

2699 - Damascus Resilience Plan

Application Details

Funding Opportunity:	2335-Virginia Community Flood Preparedness Fund - Capacity Building/Planning Grants - CY24 Round 5
Funding Opportunity Due Date:	Mar 28, 2025 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Jan 22, 2025 3:27 PM
Initially Submitted By:	Gavin Blevins
Last Submit Date:	
Last Submitted By:	

Contact Information

Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Mr. Gavin N Blevins
	Salutation First Name Middle Name Last Name
Title:	Planning Director
Email*:	gblevins@mrpdc.org
Address*:	1021 Terrace Drive
	Marion Virginia 24354
	City State/Province Postal Code/Zip
Phone*:	(276) 783-5103 315
	Phone Ext.
	### ### #####
Fax:	### ### #####
Comments:	

Organization Information

Status*:	Approved
Name*:	Town of Damascus
Organization Type*:	City Government
Tax ID*:	54-6001242
Unique Entity Identifier (UEI)*:	W4ULSSJNFAT5
Organization Website:	https://www.damascus.org/

Address*: 208 West Laurel Avenue
P.O. Box 24236

Damascus Virginia 24236-
City State/Province Postal Code/Zip
Phone*: (276) 475-3831 Ext.

Fax: ### ###
Benefactor:
Vendor ID:
Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: Town of Damascus
Your locality's CID number can be found at the following link: [Community Status Book Report](#)

NFIP/DCR Community Identification Number (CID)*: 510170

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Chris Bell
First Name Last Name

Mailing Address*: P.O. Box 576
Address Line 1
Address Line 2

Damascus Virginia 24236
City State Zip Code

Telephone Number*: 276-475-3831

Cell Phone Number*: 404-597-3853

Email*: townmanager@damascus.org

Is the contact person different than the authorized individual?

Contact Person*: Yes

Contact: Gavin Blevins
First Name Last Name

1021 Terrace Drive
Address Line 1
Address Line 2

Marion Virginia 24354
City State Zip Code

Telephone Number: 276-783-5103

Cell Phone Number: 276-685-9791

Email Address: gblevins@mrpdc.org

Enter a description of the project for which you are applying to this funding opportunity

Project Description*:

Aligning with the revitalization efforts of the town over the past decade, and in the wake of the devastation caused by Hurricane Helene, Damascus seeks to complete a resilience plan, coordinating the planning efforts with the Dept. of Forestry and the recent comprehensive plan. Flood

resilience was always a concern for Damascus, however, the recent hurricane devastation has made redevelopment with resilience as a focus even more critical.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area*: Yes

Information regarding your census block(s) can be found at [census.gov](https://www.census.gov)

Census Block(s) Where Project will Occur*: 109

Is Project Located in an NFIP Participating Community?* Yes

Is Project Located in a Special Flood Hazard Area?* Yes

Flood Zone(s) (if applicable): AE, X

Flood Insurance Rate Map Number(s) (if applicable): 51191C0320C

Eligibility - Round 4

Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

Local Government*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support*: N/A
Yes - Eligible for consideration
No - Not eligible for consideration

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded*: No
Yes - Not eligible for consideration
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds*: N/A
Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Match not required

Scoring Criteria for Capacity Building & Planning - Round 4

Scoring

Eligible Capacity Building and Planning Activities (Select all that apply) ? Maximum 100 points. To make multiple selections, Hold CTRL and click the desired items.

Capacity Building and Planning*: Resilience Plan Development

Is the project area socially vulnerable? (based on [ADAPT Virginia's Social Vulnerability Index Score](#))

Social Vulnerability Scoring:

Very High Social Vulnerability (More than 1.5)

High Social Vulnerability (1.0 to 1.5)

Moderate Social Vulnerability (0.0 to 1.0)

Low Social Vulnerability (-1.0 to 0.0)

Very Low Social Vulnerability (Less than -1.0)

Socially Vulnerable*: Moderate Social Vulnerability (0.0 to 1.0)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NRP?

NFIP*: No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Low-Income Geographic Area*: Yes

Does this project provide ?community scale? benefits?

Community Scale Benefits*: 50-100% of census block

Comments:

Scope of Work and Budget Narrative - Capacity Building and Planning - Round 4

Scope of Work - General Information

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

Scope of Work Attachment*: [CID510170_Town of Damascus_CFPF_RP_Scope_Narrative.pdf](#)

Comments:

Scope includes project management, public engagement, data collection, conditions report, capability and capacity assessment, risk and vulnerability assessment, action plan, and of course the comprehensive resilience plan.

