEN COMPLETED and is on-going.
2011: Use the fair, festivals, National Preparedness Month in September.
2010: Ms. Miller noted this is a new strategy. JCHSEM is holding a Family Disaster Preparedness Night scheduled for September 1, 2010.

Strategy 11.1.3: Coordinate with local media to alert the public as to the current threat status.
2012: This strategy had to do with the old Color Codes used by US Homeland Security. They do not use these any longer. The committee recommends that this strategy go away in the 2013 Risk Assessment and Mitigation Plan.
2011: Director reported that the Color Codes have gone away.
2010: Ms. Miller noted this status is ongoing.

Objective 11.2 Enact response programs to cope with terrorist attacks should they occur.

Strategy 11.2.1: Establish trauma centers to offer medical attention and counseling to affected Populations in the event of a terrorist event.

2011: THIS STRATEGY HAS BEEN COMPLETED-Mr. Jefferies reported that they do have a level 4 trauma center. They stabilize them and send them on. They can keep 25 people daily; in case of emergency, they can take more. A surge plan was developed by the JMH. Ms. Hite reported coordination with East Ridge and the establishment of a crisis team. Dr. Hoff indicated that there are also school crisis teams that can be made available. Mr. Sherwood discussed a Psychological First Aid Class that the Red Cross held. Mr. Schweitzer indicated that the Fire Companies also have crisis team's specific for first responders.

2010: Mr. Jefferies reported Jefferson Memorial Hospital has a level 4 trauma center. The State of WV has evaluated the new additions to the hospital with high scores. The new additions include: 20 beds, fast track minor care area with 4 beds, decon area, 2-500 gallon tanks to pick up disposed water, a wait area for paramedics, lounge for nurses, psychiatric room with damage proof glass, 2 trauma rooms, larger waiting area and a pediatric room.

Strategy 11.2.2: Continue education and training efforts of first responders and emergency personnel.

2011: THIS STRATEGY IS ON-GOING through RESA and other agencies.
2010: Ms. Miller noted this strategy is ongoing. RESA has given many of trainings.

Strategy 11.2.3: Consider providing heightened security at public gatherings, special events, Hazardous materials facilities and critical community facilities and industries.

2011: Law Enforcement was not represented at the meeting. Dr. Hoff expressed concerns over thousands of people at football games where they only have 2 officers. The schools have to pay for security at the events. They've never thought about it from a terrorism standpoint. Director Miller

discussed the National Guard Critical Information on schools in the state. The information then becomes PCII information and is protected.

2010: Ms. Miller noted this is a new strategy. This pertains to mostly law enforcement. Jefferson County Sheriff's Department will be heavily involved in the 167th Air Show.

Strategy 11.2.4: Make arrangements or other wise establish mass morgue facilities to be used following potential mass casualty events.

2012: Sandy Hite, Threat Preparedness Coordinator reported that the group mentioned below did attend a Mass Fatalities Training in August, 2011 at Pipestem State Park, and a Health Department Mass Fatalities Committee has come out of that group. They are planning a Mass Fatalities Conference in October, 2013 in Jefferson County for the state and the National Capitol Region, which is in the planning phase currently. Additionally, the Jefferson County Department of Health just approved funding for a County Mass Fatalities Plan that J.H. Consulting has been hired to do.

2011: Director Miller reported that several members of the community will be attending Mass Fatalities Training at Pipe stem that is being offered by WVDHSEM. Jeff Jefferies reported on a "shrink wrapped" product for mass casualties. Ms. Hite reported that a new mobile morgue was purchased by ESA that is at Eagles-Spencer-Norton Funeral Home that holds 3 bodies. Additionally a mobile morgue will be held at the Sheriff's Department. Unknown how many bodies that will hold.

2010: Ms. Miller asked Mr. Jefferies from Jefferson Memorial Hospital if there will be additional morgue space. Mr. Jefferies is currently looking into MOU's for additional space.

Goal 12 Protect Jefferson County's population and forests from wildfires.

Objective 12.1 educate the public on how to avoid starting wildfires.

Strategy 12.1.1: Create displays for children's programs that teach safety. Examples of information to be used would be similar to that on the FEMA for kids CD and/or the Sparky Fire Safety Program. Ms. Miller noted this is an ongoing strategy.

THIS STRATEGY HAS BEEN COMPLETED.
2011: JCHSEM and local Fire Companies do Fire Safety Month in local schools. Additionally, the fire departments have a talking fire hydrant; another has a remote control car that squirts the kids, coloring books, etc.

Status Notes from 2008: The JCHSEM booth at the 2003-2007 Jefferson County Fairs has included information on Fire Safety (NFPA Sparky the Fire Dog Coloring and Activity Books). Disaster

Preparedness Coloring Books, Robbie and Julia-The Disaster Twins, and Herman, PIC Storybooks, Exty and Hydro Activity Books, and Coloring Books from the Home Safety Council.

Strategy 12.1.2: Encourage residents in rural areas to inspect and clean their chimneys at least once a year.

2011: Mr. Schwitzer reported that they do mostly reactive, rather than having a program to tell people to do it, he was not aware of it.

2010: Encourage residents in rural areas to inspect and clean their chimneys at least once a year. Ms. Miller asked Randy Whittington if the fire department encourages residents in the area to inspect and clean their chimneys at least once a year. Mr. Whittington noted when there is an incident a chimney does catch on fire, they will remind the home owner chimneys should be cleaned once a year.

Strategy 12.1.3: Encourage residents and businesses to maintain their property in or near Forested areas (including short grass; thinned trees and removal of low hanging branches, cleaning of dead or dry leaves, needles, twigs, etc.), and to create a buffer zone (defensible space) between structures and adjacent forests.

2011: Mr. Carter reported that there is a property safety council. There is a property safety ordinance that has been adopted by the Jefferson County Commission. It was adopted on January 7, 1999 and Amended on May 20, 2010.

2010: Mr. Carter noted the Jefferson County Commission had not to adopt a property safety ordinance.

Goal 13 Reduce or eliminate the negative effects of various other hazards in Jefferson County, and improve upon the protection of the citizens of Jefferson County from all natural and man-made hazards.

Objective 13.1 Develop and distribute public awareness materials about natural hazard risks, preparedness, and mitigation.

Strategy 13.1.1: Create displays for use at public events (health fair, public awareness day, and county fair). This display would include pictures and information, such as that contained in FEMA's Retrofitting for Homeowners Guide, Elevating Your Flood Prone Home, Elevating Residential Structures, and information on the NFIP.

2011: Director Miller reported that in addition to the information booth at the fairs and festivals, they have also started doing lunch n learn sessions and other activities during national preparedness month. She reported that JCHSEM won the "United We Stand" award from FEMA Region III last year for their efforts.
2010: Ms. Miller noted this strategy is complete.

Status Notes from 2008: The JCHSEM's display at the Jefferson County Fair includes mitigation information. The display highlights the Jefferson County Risk Assessment and Mitigation Plan, flood homeowner's and business mitigation information, information about elevating homes, retrofitting information, and National Flood Insurance Information. Flooding handouts include: Are You Protected from the Next Flood? Coping a Flood- Before, During and After, Answers to Questions about the NFIP, Avoiding Flood Damage: A checklist for homeowners, Top 10 Facts about Flood Insurance, What you need to know about Federal Disaster Assistance and National Flood Insurance, Myths and Facts about the NFIP, How the NFIP works, NFIP Insurance Agent's Lowest Floor Guide, NFIP Increased Cost of Compliance Coverage, things you should know about flood insurance, An Ounce of Prevention is Worth a Pound of Cure, Floods, The Awesome power, Tropical Cyclones and Inland Flooding, Homeowners Guide to Retrofitting. The JCHSEM has a 10'X10' display and two tabletop display boards that are used for events. Flood Mitigation materials are available any time that the display is up, as well as from the Homeland Security Office.

An Animal in Disaster Display was developed and used at the Jefferson County Fair. It includes information about domestic pets, agricultural animals and horses. In addition to the display board, brochures were available, including: The American Red Cross/The Humane Society of the United States, "Pets and Disasters-GET PREPARED"; The Humane Society of the United States, "Disaster Preparedness for Pets"; The Humane Society of the United States, "Disaster Preparedness for Horses"; The Humane Society of the United States, "Disaster Preparedness for Livestock"; The National Humane Education Society's, "Disaster and Your Pets"; The Veterinary Medical Association's, "Saving the Whole Family" and the Jefferson County Animals in Disaster Plan. The new table top display was used at the Jefferson County Fair and at Furry Fun Fest at Briggs Animal Adoption Center in 2004.