Budget Narrative

Budget Narrative Attachment*: [CID510170_Town of Damascus_CFPF_RP_Budget_Narrative.pdf](#)

Comments:

The town is requesting a match waiver

Scope of Work Supporting Information - Capacity Building and Planning

Scope of Work Supporting Information

Describe identified resource needs including financial, human, technical assistance, and training needs

Resource need identification*:

The town was once a thriving community, but following the loss of the timber industry and the railroad, is now sustained by the outdoor recreation tourism industry. However, resources are limited, and the town has only begun to rebuild and plan for the future within the past decade. Past of this, is development of urban forests and natural spaces, due to threats of flooding. the majority of the towns core is a floodplain between two creeks.

In the wake of the disaster left behind by Hurricane Helene, the town seeks to complete a resilience plan to guide reconstruction and revitalization efforts. The town has very limited human and financial resources, and therefore contracts additional capacity through the Mount Rogers Planning District Commission at a reduced rate.

Describe the plan for developing, increasing, or strengthening knowledge, skills and abilities of existing or new staff. This may include training of existing staff, hiring personnel, contracting consultants or advisors

Development of Existing or New Staff*:

The existing staff is heavily limited, but the town leverages additional resources through Washington County and the Mount Rogers PDC. Facilities are limited to house additional staff, but the PDC is assisting with floodplain regulation administration and training for current staff.

Where capacity is limited by funding, what strategies will be developed to increase resources in the local government? (This may include work with non-governmental organization, or applying for grants, loans, or other funding sources)

Resource Development Strategies*:

The 2025 Mount Rogers Planning District's Pre-disaster Hazard Mitigation Plan has just been completed, as well as a new comprehensive plan, and with additional assistance from the PDC, the town believes the plan can be completed at a reasonable cost, combined with the study funding. Following the devastation of hurricane Helene, the town's situation is critical. The PDC is applying for additional funds to support planning efforts district-wide following the hurricane, and should be able to provide the additional resources to the town/project without financially burdening the town.

Describe policy management and/or development plans

Policy management and/or development*:

The town seeks to update policies and procedures to mitigate flooding threats and regulate future development patterns to align with the town's environmental sustainability goals. Nature-based solutions incorporated into policies, procedures, and plans are high priority. Overly-designed gray infrastructure can be beyond the town's capability to maintain and fund maintenance/replacement. The resiliency planning process is critical to the sustainable and resilient reconstruction of the Town of Damascus.

Describe plans for stakeholder identification, outreach, and education strategies

Stakeholder identification, outreach, and education strategies*:

Following the disaster that was Hurricane Helene, community engagement is at record levels, stakeholders are known, partners are engaged and on site, and the town has contacts and relationships with staff from all the relevant state and federal agencies. Damascus outreach has been tested and adapted to meet the needs of such a project.

Budget

Budget Summary

Grant Matching Requirement*:

LOW INCOME - Planning and Capacity Building - Fund 90%/Match 10%

*Match requirements for Planning and Capacity Building in low-income geographic areas will not require match for applications requesting less than \$3,000.

Is a match waiver being requested?

Match Waiver Request Yes

Note: only low-income communities are eligible for a match waiver.

*:

I certify that my project is in a low-income geographic area: Yes

Total Project Amount (Request + Match)*: \$50,000.00
**This amount should equal the sum of your request and match figures

REQUIRED Match Percentage Amount: \$5,000.00

BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

Match Percentage: 9.09%
Verify that your match percentage matches your required match percentage amount above.

Total Requested Fund Amount: \$50,000.00

Total Match Amount: \$5,000.00

TOTAL: \$55,000.00

Personnel

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Travel

Description	Requested Fund Amount	Match Amount	Match Source
-------------	-----------------------	--------------	--------------

No Data for Table

Equipment

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Supplies

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Construction

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Contracts

Description	Requested Fund Amount	Match Amount	Match Source
Professional Services	\$50,000.00	\$5,000.00	WAIVER
	\$50,000.00	\$5,000.00	

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Other Direct Costs

Description	Requested Fun Amount	Match Amount	Match Source
No Data for Table			

Supporting Documentation - General

Supporting Documentation

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
Detailed map of the project area(s) (Projects/Studies)		Map outlines priority project area	CID510170_Town of Damascus_CFPF_Project Area Map.pdf	pdf	5 MB	01/09/2025 02:44 PM
FIRMette of the project area(s) (Projects/Studies)		2010 FIRM; digitized from 1988 FIRM	CID510170_Town of Damascus_CFPF_Firmette FM51191C0320C.pdf	pdf	11 MB	01/09/2025 02:45 PM
Historic flood damage data and/or images (Projects/Studies)		Selected photos of flood damage from Hurricane Helene only; does not contain photos of historic 1977 flood or annual flooding events	CID510170_Town of Damascus_CFPF_Photos of Flood Damage.pdf	pdf	22 MB	01/09/2025 02:46 PM
A link to or a copy of the current floodplain ordinance		Includes flood regulation ordinance + zoning ordinance	CID510170_Town of Damascus_CFPF_Ch 30 Floods.pdf	pdf	5 MB	01/09/2025 02:47 PM
Maintenance and management plan for project						

A link to or a copy of the current hazard mitigation plan	2019 plan attached as approved by FEMA; 2025 plan is still pending final FEMA approval	CID510170_Town of Damascus_CFPF_2019 Hazard Mitigation Plan.pdf	pdf	2	01/09/2025	MB	02:48 PM
A link to or a copy of the current comprehensive plan	2013 plan attached; 2024 plan update hasn't been adopted due to catastrophe	CID510170_Town of Damascus_CFPF_Comprehensive Plan 2013.pdf	pdf	4	01/09/2025	MB	02:49 PM
Social vulnerability index score(s) for the project area	Social vulnerability score for surrounding Washington County averages 0.17 (moderate) for 2020	CID510170_Town of Damascus_CFPF_Social Vulnerability Map.pdf	pdf	3	01/09/2025	MB	02:49 PM
Authorization to request funding from the Fund from governing body or chief executive of the local government	Waiver Requested	CID510170_Town of Damascus_CFPF_RP Authorization Ltr_signed.pdf	pdf	32	01/09/2025	KB	04:45 PM
Signed pledge agreement from each contributing organization							
Maintenance Plan							
<i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i>							
Benefit Cost Analysis							
Other Relevant Attachments							

Letters of Support

Description	File Name	Type	Size	Upload Date
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No files attached.

Scope Narrative

510170 – Town of Damascus – CFPF Round 5 – “Capacity/Planning” (Damascus Resilience Plan)

Needs:

Following the historic flood of 1977, when Beaverdam Creek flooded the western portion of the town, the Army Corps of Engineers, FEMA, and the Tennessee Valley Authority worked together for years to help the town mitigate future damages and restore the area. Stream bank stabilization projects through the Natural Resource Conservation Service needed to be completed in the following years. This most recent historic flood from Hurricane Helene, when Laurel Creek jumped its banks and flooded the eastern portion of town has not yet been addressed the same way. Nevertheless, the town needs a plan and adequate data to guide recovery efforts and redevelopment which will mitigate future risks.

The first step in long-term recovery is to have a plan that is backed by community support and the best data possible. Though the town has minimally invested in strategies to create an urban forestry plan, implement nature-based stream restoration projects, and incorporate climate change and sustainability principles into goals, objectives, and strategies, there has never been the capacity and/or funding available to create a real plan. This effort should allow the town to generate a plan to recover and redevelop in a sustainable way, implement mitigation strategies based on the best data possible, provide a mechanism to reduce flood insurance premiums, provide a framework to implement nature-based solutions in areas of highest ROI, and redesign its approach and goals to be more resilient to climate change.

Though this project is localized within Damascus, it complements the resilience planning initiative and comes just on the tail-end of the 2025 *Mount Rogers Planning District's Pre-disaster Hazard Mitigation Plan* (HMP).

Goals and Objectives:

Goal: The town has a resilience plan to guide sustainable, flood and climate change-resilience redevelopment.

Objectives:

1. Complete a capacity and capability assessment.
2. Complete a risk and vulnerability assessment.
3. Establish a public awareness and outreach program beyond the extent of the plan development process.
4. Develop a workplan including action items that are primarily nature-based, reasonably specific, measurable, achievable, relevant, and time bound.
5. Coordinate the resilience plan with the town's policies, regulations, administrative procedures, goals, mission, and other plans and planning processes.

Work Plan:

Procurement will have already been completed by the MRPDC.

Assuming the study is also funded (application #2701), the completion of this project will be coordinated with the study, guidebook, and additional mapping, to be included in the plan.

At a minimum, the process will include data collection, monthly management team meetings, a kick-off meeting, community workshop #1, community workshop #2, community feedback meeting, and a public

hearing for adoption. Other components would include the capacity, capability, risk and vulnerability assessments.

Tasks: Major tasks would be specifically identified during contract negotiation but would primarily be the development of the resilience plan in accordance with CFPF program requirements.

- Project Management: includes monthly meetings with the project management team and several facilitated meetings with the expanded Flood Resilience Committee, plus coordination of project activities and partners
- Public Engagement: including public meetings, workshops, and events
- Data Collection and Analysis
- Existing Conditions Report
- Capability and Capacity Assessment
- Risk and Vulnerability Assessment
- Resilience Action Implementation Plan: including workshops
- Draft and Final Plan: including review meetings

Who: Town staff will coordinate with the Planning Director of the Mount Rogers Planning District Commission (MRPDC) and the engineering consultant to produce the data collection/analysis, capability and capacity assessment, risk and vulnerability assessment, and other plan components. The MRPDC will have a staff member acting as the project manager, completing plan writing, project coordination, outreach, and reporting.