Strategy 13.1.2: Create materials that are targeted towards tourist populations. Work with the Jefferson County Convention and Visitors Bureau, the US Park Service and others to alert tourists to potential natural hazard areas and what to do if a natural or man-made hazard occurs during their visit to Jefferson County.

2012: Deputy Director Mehling reported that a new director of the CVB will be on board soon.

2011: Deputy Director Mehling reported that she and David Colbert went to the CVB and presented information.

2010: Ms. Miller reported this strategy is not yet started. Ms. Miller noted if anyone has any suggestions to please let her know.

Strategy 13.1.3: Send news releases to local newspapers, radio and TV stations about pre-Disaster information. Our media strategies are designed to reach all areas of Jefferson County Ms. Miller noted this strategy is ongoing.

2011: In addition to all of the usual media outlets, we do have a website and a FACEBOOK page.

Strategy 13.1.4: Create a public speaking series to include topics such as types of natural disaster and risk, how to develop a family disaster plan, how to develop a family disaster supply kit, how to develop a business continuity plan, simple type of mitigation projects for homeowners, etc. These speaking engagements will be offered to civic groups such as Rotary and Kiwanis Clubs, the Chamber of Commerce, Church and interfaith groups.

2012: Deputy Director Mehling spoke to the Shepherdstown Women's Club and PIO Jennifer Maggio spoke to the Jefferson County Council on Aging.
2011: Ms. Miller spoke to the Democratic Women's Committee about CERT and our office.
2010: Ms. Miller reported Ms. Mehling has given a recent presentation to the American Heritage Girls on disaster preparedness.

Strategy 13.1.5: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.

2011: Ms. Palmer reported that the Masters of Disaster Course isn't done any more. All of the Red Cross Classes will be available on-line. By the end of this year, you will be able to do the testing at home. They still do the Basic Aid Training (BAT) in 4th grade in all schools in Jefferson County. Additionally, Babysitter Boot Camp is being offered by Red Cross.

2010: Ms. Miller noted Red Cross is unavailable to update today.

Strategy 13.1.6: Update the county website to provide hazard related information that is easily accessible. The County Commission website has information about disaster preparedness and related activities. The plan is to expand and update the website as needed and as appropriate in a timely manner to benefit all County residents.

2011: THIS STRATEGY HAS BEEN COMPLETED.
2010: Ms. Miller noted this strategy is complete. The website is ongoing so if there are any suggestions please let her know.

Strategy 13.1.7: Continue to work with the Jefferson County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.

2011: Dr. Hoff reported that this is on-going.

2010: Ms. Miller reported this strategy is ongoing through the Fire Prevention Month program in October. JCHSEM hands out a wide variety of fire safety materials from the National Fire Protection Association.

Strategy 13.1.8: Continue to work with non- governmental organizations (youth services, Professional, religious) to promote mitigation education and awareness.

2012: Director Miller reported that Jefferson County was just named as a Pilot Community of the Resilient Neighbors Network.

2011: Director Miller reported that this year we are concentrating on the new Whole of Community; Whole of National initiative that DHS/FEMA is promoting. It is about building partnerships with private businesses, faith-based and other non-governmental organizations. FEMA Director, MaryAnn Tierney will be in our community on July 27 to give a presentation about this at a Quarterly Partnership Meeting.

2010: Ms. Miller noted this strategy is ongoing. JCHSEM have held workshops for church groups, youth groups, boy scouts and girl scouts.

Strategy 13.1.9: Establish all-hazard resource centers to be located in the main office of the county And cities. The centers will act as a repository for information on local hazard identification, Preparedness and mitigation strategies for use by citizens, realtors, and lenders.

2012: Director Miller reported that this needs to begin again and should be a strategy in the 2013 Risk Assessment and Mitigation Plan.
2011: Ms. Miller reported we used to do this and we need to reinstate it.
2010: Ms. Miller noted this strategy will have to be revisited.

Objective 13.2 Provide protections for domestic pets, livestock and wildlife during and following disasters in Jefferson County.

Strategy 13.2.1: Develop adequate emergency shelter and evacuation plans for animals (domestic Pets, livestock, and wildlife). Establish a committee representative of all areas of the county that will Include vets, pet store owners, the Humane Society, animal shelters, the WVU Extension Service and other interested parties to work on animal -specific evacuation and sheltering needs.

2012: Director Miller reported that the County just purchased an Animals in Disaster Trailer with supplies that is for the Region as a Rapid Response Trailer for pets. However, a funding source has not yet been identified for training volunteers. Funding is still being sought.

2011: Director Miller reported that there is a regional Eastern Panhandle Animals in Disaster Plan. The EPOCC group is working on it. Ms. Palmer offered the services of a Red Cross State Disasters, Kathy Lealer. The plan should be finished by the end of the year.
2010: Ms. Miller noted this strategy is complete.

Strategy 13.3.1: Meet with groups of potential volunteers to attempt to increase the number of trained responders. Groups will include all county fire departments, doctors, nurses and EMS personnel who may become first responders in a bio-terrorism event.

2011: Mr. Schweitzer reported that they have developed a DVD to use at events to try to recruit new members.

2010: Ms. Miller reported JCHSEM has encouraged volunteers to take training from the Red Cross, MRC, etc. CERT classes are being given by JCHSEM to local residents.

Objective 13.4 Provide training for local first responders.

Strategy 13.4.1: Conduct annual tabletop disaster exercises with local law enforcement, emergency Managers, city and county officials, and other disaster response agencies.

2011: Director Miller reported that during the past year, they have been involved in a few exercises with federal agencies; the Operation Troubled Waters Tabletop Exercise and Functional Exercise; Operation Improvise Functional Exercise; and an EOC Functional Exercise.

2010: Ms. Miller listed recent exercises JCHSEM has been involved with: VIPER exercise with Virginia, Regional Operation Improvise, Volunteer Mobilization Center and the Propane Table Top Exercise, and The Emergency Operations Center Exercise.

Strategy 13.4.2: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.

2012: Director Miller reported that most of the emergency responders use RESA. Additionally, the JCHSEM training calendar is also available to all responders.
2011: Ms. Miller reported a list of all known training was developed and is listed in the JCHSEM Public Awareness, Education and Training Strategies as well as the county website.

Objective 13.5 Direct new development away from high hazard areas.

Strategy 13.5.1: Review existing regulations to ensure adequacy in reducing the amount of future development in identified hazard areas.

2012: This can be found in the sub division requirements.
2011: Mr. Carter reported that no building is allowed in the flood hazard area.
2010: Ms. Miller reported the GIS department is responsible for this strategy. Mr. Carter reported ordnances are being reviewed and revised.

Strategy 13.5.2: Review all comprehensive plans to ensure that designated growth areas are not in hazard areas.

2012: Ms. Brockman reported that a new Comprehensive Plan will get underway in the fall of 2012 and will take about 2 years to complete. Director Miller pointed out that the two documents need to mesh. Ms. Brockman agreed.

2011: Mr. Carter reported that the County's Comprehensive Plan was adopted in 2004 and has not been amended since that time.

2010: Ms. Miller noted the Planning department is unavailable to update at this meeting.

Strategy 13.5.3: Review all capital improvement plans to ensure that infrastructure improvements are not directed towards hazardous areas.

2011: Mr. Carter will check on this for updates.
2010: Ms. Miller reported ordinances are being reviewed and revised.

Objective 13.6 Improve emergency preparedness in Jefferson County and its incorporated Municipalities.

Strategy 13.6.1: Review the existing Jefferson County Emergency Operations Plan (EOP) and update where necessary based on the recommendations of the Jefferson County Hazard Mitigation Plan.

2012: New annexes are reviewed and updated each year.
2011: One annex is reviewed, updated, or developed each quarter. This year we are developing a Drought Annex, updating the Engineering Annex, Training and Exercise Annex, a new Transportation Annex, reviewing the Damage Assessment Annex and will integrate a new Regional Animals Annex.

2010: Ms. Miller noted the EOP has been updated every year since 2007. This year the Mass Care Annex, Law Enforcement Annex, COOP Planning, Flood Warning Plan and Medical Annex will be updated.

Objective 13.7 Improve coordination and communication among disaster response organizations, local, and county governments.

Strategy 13.7.1: Expand the mission and membership of the Jefferson County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.

2011: Director Miller reported that the LEPC sent out letters to all of the Tier II Filers inviting them to join the Jefferson County LEPC. At the last meeting, a representative of Thompson Gas attended a meeting for the first time.

2010: Ms. Miller reported the LEPC meets on a quarterly basis. Ms. Miller noted the LEPC is currently working on making sure Tier II reports are being filled out correctly.

Objective 13.8 Update equipment at the E 911 Communications Center

Strategy 13.8.1: Develop a plan to implement the Needs Assessment recommendations developed by the Public Safety System Consultant.
2012: The 9-1-1 Center now needs CAD, Mobile Data, and the ability to do Public Alerts.
2011: THIS STRATEGY HAS BEEN COMPLETED.
2010: Ms. Miller reported this strategy is no longer a goal.

Objective 13.9 Develop public/private partnerships toward the protection of private properties.

Strategy 13.9.1: Continue to support initiatives established under the Jefferson County Project Impact.

2012: Director Miller noted that Jefferson County was just named as one of the pilot communities for the Resilient Neighbors Network, which works well with the concept of Project Impact and the Whole Community efforts.
2011, 2010: Ms. Miller noted this strategy is ongoing.

Strategy 13.9.2: Evaluate the feasibility of the continuation of a funded Project Impact Coordinator position in Jefferson County.
2012: The committee suggested this be deleted from the next Risk Assessment and Mitigation Plan.
2011: THIS STRATEGY HAS BEEN COMPLETED.
2010: Ms. Miller noted this strategy is complete.

Objective 13.10 Improve coordination of mitigation efforts between the National Park Service and the Town of Harpers Ferry.

Strategy 13.10.1: Establish a formal process for the Town of Harpers Ferry and the Park Service to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.

2012: The Town and the National Park Service worked well during the 2012 June Storm to get the Harpers Ferry Water Plant back up and operational after the storm.

2011: Director Miller said she has received no information from either organization on this, however a new mayor was elected to Harpers Ferry and the Park Superintendent has changed since this plan was written.

2010: Ms. Miller reported this strategy has not yet been addressed.

Strategy 13.10.2: Conduct training exercises that include representatives from the Town of Harpers Ferry and the Park Service to facilitate increased coordination.

2012: Director Miller has invited both to participate in the Jennings Randolph Lake Dam Exercises for 2012.
2011: Mrs. Miller reported that both entities participated in Operation Troubled Waters Exercise.
2010: Ms. Miller noted CSX Railroad held training and exercises in the early part of 2007.

Objective 13.11 Identify and protect historic structures throughout the county that are at risk from Hazards.

Strategy 13.11.1: Conduct a survey of all historic sites that are located in hazard areas and develop Mitigation strategies to protect any at-risk historic properties.

2011: THIS STRATEGY HAS BEEN COMPLETED
2010: Ms. Miller reported this has been completed the GIS department. Properties on the National Historic Register have been identified and mapped. There have been additional properties added to the list. A lot of the properties are private and we are unable to make property owners develop and use mitigation strategies.

Objective 13.12 Ensure measures are being taken to address hazard risks with regards to commercial and commuter rail lines.

Strategy 13.12.1: Contact representatives of rail lines to collect information about emergency planning and risks associated with rail services in the county.
2011: THIS STRATEGY HAS BEEN COMPLETED
2010: Ms. Miller noted this strategy is complete.

Ms. Miller reviewed the remainder of the Jefferson County Action Plan. Ms. Miller noted if anyone has any suggestions on goals or objectives to please let her know. Ms. Miller reported the minutes for today's meeting will be given to the County Commission, local media, WV Department of Homeland Security and FEMA.

The meeting was adjourned at approximately 15:50.

Rosie FROM PAGE B1

The women's stories inspired Montague and group members to redirect the Rosie the Riveter Project toward a goal of seeking national recognition for the Rosies' historical significance.

Currently, the Rosie the Riveter Project has helped surrounding states, including Maryland, Virginia, Pennsylvania and South Carolina, develop their own organizations for Rosies.

As part of the effort to encourage a national presence, the West Virginia Rosie the Riveter Project was featured on "The Today Show" on Aug. 13.

In addition to the group's national effort, the project has also made strides throughout the state. In March, the city of Charleston dedicated the first state Rosie the Riveter Memorial Park.

An additional accomplishment includes integrating the history of Rosie the Riveters into education.

"The West Virginia Department of Education is one of our best achievements, in my view. The West Virginia Department of Education mandated that Rosie the Riveter be taught in sixth and 10th grade," Montague said.

Montague said without community support and involvement, the project could not continue to grow and be successful, either throughout the state or as a national movement.

To encourage community involvement, the Rosie the Riveter Project will soon host a contest seeking an original Rosie the Riveter song. The winning song will be featured on a Rosie the Riveter CD. Montague is hopeful that she can host the contest in the Eastern Panhandle.

"I really believe that the Rosie movement can unify the nation around these women if we move fast. I don't know if it's possible because so much time has passed, but we have to try," Montague said.

– Staff writer Samantha Cronk can be reached at 304-263-8931, ext. 132, or scronk@journal-news.net.

Jefferson County All Hazards Plan to be revised; public comment sought

CHARLES TOWN – The 2008 Jefferson County Multi-Jurisdictional All Hazards Mitigation Plan will be replaced next year by a newer, updated version, and Jefferson County residents and local business owners are being asked to be a part of the revision process.

Public meetings will be held at 2 and 7 p.m. Wednesday, Aug. 29, at 128 Industrial Boulevard, Kearneysville, to kick off this project. The public is invited to attend and learn about this process and to participate in future meetings. Representatives from Jefferson County Homeland Security and Emergency Management (JCHSEM) and JH Consulting LLC will facilitate these meetings.

JCHSEM is requesting public comment on the four-year-old countywide plan to assist the agency in making needed changes for an updated version. JCHSEM will work with a committee of subject matter experts and the public to complete the revisions of the plan in 2012.

"We're asking the public to help shape future mitigation actions across Jefferson County to reduce our risk from flooding, winter storms, high winds and other natural hazards," JCHSEM Director Barbara Miller said. "Your input is important."

The public may review the current plan by going to the county's website at www.jeffersoncountywv.org/uploads/homeland/Complete%20HMP%202008%20Public.pdf.

The countywide mitigation plan was originally implemented in 2003 to minimize the county's vulnerability to dangerous natural disasters. The plan update is required every five years per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. It is a key precondition for future FEMA funding for hazard mitigation projects by participating local jurisdictions.

Jefferson County also is a Community Rating System member and has met certain criteria in order for residents to receive a discount on flood insurance through the National Flood Insurance Program. Conducting this risk assessment is a crucial component to meeting those criteria.

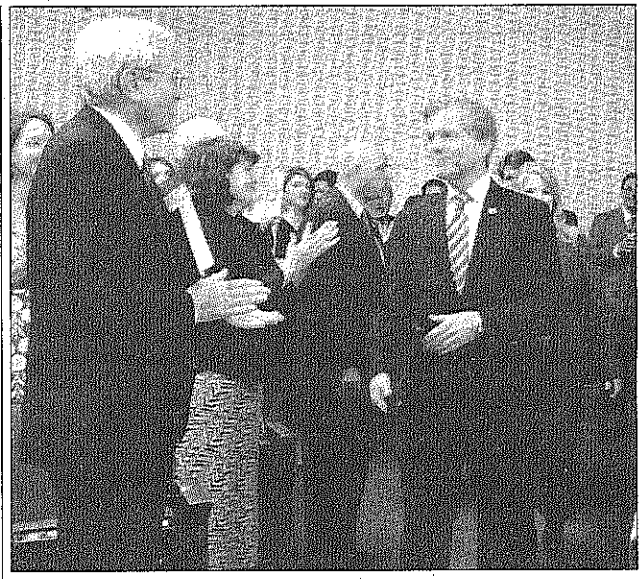
JCHSEM expects to work with the county's five local government jurisdictions on the project. The new plan will include several changes to improve upon efforts to reduce the impact of natural disasters and promote countywide disaster preparedness. It will include a new risk assessment identifying natural hazards the county is most likely to face, mitigation projects and improved mapping.