Additional partners would include VDEMS, FEMA, NRCS, ACE, VDOF, DFWS, and Washington County (contacts identified following the Hurricane Helene emergency).

Timeframe: The project should begin soon after the award (anticipated by October 2025) and be completed within 16 months.

Deliverables: Resilience Plan

Evaluation:

The project will be a success when the resilience plan has been completed, including action items that are reasonably specific, measurable, achievable, relevant, and time bound.

The project management team will meet regularly to ensure that the project is not delayed in ways that are unavoidable/outside our control. Additionally, outreach efforts and milestones may be entangled with the study (if funded) to push the two projects along together.

Budget Narrative

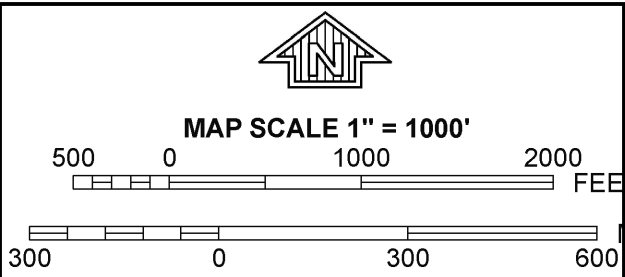
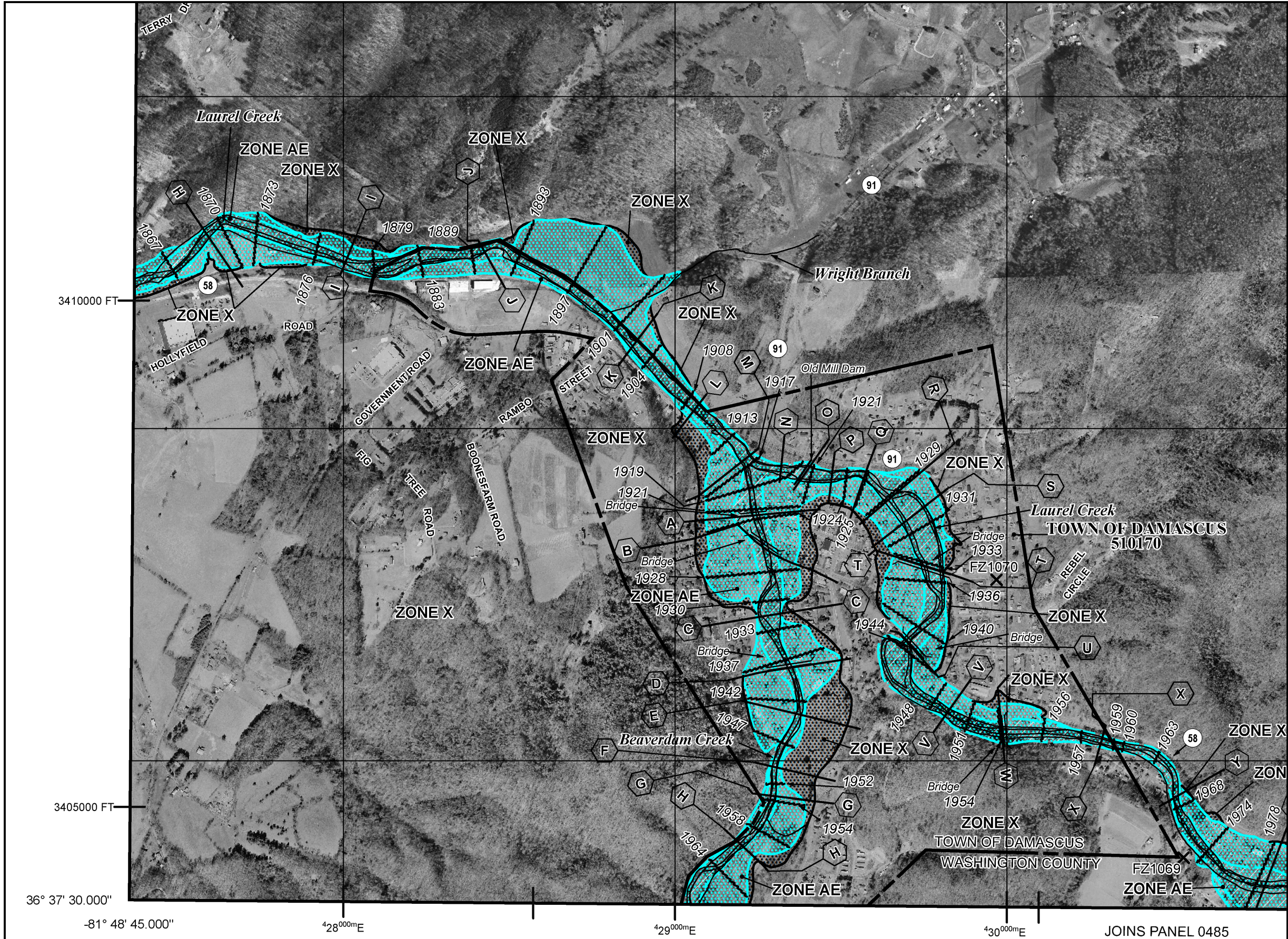
510170 – Town of Damascus – CFPF Round 5 – “Capacity Building” (Damascus Resilience Plan)