IF YOU GO

What: Public meetings for Jefferson County Multi-Jurisdictional All Hazards Mitigation Plan
When: 2 and 7 p.m. Aug. 29
Where: 128 Industrial Blvd., Kearneysville

Jefferson County Homeland Security and Emergency Management, a department under the Jefferson County Commission, coordinates countywide emergency/disaster planning, education, warning, response and recovery to minimize adverse impacts on area residents, property and the environment. Contact Terri Mehling, deputy director of Jefferson County Homeland Security and Emergency Management, at 304-728-3329 or tmehling@jeffersoncountywv.org to submit comments or request additional information.

– From staff reports



AP photo

Virginia Gov. Bob McDonnell, right, enters the room to present a state budget surplus to the General Assembly Appropriations and Finance committee members at the General Assembly Building in Richmond, Va., Wednesday.

Va. politics map shaped by TV ads

RICHMOND, Va. (AP) – We're not used to all this in Virginia: the nonstop political poison in television ads, presidential-level road trips across the byways and back roads, the annoying dinner-hour say far more has actually been spent, noting that OpenSecrets doesn't track "issue advocacy" ads, those clever contrivances that tar a candidate over a certain topic but avoid being ruled political by urging

Jefferson County Homeland Security and Emergency Management
28 Industrial Blvd
Kearneysville, WV 25430
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bmiller@jeffersoncountywv.org

Jefferson County All Hazards Mitigation Plan and Risk Assessment Public Meeting
August 29, 2012 2:00pm
128 Industrial Blvd.
Kearneysville, WV
Sign In Sheet

Print Name & Organization	Email	Phone	Sign In
Blake, Andrew City of Ranson	ablake@cityofransonwv.net	724-3872	
Britvec, Doug JH Consulting LLC	dbritvec@jhcemergencypreparedness.com	473-1009	
Brockman, Jennie Jefferson County Planning Dept.	jbrockman@jeffersoncountywv.org	7283228	
Burke, Paul	numbersinstitute@juno.com	876-2227	
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Christensen, Karin NCTC	Karin_christensen@fws.gov	876-7222	
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Hite, Sandy Jefferson County Health Dept.	sandy.d.hite@wv.gov	728-8416	
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Jefferies, Jeff Jefferson Memorial Hospital	ljefferies@jeffmem.com	728-1695	
Johnson, Kevin Loudoun County, VA Office of Emergency Management	kevin.johnson@loudoun.gov	(703) 737-8831	

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August 29, 2012 7:00pm
128 Industrial Blvd.
Kearneysville, WV
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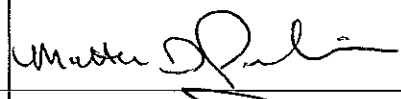
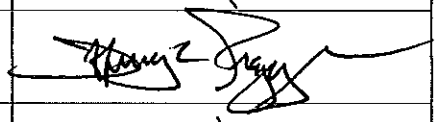
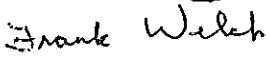
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David Tabb		304 676 5976	

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Jefferson County All Hazards Mitigation Plan and Risk Assessment Committee Meeting
September 18, 2012 2:00pm
28 Industrial Blvd.
Kearneysville, WV
Sign In Sheet

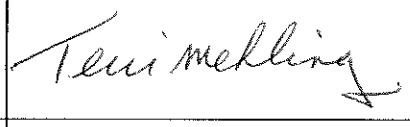
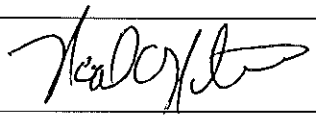
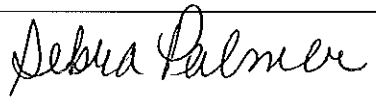
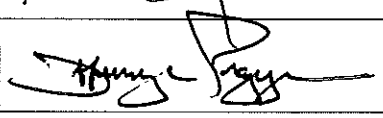
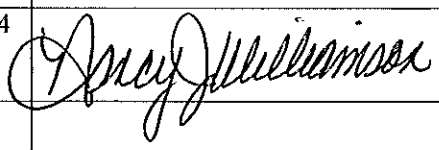
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Jefferson County All Hazards Mitigation Plan and Risk Assessment Committee Meeting
October 23, 2012 2:00pm
28 Industrial Blvd.
Kearneysville, WV
Sign In Sheet

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Piepenburg, Matt Jefferson County Public Service District	Engineering@jcpsd.com		
Polczynski, Jeff Jefferson County Emergency Communications Center	jpolczynski@jeffersoncountywv.org	728-3317	
Welch, Frank City of Shepherdstown Public Works Dept.	fwelch@shepherdstown.us	876-3322	
Widmyer, Lyn Jefferson County Commission			
Williamson, Nancy Harpers Ferry Job Corps Center	njwilliamson@fs.fed.us	724-3474	

Jefferson County Homeland Security and Emergency Management
28 Industrial Blvd
Kearneysville, WV 25430
304-728-3290
bmiller@jeffersoncountywv.org

Jefferson County All Hazards Mitigation Plan and Risk Assessment Committee Meeting
November 27, 2012 2:00pm
28 Industrial Blvd.
Kearneysville, WV
Sign In Sheet

rint Name & Organization	Email	Phone	Sign In
Blake, Andrew City of Ranson	ablake@cityofransonwv.net	724-3872	
Britvec, Doug JH Consulting LLC	dbritvec@jhcemergencypreparedness.com	473-1009	via phone
Brockman, Jennie erson County Planning Dept.	jbrockman@jeffersoncountywv.org		
Burke, Paul	numbersinstitute@juno.com	876-2227	
Carter, Mason Jefferson County Dept. of Zoning and Engineering	mcarter@jeffersoncountywv.org	728-3228	
Christensen, Karin NCTC	Karin_christensen@fws.gov	876-7222	
Cosentini, Joe City of Charles Town	joe@charlestownwv.us	725-2311	
Coyle, Scott City of Charles Town	scott@charlestownwv.us	725-2311	
Edwards, Sallie	salsamurai@gmail.com		
Fagan, Todd efferson County GIS Dept.	tfagan@jeffersoncountywv.org	724-6759	
Gormont, Jessica efferson County GIS Dept.	Jgormont@jeffersoncountywv.org	724-8986	
Hite, Sandy ferson County Health Dept.	sandy.d.hite@wv.gov	728-8416	
Hoff, Sheri efferson County Schools	Shoff@access.k12.wv.us	5402479878 728-9221	
Jefferies, Jeff fferson Memorial Hospital	ljefferies@jeffmem.com	728-1695	

Johnson, Kevin Loudoun County, VA Office of Emergency Management	kevin.johnson@loudoun.gov	(703) 737-8831	
Lawton, Sue Jefferson County Public Service District	gm@jcpsd.com		
Manuel, Dale Jefferson County Commission			
Mehling, Terri Jefferson County Homeland Security & Emergency Management	tmehling@jeffersoncountywv.org	728-3329	Terri Mehling
Miller, Barbara Jefferson County Homeland Security & Emergency Management	bmiller@jeffersoncountywv.org	728-3290	Barbara J Miller
Morgan, Frances Jefferson County Commission			
Nilsen, Neal Ask Neal	neal@askneal.net		
Noland, Patsy Jefferson County Commission			
Owens, Jessica Jefferson County Homeland Security & Emergency Management	jowens@jeffersoncountywv.org	724-8914	Jessica Owens
Palmer, Debbi Eastern Panhandle Chapter American Red Cross	Debbie.Palmer@redcross.org	725-5015	
Parkin, Johnnie	compujedijp@yahoo.com		
Pellish, Walt Jefferson County Commission			
Piepenburg, Matt Jefferson County Public Service District	Engineering@jcpsd.com		
Polczynski, Jeff Jefferson County Emergency Communications Center	jpolczynski@jeffersoncountywv.org	728-3317	
Welch, Frank City of Shepherdstown Public Works Dept.	fwelch@shepherdstown.us	876-3322	Frank Welch
Widmyer, Lyn Jefferson County Commission			
Williamson, Nancy Harpers Ferry Job Corps Center	njwilliamson@fs.fed.us	724-3474	Nancy Williamson
Ashley Petrolino Citizen	Petrolino.ashley@gmail.com	540-233-2457	Ashley Petrolino
SANFORD GREEN	SANFORD.H.GREEN@WV.GOV	304 535 5135	

EVIDENCE OF PUBLIC MEETING









A4-38

Terri Mehling

From: Terri Mehling [tmehling@jeffersoncountywv.org]
Sent: Monday, August 27, 2012 11:35 AM
To: 'Johnson, Kevin'
Subject: Multi-Jurisdictional All Hazards Mitigation Plan Public Meetings August 29, 2012

Kevin,

Our office is in the beginning stages of revising the Jefferson County Risk Assessment and Mitigation Plan. Since Loudoun County, VA is a bordering county to Jefferson County, I am inviting you or a representative to attend these meetings.