The estimated minimum cost to complete the project is \$50,000, reduced due to savings/work completed as part of the town’s resilience plan and flexible procurement of the consultants. The project costs will be 100% contractual for professional services. To offset the cost of the plan, the planning district commission is preparing to offer additional services district-wide to assist the various localities with additional planning capacity – this will include assistance with eh Damascus Resilience Plan.

The Town of Damascus is requesting a match waiver, even though Damascus’s household median income level is approximately 1/3 of Virginia and the National Average, meeting the CFPF definition of a low-income community. Typically, this project would require a 10% match, however, the town does not have the financial resources to match any additional projects currently or for the foreseeable future and has also requested a waiver for the match on a “study” application for flood recovery. Due to the need of the town to address substantial damage along Laurel Creek, plan for flood mitigation actions, and create a plan to prepare for increasing climate change hazards, including flooding. This project will complement the study that the town is applying for as well (application #22699), by establishing the current conditions, vulnerability, goals, objections, and establishing a framework for mitigation actions.

The project budget was derived from the estimates utilized during the resilience plan project estimations; the town anticipates that the study cost should be reduced due to the project overlap with the resilience planning process. The same consultant for the resilience plan will be working on the study, in accordance with the VPPA, for the purpose of reducing costs.

Applicant Name: Town of Damascus (510170) Community Flood Preparedness Fund & Resilient Virginia Revolving Loan Fund									
Detailed Budget Narrative Period of Performance: September 30, 2025, through December 30, 2026 Submission Date: January 24, 2025									
Grand Total State Funding Request									
Grand Total Local Share of Project									\$0
Federal Funding (if applicable)									\$0
Project Grand Total									\$50,000
Locality Cost Match									0%
** Town of Damascus respectfully requests a match waiver									
Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share									
State Share – CFPF Grant						\$50,000			
State Share – RVRF Match Loan									
Pre-Award/Startup									
Maintenance									
Total	\$	\$	\$	\$	\$	\$50,000	\$	\$	\$



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0320C

FIRM

FLOOD INSURANCE RATE MAP

WASHINGTON COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 320 OF 550

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DAMASCUS, TOWN OF	510170	0320	C
WASHINGTON COUNTY	510168	0320	C



MAP NUMBER

51191C0320C

EFFECTIVE DATE

SEPTEMBER 29, 2010

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.

TOWN OF DAMASCUS

COMPREHENSIVE PLAN



August 2013

**COMPREHENSIVE PLAN
FOR
DAMASCUS, VIRGINIA**

Prepared by
Damascus Planning Commission

Adopted by
Damascus Town Council
June 2, 1980

Revised
July 1988, February 1995
Lawrence Lewis, Chairman
Damascus Planning Commission

Rewritten
December 1999
Creed Jones, Chairman
Damascus Planning Commission

Revised
September 2007
Tom Horsch, Chairman
Damascus Planning Commission

Rewritten
August 2013
Jim Cartwright, Chairman
Damascus Planning Commission

The preparation of this document was
financed in part by comprehensive
planning grants from the
Appalachian Regional Commission
and the U.S. Department of
Housing and Community Development

Town of Damascus

"The Strength of a Town Lies in the Confidence and Cooperation of Its People"

PO DRAWER 576
DAMASCUS, VIRGINIA 24236-0576

TELEPHONE 276-475-3831
FAX # 276-475-3241

RESOLUTION DAMASCUS PLANNING COMMISSION

WHEREAS, the Damascus Planning Commission is charged by Section 15.2-2232 of the Code of Virginia, 1950, as amended, to prepare and recommend a Comprehensive Plan for the physical development of the territory within the Town; and

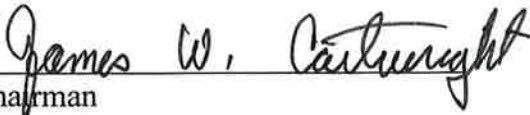
WHEREAS, the Planning Commission has met regularly during the re-writing of this Plan and has carefully examined the existing conditions and trends of growth and the probable future requirements of the Town and its inhabitants; and

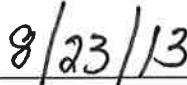
WHEREAS, the Planning Commission agrees that this re-written Comprehensive Plan should be presented to the Town Council as its general guide for decision making regarding the provision of the public services for existing and future needs of the Town; and

WHEREAS, the Planning Commission and Town Council have jointly advertised their intent to conduct a joint public hearing pursuant to Section 15.2-432 of the Code of Virginia, 1950, as amended.