In order to continue to qualify for federal funding for disasters, we are mandated to update the plan every five years and/or after each disaster event. We must also explain what we have done towards completing the goals and projects that were identified in the last plan. It is anticipated that the committee will meet every two weeks to review the current document and formulate goals and strategies to be incorporated in the 2013 updated and revised plan. More information on those meetings will be forthcoming in the future.

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Below is the press release that has been sent out to our media contacts.

Please let me know if you or a representative will be attending the August 29th meeting and also if you have any questions. Thank you!

FOR IMMEDIATE RELEASE
August 14, 2012
Terri Mehling

304-728-3329

PUBLIC ASKED TO HELP GUIDE REVISIONS TO HAZARD MITIGATION PLAN

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JCHSEM is requesting public comment on the 4-year-old countywide plan to assist the agency in making needed changes for an updated version. JCHSEM will work with a committee of subject matter experts and the public to complete the revisions of the plan in 2012.

"We're asking the public to help shape future mitigation actions across Jefferson County to reduce our risk from flooding, winter storms, high winds and other natural hazards," JCHSEM Director Barbara Miller said. "Your input is important."

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The countywide mitigation plan was originally implemented in 2003 to minimize the County's vulnerability to dangerous natural disasters. The plan update is required every five years per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. It is a key precondition for future FEMA funding for hazard mitigation projects by participating local jurisdictions. Jefferson County also is a Community Rating System member and has met certain criteria in order for residents to receive a discount on flood insurance through the National Flood Insurance Program. Conducting this risk assessment is a crucial component to meeting those criteria.

JCHSEM expects to work with the County's five local government jurisdictions on the project. The new plan will include several changes to improve upon efforts to reduce the impact of natural disasters and promote countywide disaster preparedness. It will include a new risk assessment identifying natural hazards the county is most likely to face, mitigation projects, and improved mapping.

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Terri Mehling
Program Manager/Planner/Deputy Director
Jefferson County Homeland Security & Emergency Management
28 Industrial Blvd., Suite 101
Kearneysville, WV 25430
(304) 728-3329
(304) 279-8233 Mobile
(304) 728-3320 Fax
tmehling@jeffersoncountywv.org

Terri Mehling

From: Terri Mehling [tmehling@jeffersoncountywv.org]
Sent: Monday, August 27, 2012 11:38 AM
To: 'sallen@berkeleycountycomm.org'
Subject: Multi-Jurisdictional All Hazards Mitigation Plan Public Meetings August 29, 2012

Steve,

Our office is in the beginning stages of revising the Jefferson County Risk Assessment and Mitigation Plan. Since Berkeley County is a bordering county to Jefferson County, I am inviting you or a representative to attend these meetings.

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Terri Mehling

From: Terri Mehling [tmehling@jeffersoncountywv.org]
Sent: Monday, August 27, 2012 11:41 AM
To: David Ash (dash@clarkecounty.gov)
Subject: Multi-Jurisdictional All Hazards Mitigation Plan Public Meetings August 29, 2012

David,

Our office is in the beginning stages of revising the Jefferson County Risk Assessment and Mitigation Plan. Since Clarke County, VA is a bordering county to Jefferson County, I am inviting you or a representative to attend these meetings.

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Terri Mehling

From: Terri Mehling [tmehling@jeffersoncountywv.org]
Sent: Monday, August 27, 2012 11:51 AM
To: Kevin Lewis (klewis@washco-md.net)
Subject: Multi-Jurisdictional All Hazards Mitigation Plan Public Meetings August 29, 2012

Kevin,

Our office is in the beginning stages of revising the Jefferson County Risk Assessment and Mitigation Plan. Since Washington County, MD is a bordering county to Jefferson County, I am inviting you or a representative to attend these meetings.

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Households Hazards Preparedness Questionnaire

Thank you for taking the time to answer this questionnaire and participating in the Jefferson County hazard mitigation planning process. This questionnaire is designed to help the county and the municipalities therein to gauge public perceptions of hazard vulnerability throughout all of Jefferson County. This information you provide will help reduce vulnerability by guiding local leaders as they prioritize mitigation projects.

HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
   - □ Drought
   - □ Earthquake
   - □ Flooding
   - □ Hailstorm
   - □ Hazardous Material Incident
   - □ Land Subsidence
   - □ Terrorism
   - □ Thunderstorm/Lightning
   - □ Urban Fire
   - □ Wildfire
   - □ Wind Storm/Tornado
   - □ Winter Storm

2. How concerned are you personally about the following hazards affecting Jefferson County? (***Circle the corresponding number for each hazard.***)

Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	1	2	3	4	5
Earthquake	1	2	3	4	5
Flooding	1	2	3	4	5
Hailstorm	1	2	3	4	5
Hazardous Material Incident	1	2	3	4	5
Land Subsidence	1	2	3	4	5
Terrorism	1	2	3	4	5
Thunderstorm/Lightning	1	2	3	4	5
Urban Fire	1	2	3	4	5
Wildfire	1	2	3	4	5
Wind Storm/Tornado	1	2	3	4	5
Winter Storm	1	2	3	4	5

3. Have you ever received information about how to make your family and home safer from emergency situations?
   - □ Yes
   - □ No

4. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (***Please check one answer for each preparedness activity.***)

In **your household**, have you or someone in your household:

Preparedness activity	Have Done	Plan to Do	Not Done	Un-able to Do
A. Attended meetings or received written information on emergency preparedness?	☐	☐	☐	☐
B. Talked with members in your household about what to do in case of an emergency?	☐	☐	☐	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☐	☐	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☐	☐	☐
E. In the last year, has anyone in your household received CPR training?	☐	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☐ Yes
   - ☐ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☐ Yes
   - ☐ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☐ $1,000 - $2,499
   - ☐ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☐ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: _____

9. Gender:
   - ☐ Male
   - ☐ Female

10. Please indicate your level of education:

- □ Grade school / no schooling
- □ Some high school
- □ High school graduate / GED
- □ Some college / trade school
- □ College degree
- □ Postgraduate degree
- □ Other

11. Zip Code: _____

12. How long have you lived in Jefferson County?

- □ Less than one year
- □ 1 – 5 years
- □ 5 – 9 years
- □ 10 – 19 years
- □ 20 years or more

OTHER COMMENTS:

THANK YOU FOR PROVIDING THIS INFORMATION

By virtue of their location in Jefferson County, the municipalities in the county can be said to be susceptible to the same hazards that are identified above. However, these municipalities may be more or less susceptible to some of the hazard events. Table 2.2 illustrates if the municipalities are affected by the hazard events more than the rest of the county, less than the rest of the county, or in the same manner as the rest of the county.