NOW, THEREFORE, BE IT RESOLVED by the Damascus Planning Commission that the re-written Comprehensive Plan is hereby certified to the Town Council; and

BE IT FURTHER RESOLVED, that the Damascus Planning Commission doth hereby and hereon recommend that the Town Council adopt the Comprehensive Plan as the guide for the future development of the Town of Damascus.


Chairman


Date


Secretary


Date

TOWN OF DAMASCUS COMPREHENSIVE PLAN
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List of Maps

Damascus Zoning Map
VDOT SYIP Projects

CHAPTER I INTRODUCTION

A. Purpose

The purpose of the Damascus Comprehensive Plan is to provide a guide or a “vision” for the future development of the town. Planning is an organized way of determining a community’s problems and opportunities, then setting goals, objectives, and strategies to address those problems and opportunities. Planning is a forward-looking process that bridges the gap between where we are today and where we want to go in the future. A comprehensive plan by its very name addresses a variety of often-interrelated public facilities and services, quality of life, economy, and transportation.

A comprehensive plan is a tool to guide local government decisions pertaining to the provision of a better environment and efficient public services, both now and in the future. To accomplish these purposes the plan must be comprehensive, general, and long range. A comprehensive plan should include surveys of existing conditions, an analysis of those conditions to determine what changes will take place, and recommendations for action on strategies that will improve existing conditions in order to prepare for the future.

B. Background

As of July 1, 1980, Title 15.2-2223 of the Code of Virginia states that all localities in Virginia had to have adopted a Comprehensive Plan. The Code of Virginia also requires that the plan be updated at least every five years and that “The comprehensive plan shall be made with the purpose of guiding and accomplishing a coordinated, adjusted and harmonious development

of the area which will be in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity, and general welfare of the inhabitants.”

Damascus adopted a Comprehensive Land Use Plan on June 2, 1980 with subsequent amendments in 1988 and 1995. None of those amendments were a result of an overall review of the original plan, but were additions primarily necessitated by community improvement projects that were not included in the original plan. In 1998, the town completed a thorough update of the Damascus Comprehensive Plan, which formed the foundation for this version of the plan.

C. Relationship to Other Plans

The comprehensive plan is a general plan and is not designed to stand alone as the sole guide for the development of a locality. However, the plan fulfills a number of specific purposes. It is the basis for a town zoning ordinance and serves as a sounding board for examination of an application for rezoning. It provides a comprehensive frame of reference for the review and evaluation of conditional use permits, subdivision plats, site plans, and developmental proposals. It gives official recognition to areas of natural, historical, geological, or archeological significance, thus insuring their conservation and protection. The plan serves as a guide for efficient and coordinated improvements in public services. It identifies the assets of the town and outlines ways to preserve and take advantage of those assets. The comprehensive plan may be implemented by zoning ordinances, subdivision ordinances, and capital improvements programs. Other plans of importance to the town in the development of this plan include the Washington County Comprehensive Plan; the Washington County 604(b) Comprehensive Water and Wastewater Quality Plan; the Mount Rogers Regional Strategic Plan;

the Mount Rogers National Recreation Area Unit Plan; the VDOT Corridor Plans for U.S. Route 58 and Route 91; and the Highway Improvement Plans of Tennessee and North Carolina.

D. Definitions

“Comprehensive” means that the plan must include all the land within the town as well as be cognizant of all decisions which may have an impact on the land. “General” means that the plan does not dictate specific locations or include the ordinances which are needed to put the plan into effect. Rather a general plan provides the goals, objectives, and strategies to which decisions and ordinance of the local government can be directed.

“Long Range” means that the plan, while addressing current problems, also considers future situations and the impact of changes 10 to 15 years from now. “Goals” are general statements or future conditions considered desirable to the town; they are ends toward which actions are aimed. “Objectives” are statements of measurable activities to be accomplished in pursuit of the goals; they refer to some specific aspirations which are reasonably attainable.

“Strategies” or “recommendations” are specific proposals that directly relate to accomplishing the objective; they are the actions recommended to implement the plan. Strategies or recommendations represent the “how we are going to get there” component of the Plan.

E. Description of the Planning Area

Damascus is located in the southeast section of Washington County. The town is 12 miles from the Town of Abingdon and Interstate 81 and 28 miles from Bristol. The Tennessee border lies 1 ½ miles to the south of Damascus and the Smyth County line is 17 miles to the east. Highways 58 and 91, as well as Laurel and Beaverdam Creeks, intersect within the corporate limits.