	Town of Bolivar	City of Charles Town	City of Ranson	Town of Harpers Ferry	Corp. of Shepherdstown
Dam Failure					
Drought	=	=	=	=	=
Earthquake	=	=	=	=	=
Flooding	<	<	<	>	>
Hailstorm	=	=	=	=	=
Hazmat	=	>	>	=	=
Landslide	>	>	>	>	<
Land Subsidence	=	>	=	=	=
Severe Thunderstorm	=	=	=	=	=
Severe Wind/Tornado	=	=	=	=	=
Severe Winter Storm/Sleet	=	=	=	=	=
Solar Flares					
Terrorism	=	>	>	=	=
Wildfire	=	<	<	=	=

Key
= : Municipality affected same as county
> : Municipality affected more than county
< : Municipality affected less than county

Households Hazards Preparedness Questionnaire

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HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
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   - □ Flooding
   - □ Hazardous Material Incident
   - □ Terrorism
   - □ Urban Fire
   - ☒ Wind Storm/Tornado
   - ☒ Earthquake
   - □ Hailstorm
   - □ Land Subsidence
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B. Talked with members in your household about what to do in case of an emergency?	☒	☐	☐	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☒	☐	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☒	☐	☐
E. In the last year, has anyone in your household received CPR training?	☒	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☒ Yes
   - ☐ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☒ Yes
   - ☐ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☒ $1,000 - $2,499
   - ☐ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☐ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: 39

9. Gender:
   - ☒ Male
   - ☐ Female

10. Please indicate your level of education:

- □ Grade school / no schooling
- □ Some high school
- □ High school graduate / GED
- □ Some college / trade school
- □ College degree
- ☒ Postgraduate degree
- □ Other

11. Zip Code: 25414

12. How long have you lived in Jefferson County?

- □ Less than one year
- ☒ 1 – 5 years
- □ 5 – 9 years
- □ 10 – 19 years
- □ 20 years or more

OTHER COMMENTS:

THANK YOU FOR PROVIDING THIS INFORMATION

Households Hazards Preparedness Questionnaire

Thank you for taking the time to answer this questionnaire and participating in the Jefferson County hazard mitigation planning process. This questionnaire is designed to help the county and the municipalities therein to gauge public perceptions of hazard vulnerability throughout all of Jefferson County. This information you provide will help reduce vulnerability by guiding local leaders as they prioritize mitigation projects.

HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
   - □ Drought
   - ☒ Earthquake
   - □ Flooding
   - □ Hailstorm
   - □ Hazardous Material Incident
   - □ Land Subsidence
   - □ Terrorism
   - □ Thunderstorm/Lightning
   - □ Urban Fire
   - □ Wildfire
   - □ Wind Storm/Tornado
   - ☒ Winter Storm

2. How concerned are you personally about the following hazards affecting Jefferson County? (***Circle the corresponding number for each hazard.***)

Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	1	2	(3)	4	5
Earthquake	1	2	(3)	4	5
Flooding	1	2	(3)	4	5
Hailstorm	1	2	3	(4)	5
Hazardous Material Incident	1	2	(3)	4	5
Land Subsidence	1	2	(3)	4	5
Terrorism	1	2	(3)	4	5
Thunderstorm/Lightning	1	2	3	(4)	5
Urban Fire	(1)	2	3	4	5
Wildfire	(1)	2	3	4	5
Wind Storm/Tornado	1	2	3	(4)	5
Winter Storm	(1)	2	3	4	5

3. Have you ever received information about how to make your family and home safer from emergency situations?
   - □ Yes
   - ☒ No

4. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (***Please check one answer for each preparedness activity.***)

In **your household**, have you or someone in your household:

Preparedness activity	Have Done	Plan to Do	Not Done	Un-able to Do
A. Attended meetings or received written information on emergency preparedness?	☐	☐	☒	☐
B. Talked with members in your household about what to do in case of an emergency?	☐	☐	☒	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☒	☐	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☒	☐	☐
E. In the last year, has anyone in your household received CPR training?	☒	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☐ Yes
   - ☒ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☑ Yes
   - ☐ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☐ $1,000 - $2,499
   - ☒ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☐ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: 29

9. Gender:
   - ☐ Male
   - ☒ Female

10. Please indicate your level of education:

- □ Grade school / no schooling
- □ Some high school
- □ High school graduate / GED
- □ Some college / trade school
- ☒ College degree
- ☒ Postgraduate degree
- □ Other

11. Zip Code: 25401

12. How long have you lived in Jefferson County?

- □ Less than one year
- □ 1 – 5 years
- □ 5 – 9 years
- □ 10 – 19 years
- □ 20 years or more
- ☒ I live in Berkeley County

OTHER COMMENTS:

THANK YOU FOR PROVIDING THIS INFORMATION

Households Hazards Preparedness Questionnaire

Thank you for taking the time to answer this questionnaire and participating in the Jefferson County hazard mitigation planning process. This questionnaire is designed to help the county and the municipalities therein to gauge public perceptions of hazard vulnerability throughout all of Jefferson County. This information you provide will help reduce vulnerability by guiding local leaders as they prioritize mitigation projects.

HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
   - □ Drought
   - □ Flooding
   - □ Hazardous Material Incident
   - □ Terrorism
   - □ Urban Fire
   - □ Wind Storm/Tornado
   - □ Earthquake
   - □ Hailstorm
   - □ Land Subsidence
   - ☑ Thunderstorm/Lightning
   - □ Wildfire
   - ☑ Winter Storm

2. How concerned are you personally about the following hazards affecting Jefferson County? (***Circle the corresponding number for each hazard.***)

Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	1	2	3	4	5
Earthquake	1	2	3	4	5
Flooding	1	2	3	4	5
Hailstorm	1	2	3	4	5
Hazardous Material Incident	1	2	3	4	5
Land Subsidence	1	2	3	4	5
Terrorism	1	2	3	4	5
Thunderstorm/Lightning	1	2	3	4	5
Urban Fire	1	2	3	4	5
Wildfire	1	2	3	4	5
Wind Storm/Tornado	1	2	3	4	5
Winter Storm	1	2	3	4	5

3. Have you ever received information about how to make your family and home safer from emergency situations?
   - ☑ Yes
   - □ No

4. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (***Please check one answer for each preparedness activity.***)

In **your household**, have you or someone in your household:

Preparedness activity	Have Done	Plan to Do	Not Done	Un-able to Do
A. Attended meetings or received written information on emergency preparedness?	☑	☐	☐	☐
B. Talked with members in your household about what to do in case of an emergency?	☑	☑	☐	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☐	☑	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☑	☐	☐
E. In the last year, has anyone in your household received CPR training?	☑	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☐ Yes
   - ☑ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☐ Yes
   - ☑ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☐ $1,000 - $2,499
   - ☐ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☑ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: 53

9. Gender:
   - ☐ Male
   - ☑ Female

10. Please indicate your level of education:

- ☐ Grade school / no schooling
- ☐ Some high school
- ☐ High school graduate / GED
- ☐ Some college / trade school
- ☐ College degree
- ☑ Postgraduate degree
- ☐ Other

11. Zip Code: 25425

12. How long have you lived in Jefferson County?

- ☐ Less than one year
- ☑ 1 – 5 years
- ☐ 5 – 9 years
- ☐ 10 – 19 years
- ☐ 20 years or more

OTHER COMMENTS:

Backup to water + sewer systems seems critical esp related to flooding + storms

THANK YOU FOR PROVIDING THIS INFORMATION

Households Hazards Preparedness Questionnaire

Thank you for taking the time to answer this questionnaire and participating in the Jefferson County hazard mitigation planning process. This questionnaire is designed to help the county and the municipalities therein to gauge public perceptions of hazard vulnerability throughout all of Jefferson County. This information you provide will help reduce vulnerability by guiding local leaders as they prioritize mitigation projects.

HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
   - ☑ Drought
   - ☑ Flooding
   - ☐ Hazardous Material Incident
   - ☐ Terrorism
   - ☐ Urban Fire
   - ☐ Wind Storm/Tornado
   - ☑ Earthquake
   - ☐ Hailstorm
   - ☐ Land Subsidence
   - ☑ Thunderstorm/Lightning
   - ☐ Wildfire
   - ☑ Winter Storm

2. How concerned are you personally about the following hazards affecting Jefferson County? (***Circle the corresponding number for each hazard.***)

Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	1	2	3	4	5
Earthquake	1	2	3	4	5
Flooding	1	2	3	4	5
Hailstorm	1	2	3	4	5
Hazardous Material Incident	1	2	3	4	5
Land Subsidence	1	2	3	4	5
Terrorism	1	2	3	4	5
Thunderstorm/Lightning	1	2	3	4	5
Urban Fire	1	2	3	4	5
Wildfire	1	2	3	4	5
Wind Storm/Tornado	1	2	3	4	5
Winter Storm	1	2	3	4	5

3. Have you ever received information about how to make your family and home safer from emergency situations?
   - ☑ Yes
   - ☐ No

4. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (***Please check one answer for each preparedness activity.***)

In **your household**, have you or someone in your household:

Preparedness activity	Have Done	Plan to Do	Not Done	Un-able to Do
A. Attended meetings or received written information on emergency preparedness?	☐	☐	☐	☐
B. Talked with members in your household about what to do in case of an emergency?	☐	☐	☐	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☐	☐	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☐	☐	☐
E. In the last year, has anyone in your household received CPR training?	☐	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☐ Yes
   - ☐ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☐ Yes maybe
   - ☐ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☐ $1,000 - $2,499
   - ☐ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☐ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: 43

9. Gender:
   - ☐ Male
   - ☐ Female

10. Please indicate your level of education:

- ☐ Grade school / no schooling
- ☐ Some high school
- ☑ High school graduate / GED
- ☑ Some college / trade school
- ☐ College degree
- ☐ Postgraduate degree
- ☐ Other

11. Zip Code: 25425

12. How long have you lived in Jefferson County?

- ☐ Less than one year
- ☐ 1 – 5 years
- ☐ 5 – 9 years
- ☐ 10 – 19 years
- ☐ 20 years or more

OTHER COMMENTS:

THANK YOU FOR PROVIDING THIS INFORMATION

Households Hazards Preparedness Questionnaire

Thank you for taking the time to answer this questionnaire and participating in the Jefferson County hazard mitigation planning process. This questionnaire is designed to help the county and the municipalities therein to gauge public perceptions of hazard vulnerability throughout all of Jefferson County. This information you provide will help reduce vulnerability by guiding local leaders as they prioritize mitigation projects.

HAZARD INFORMATION

1. In the past five (5) years, have you or someone in your household experienced a disaster such as a flood, wind storm, winter storm?
   - □ Drought
   - □ Flooding
   - □ Hazardous Material Incident
   - □ Terrorism
   - □ Urban Fire
   - □ Wind Storm/Tornado
   - □ Earthquake
   - □ Hailstorm
   - □ Land Subsidence
   - □ Thunderstorm/Lightning
   - □ Wildfire
   - □ Winter Storm

2. How concerned are you personally about the following hazards affecting Jefferson County? (***Circle the corresponding number for each hazard.***)

Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	1	2	3	4	5
Earthquake	1	2	3	4	5
Flooding	1	2	3	4	5
Hailstorm	1	2	3	4	5
Hazardous Material Incident	1	2	3	4	5
Land Subsidence	1	2	3	4	5
Terrorism	1	2	3	4	5
Thunderstorm/Lightning	1	2	3	4	5
Urban Fire	1	2	3	4	5
Wildfire	1	2	3	4	5
Wind Storm/Tornado	1	2	3	4	5
Winter Storm	1	2	3	4	5

3. Have you ever received information about how to make your family and home safer from emergency situations?
   - □ Yes
   - □ No

4. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. ***(Please check one answer for each preparedness activity.)***

In **your household**, have you or someone in your household:

Preparedness activity	Have Done	Plan to Do	Not Done	Un-able to Do
A. Attended meetings or received written information on emergency preparedness?	☐	☐	☐	☐
B. Talked with members in your household about what to do in case of an emergency?	☐	☐	☐	☐
C. Developed a "household emergency plan in order to decide what everyone would do in the event of an emergency?	☐	☐	☐	☐
D. Prepared a "disaster supply kit" (stored extra food, water, batteries, or other emergency supplies)?	☐	☐	☐	☐
E. In the last year, has anyone in your household received CPR training?	☐	☐	☐	☐

HAZARD RISK REDUCTION

5. Did you consider the possible occurrence of an emergency when you bought/moved into your current home?
   - ☐ Yes
   - ☐ No

6. Would you be willing to spend more money on a home that had features that made it more disaster-resistant?
   - ☐ Yes
   - ☐ No

7. How much more money are you willing to spend to better protect your family and home from disasters?
   - ☐ $5,000 and above
   - ☐ $2,500 - $4,999
   - ☐ $1,000 - $2,499
   - ☐ $500 - $999
   - ☐ $100 - $499
   - ☐ Less than $100
   - ☐ Nothing
   - ☐ Don't know
   - ☐ Other, please explain: _____

GENERAL HOUSEHOLD INFORMATION

8. Please indicate your age: 39

9. Gender:
   - ☐ Male
   - ☐ Female

10. Please indicate your level of education:

- □ Grade school / no schooling
- □ Some high school
- □ High school graduate / GED
- □ Some college / trade school
- □ College degree
- □ Postgraduate degree
- □ Other

11. Zip Code: 25430

12. How long have you lived in Jefferson County?

- □ Less than one year
- □ 1 – 5 years
- □ 5 – 9 years
- □ 10 – 19 years
- □ 20 years or more

OTHER COMMENTS:

THANK YOU FOR PROVIDING THIS INFORMATION

Name (Optional): _____

Agency (Optional): _____

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

Severe Storms

List one project that you feel would lessen hazard-related loss: _____

Create a well-known Radio frequency for emergency info. Outside emergencies it can broad cast other info like traffic delays so people stay familiar with the frequency. or Shepherd-produced shows or APU-produced shows

Post frequency on Highway signs so evacuees can see it.

Name (Optional): _____

Agency (Optional): _____

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

Flooding - Most frequent hazard w/ impact on greatest amount of homes/locations

List one project that you feel would lessen hazard-related loss: _____

Most important to me is a generator appropriate fuel storage & refuel for Charles Town Water

Name (Optional): _____

Agency (Optional): _____

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

High Winds/Floods: Being in a valley w/ mountains in the direction they are funnels wind & rain through Jefferson County

List one project that you feel would lessen hazard-related loss: Underground

Powerlines/phone lines

Name (Optional): Barbara Miller

Agency (Optional): JCHSEM

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

CRITICAL Infrastructure

List one project that you feel would lessen hazard-related loss: _____

Generators on all CRITICAL Infrastructure

Name (Optional): _____

Agency (Optional): _____

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

Drought, Wind Storm

List one project that you feel would lessen hazard-related loss: _____

Name (Optional): _____

Agency (Optional): _____

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

Winter Storms

List one project that you feel would lessen hazard-related loss: _____

Name (Optional): Andy Black

Agency (Optional): Ranson

To what hazard do you feel Jefferson County is *most* vulnerable? Why? ____

WATER, Sewer, Electric, Communication - June 29th storm proved we have some areas to work on in terms of keeping infrastructure up and running.

List one project that you feel would lessen hazard-related loss: _____

Continuity of operation plans / generators.

Terri Mehling

From: Nance Briscoe [briscoen@frontiernet.net]
Sent: Tuesday, February 26, 2013 8:27 AM
To: Terri Mehling
Subject: EPOHOA Posting - Mitigation
Attachments: briscoen.vcf

Hi Terri - I've posted your form and the Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update text to http://epohoa.org under "Latest News"

Have a nice day,
Nance

--
Nance Briscoe
304.728.2201

Eastern Panhandle Organization of Homeowners Associations

Categories: General
Date: Feb 25, 2013
Title: Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update

Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update Now Available for Review

Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update Now Available for Review
The Jefferson County Hazard Mitigation Core Planning Committee recently completed an update to the Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan. This plan identifies the hazards to which Jefferson County is susceptible as well as a variety of projects that can be undertaken to lessen the effects of those hazards. The following jurisdictions are included in the plan: Town of Bolivar, City of Charles Town, Town of Harpers Ferry, City of Ranson, Corporation of Shepherdstown, and the unincorporated areas of Jefferson County. The Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan was developed in 2003 and revised in 2008 per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. The plan must be reviewed/updated/re-adopted and submitted to FEMA every 5 years. The plan expires 7/25/13. The updated document is available for review at the office of Jefferson County Homeland Security & Emergency Management at 28 Industrial Blvd., Suite 101, Kearneysville, WV 25430, also at the Jefferson County Commission Office located at 124 East Washington Street, Charles Town, WV 25414 and at the following website: http://www.jeffersoncountywv.org/flood-plain-information/all-hazard-risk-assessment-and-mitigation-plan.html. A form will be provided at the aforementioned locations and online to document any comments. All comments must be submitted by March 21, 2013. For additional information, please contact Terri Mehling, Deputy Director of Jefferson County Homeland Security and Emergency Management at (304) 728-3329 or tmehling@jeffersoncountywv.org

[The Journal]

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NEIGHBORHOOD

Friday, March 1, 2013

WWW.JOURNAL-NEWS.NET

All-Hazard Mitigation plan update available for review

KEARNEYSVILLE – The Jefferson County Hazard Mitigation Core Planning Committee recently completed an update to the Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan.