Damascus is favorably situated as a service area for a number of tourist attractions. Backbone Rock is two miles to the southwest, while Whitetop Mountain, Mount Rogers, and Pine Mountain, the three highest peaks in Virginia, are approximately 20 miles to the east. Grayson Highlands State Park is approximately 30 miles to the east, and to the south, east and west, adjoining the corporate limits, is the Congressionally designated Mount Rogers National Recreation Area of the George Washington and Jefferson National Forests. The Appalachian Trail, Virginia Creeper Trail, Iron Mountain Trail, Daniel Boone Trail, the Crooked Road, and Transamerica 76 Bicycle Route pass through the corporate limits. Damascus also lies at the entrance to Shady Valley, Tennessee and joins the Cherokee National Forest to the south.

F. Legal Status of the Plan

“§15.2-2232. Legal status of plan. -- A. Whenever a local planning commission recommends a comprehensive plan or part thereof for the locality and such plan has been approved and adopted by the governing body, it shall control the general or approximate location, character and extent of each feature shown on the plan. Thereafter, unless a feature is already shown on the adopted master plan or part thereof or is deemed so under subsection D, no street or connection to an existing street, park or other public area, public building or public structure, public utility facility or public service corporation facility other than railroad facility, whether publicly or privately owned, shall be constructed, established or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the commission as being substantially in accord with the adopted comprehensive plan or part thereof. In connection with any such determination, the commission may, and at the direction of the governing body shall, hold a public hearing, after notice as required by § 15.2-2204.

B. The commission shall communicate its findings to the governing body, indicating its approval or disapproval with written reasons therefor. The governing body may overrule the action of the commission by a vote of a majority of its membership. Failure of the commission to act within sixty days of a submission, unless the time is extended by the governing body, shall be deemed approval. The owner or owners or their agents may appeal the decision of the commission to the governing body within ten days after the decision of the commission. The appeal shall be by written petition to the governing body setting forth the reasons for the appeal. The appeal shall be heard and determined within sixty days from its filing. A majority vote of the governing body shall overrule the commission.

C. Widening, narrowing, extension, enlargement, vacation or change of use of streets or public areas shall likewise be submitted for approval, but paving, repair, reconstruction, improvement, drainage or similar work and normal service extensions of public utilities or public service corporations shall not require approval unless involving a change in location or extent of a street or public area.

D. Any public area, facility or use as set forth in subsection A which is identified within, but not the entire subject of, a submission under either § 15.2-2258 for subdivision or provision 8 of § 15.2-2286 for development or both may be deemed a feature already shown on the adopted master plan, and, therefore, excepted from the requirement for submittal to and approval by the commission or the governing body; provided, that the governing body has by ordinance or resolution defined standards governing the construction, establishment or authorization of such public area, facility or use or has approved it through acceptance of a proffer made pursuant to § 15.2-2303.

E. Approval and funding of a public telecommunications facility by the Virginia Public Broadcasting Board pursuant to Article 12 (§ 2.2-2426 et seq.) of Chapter 24 of Title 2.2 shall be deemed to satisfy the requirements of this section and local zoning ordinances with respect to such facility with the exception of television and radio towers and structures not necessary to house electronic apparatus. The exemption provided for in this subsection shall not apply to facilities existing or approved by the Virginia Public Telecommunications Board prior to July 1, 1990. The Virginia Public Broadcasting Board shall notify the governing body of the locality in advance of any meeting where approval of any such facility shall be acted upon.

F. On any application for a telecommunications facility, the commission's decision shall comply with the requirements of the Federal Telecommunications Act of 1996. Failure of the commission to act on any such application for a telecommunications facility under subsection A submitted on or after July 1, 1998, within ninety days of such submission shall be deemed approval of the application by the commission unless the governing body has authorized an extension of time for consideration or the applicant has agreed to an extension of time. The governing body may extend the time required for action by the local commission by no more than sixty additional days. If the commission has not acted on the application by the end of the extension, or by the end of such longer period as may be agreed to by the applicant, the application is deemed approved by the commission. “

CHAPTER II

GEOGRAPHIC AND PHYSIOGRAPHIC FEATURES

A. Physiographic Provinces and Geology

The Town of Damascus lies within the Blue Ridge subregion of the Appalachian Mountain Range. Immediately north-northwest of town is the Ridge and Valley subregion of the Appalachians, within which lies most of Washington County. Damascus, at the division of these two subregions, is flanked by the Iron Mountains, which are part of the Blue Ridge.