This plan identifies the hazards to which Jefferson County is susceptible as well as a variety of projects that can be undertaken to lessen the effects of those hazards. The following jurisdictions are included in the plan: town of Bolivar, city of Charles Town, town of Harpers Ferry, city of Ranson, corporation of Shepherdstown and the unincorporated areas of Jefferson County.

The Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan was developed in 2003 and revised in 2008 per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. The plan must be reviewed/updated/re-adopted and submitted to FEMA every five years.

The plan expires July 25.

The updated document is available for review at the office of Jefferson County Homeland Security & Emergency Management at 28 Industrial Blvd., Suite 101, Kearneysville, as well as at the Jefferson County Commission Office at 124 E. Washington St., Charles Town and at www.jeffersoncountywv.org.

A form will be provided at the aforementioned locations and online to document any comments. All comments must be submitted by March 21.

For additional information, contact Terri Mehling, deputy director of Jefferson County Homeland Security and Emergency Management at 304-728-3329 or tmehling@jeffersoncountywv.org.

A4-72

FOR IMMEDIATE RELEASE
February 25, 2013
Contact: Jessica A. Owens
Phone: 304-724-8914

Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update
Now Available for Review

The Jefferson County Hazard Mitigation Core Planning Committee recently completed an update to the Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan.

This plan identifies the hazards to which Jefferson County is susceptible as well as a variety of projects that can be undertaken to lessen the effects of those hazards. The following jurisdictions are included in the plan: Town of Bolivar, City of Charles Town, Town of Harpers Ferry, City of Ranson, Corporation of Shepherdstown, and the unincorporated areas of Jefferson County.

The Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan was developed in 2003 and revised in 2008 per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. The plan must be reviewed/updated/re-adopted and submitted to FEMA every 5 years. The plan expires 7/25/13.

The updated document is available for review at the office of Jefferson County Homeland Security & Emergency Management at 28 Industrial Blvd., Suite 101, Kearneysville, WV 25430, also at the Jefferson County Commission Office located at 124 East Washington Street, Charles Town, WV 25414 and at the following website: http://www.jeffersoncountywv.org/flood-plain-information/all-hazard-risk-assessment-and-mitigation-plan.html. A form will be provided at the aforementioned locations and online to document any comments. All comments must be submitted by March 21, 2013.

For additional information, please contact Terri Mehling, Deputy Director of Jefferson County Homeland Security and Emergency Management at (304) 728-3329 or tmehling@jeffersoncountywv.org

Doug Britvec

From: Terri Mehling [tmehling@jeffersoncountywv.org]
Sent: Friday, March 15, 2013 1:31 PM
To: 'Terri Mehling'
Subject: REMINDER: Draft Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update Now Available for Review
Attachments: Public Comment Form.pdf

Risk Assessment Committee Members:

Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan Update Now Available for Review.

The Jefferson County Hazard Mitigation Core Planning Committee recently completed an update to the Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan. Please take the time to review the document (it is over 600 pages).

This plan identifies the hazards to which Jefferson County is susceptible as well as a variety of projects that can be undertaken to lessen the effects of those hazards. The following jurisdictions are included in the plan: Town of Bolivar, City of Charles Town, Town of Harpers Ferry, City of Ranson, Corporation of Shepherdstown, and the unincorporated areas of Jefferson County.

The Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan was developed in 2003 and revised in 2008 per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. The plan must be reviewed/updated/re-adopted and submitted to FEMA every 5 years. The plan expires 7/25/13.

The updated document is available for review at the office of Jefferson County Homeland Security & Emergency Management at 28 Industrial Blvd., Suite 101, Kearneysville, WV 25430, also at the Jefferson County Commission Office located at 124 East Washington Street, Charles Town, WV 25414 and at the following website: http://www.jeffersoncountywv.org/flood-plain-information/all-hazard-risk-assessment-and-mitigation-plan.html. A form (see attached) will be provided at the aforementioned locations and online to document any comments. **All comments must be submitted by March 21, 2013.**

For additional information, please contact Terri Mehling, Deputy Director of Jefferson County Homeland Security and Emergency Management at (304) 728-3329 or tmehling@jeffersoncountywv.org

Terri Mehling
Program Manager/Planner/Deputy Director
Jefferson County Homeland Security & Emergency Management
28 Industrial Blvd., Suite 101
Kearneysville, WV 25430
(304) 728-3329
(304) 279-8233 Mobile

APPENDIX 5: ADOPTING RESOLUTIONS

This appendix contains copies of the resolutions signed and adopted by each participating jurisdiction.

RESOLUTION – CORPORATION OF SHEPHERDSTOWN

WHEREAS natural, technological, and man-made hazards can affect the Corporation of Shepherdstown; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Corporation of Shepherdstown incurs as a result of said hazard occurrences.

THEREFORE the Corporation of Shepherdstown has partnered with the county to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting the Corporation as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Corporation of Shepherdstown has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the Corporation of Shepherdstown joined Jefferson County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Corporation of Shepherdstown does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor

RESOLUTION – CITY OF RANSON

WHEREAS natural, technological, and man-made hazards can affect the City of Ranson; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the City of Ranson incurs as a result of said hazard occurrences.

THEREFORE the Ranson City Council has partnered with the county to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting the City as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Ranson City Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the City of Ranson joined Jefferson County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Ranson City Council does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor

RESOLUTION – JEFFERSON COUNTY COMMISSION

WHEREAS natural, technological, and man-made hazards can affect Jefferson County; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses Jefferson County incurs as a result of said hazard occurrences.

THEREFORE the Jefferson County Commission has undertaken a project to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting Jefferson County as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Jefferson County Commission has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the Jefferson County Commission joined the Cities of Charles Town and Ranson, the Towns of Bolivar and Harpers Ferry, and the Corporation of Shepherdstown in the completion of this plan update.

NOW BE IT RESOLVED THAT the Jefferson County Commission does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
President, Jefferson County Commission

RESOLUTION – TOWN OF HARPERS FERRY

WHEREAS natural, technological, and man-made hazards can affect the Town of Harpers Ferry; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Town of Harpers Ferry incurs as a result of said hazard occurrences.

THEREFORE the Harpers Ferry Town Council has partnered with the county to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting the town as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Harpers Ferry Town Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the Town of Harpers Ferry joined Jefferson County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Harpers Ferry Town Council does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor

RESOLUTION – CITY OF CHARLES TOWN

WHEREAS natural, technological, and man-made hazards can affect the City of Charles Town; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the City of Charles Town incurs as a result of said hazard occurrences.

THEREFORE the Charles Town City Council has partnered with the county to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting the City as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Charles Town City Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the City of Charles Town joined Jefferson County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Charles Town City Council does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor

RESOLUTION – TOWN OF BOLIVAR

WHEREAS natural, technological, and man-made hazards can affect the Town of Bolivar; and

WHEREAS significant structural, historical, and economic losses could result from an occurrence of a natural, technological, or man-made hazard event; and

WHEREAS undertaking mitigation projects during pre-disaster periods could decrease the total losses the Town of Bolivar incurs as a result of said hazard occurrences.

THEREFORE the Bolivar Town Council has partnered with the county to update the existing *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan*, adopted in 2008, in an effort to further identify, define, and characterize the hazards affecting the town as well as to continue identifying and prioritizing projects that could lessen hazard vulnerability.

WHEREAS the Bolivar Town Council has a strong interest in reducing losses from future hazard occurrences; and

WHEREAS the hazard mitigation plan is a federal and state requirement to maintain eligibility for hazard mitigation funding, and, by that requirement, must be updated a minimum of every five (5) years; and

WHEREAS a cooperative, joint effort is a proven, efficient way to plan for and reduce hazard susceptibility in all government jurisdictions in Jefferson County, West Virginia.

THEREFORE the Town of Bolivar joined Jefferson County in the completion of this plan update.

NOW BE IT RESOLVED THAT the Bolivar Town Council does hereby adopt the updated *Jefferson County Multi-Jurisdictional All-Hazard Mitigation Plan* (as presented and with any state/federally-required modifications) this _____ day of _____, 20__.

SIGNED: _____
Mayor