Geologically, the Ridge and Valley are characterized by underlying layers of sedimentary rocks. Most of the sedimentary rock types in Washington County are sandstone, shale, limestone, and dolomite. Because such rock types are not particularly resistant to erosion and shifting, faulting has occurred throughout parts of the Ridge and Valley. In addition, the valleys of the County are characterized by sinkholes and underground caverns, which pose a problem in maintaining water quality. As development increases, if proper water and sewage treatments are not provided, pollution of springs and wells is unavoidable.

Unlike the sedimentary rock types of the Ridge and Valley, outcrops of rock characterize the Blue Ridge subregion around Damascus, which are volcanic in nature. Sandstone, red shale, limestone and dolomite underlie the town itself.

B. Relief

Generally, the elevation of the Town ranges between 1,900 and 2,000 feet, with an average elevation of approximately 1,950 feet. One knob, in the southern part of Town, rises above 2,300 feet. Directly next to Town is the Iron Mountain range that has peaks of up to 4,000 feet.

C. Climatology

Washington County has a moderate climate with July being the warmest month and January the coldest month. The daily maximum temperature averages about 84°F in July with the average daily minimum temperature in January being about 27°F. The growing season ranges from more than 200 days in the western portion of the County to less than 160 days in the Konnarock area.

Average annual rainfall in Damascus is about 45 inches. Precipitation during the six warm months, April through September, averages approximately 25 inches. Snowfall averages above 15 inches annually.

The prevailing winds in the County are from a westerly direction, with southerly and northerly winds occurring less frequently. The mountains, along with the prevailing westerly winds, generally protect the County from severe storms originating in the Atlantic Ocean. Tornadoes have been reported in Washington County at roughly ten-year intervals since 1944.

D. Hydrology

The hydrology associated with Damascus and the surrounding area is very important. The Town serves as a catch basin for water that flows out of the adjacent mountains in the Jefferson and Cherokee National Forests.

Beaverdam and Laurel Creeks that join within the Town represent the culmination water drainage from three major watersheds encompassing 156 square mile area.

Whitetop Laurel Drainage Area represents a 56.4 square mile watershed. Water drains in a southwestward direction from the Jefferson National Forest into Whitetop Laurel Creek, which flows into Laurel Creek at Laureldale. Although not as major a factor as the two other watersheds, the Whitetop-Laurel Drainage Area provides a significant volume of water to the streams that flow through Town.

The Laurel Creek Drainage Area originates in Johnson County, Tennessee. Encompassing approximately 43.1 square miles, the watershed is bounded on the south by Lord Ridge, Red Fox Ridge and Bald Knob. Elevations range from more than 4,300 feet at Bald Ridge to approximately 2,000 feet at Damascus. Laurel Bloomery is found approximately in the center of this watershed.

The Iron Mountain Ridge separates the Beaverdam Drainage Area from the Laurel Drainage Area. Located west of Laurel Creek, The Beaverdam Drainage area also originates in Tennessee, encompassing the community of Shady Valley and part of the Cherokee National Forest. This natural bowl drains an average of 100 cubic feet of water per second in the Town and encompasses a 56 square mile area. Because of these vast areas of drainage, particularly Beaverdam and Laurel, the Town has suffered from severe floods, three of which occurred in 1977 (April, October and November). The 1977 flood study, Comprehensive Flood Damage Reduction Study for the Town of Damascus¹ estimates the civil damage alone to have been \$118,000 in the November 1977 flood. Damages to business and personal property are not included in this estimate. The November 1977 flood was not the largest in the Town's history; however, it is the only one for which damages have been calculated.

¹Dewberry, Nealon & Davis: Comprehensive Flood Damage Study for the Town of Damascus, August 1979.

The consensus of reports on flooding of Damascus is that the 1901 flood was the largest. Other major floods occurred in August 1940, March 1955, April 1956, January 1957, and October/November 1977. The occurrence and severity of these floods can be more clearly seen in Table II-1.

Table II-1.

FLOOD DISCHARGES AT DAMASCUS IN ORDERS OF SIZE			
LOCATION	DRAINAGE AREA (SQ. MI.)	DATE	QUANTITY (CFS)
BEAVER CR. STREAM GAGE	56.0	MAY 1901	---
		AUG. 1940	6,500
		OCT./NOV. 1977	6,000
		JAN. 1957	4,200
		MAR. 1955	5,280
		APR. 1956	3,880
		JAN. 22, 1954	2,880
		JAN. 16, 1954	1,870
		JAN. 1950	1,870
LAUREL CR. ABOVE BEAVERDAM CREEK	99.5	MAY 1901	15,000
		AUG. 1940	---
		JAN. 1957	8,900
		APR. 1956	6,500
LAUREL CR. BELOW BEAVERDAM CREEK	156.0	MAY 1901	23,000
		AUG. 1940	---
		JAN. 1957	12,600
		APR. 1956	9,100
SOURCE: TENNESSEE VALLEY AUTHORITY, DIVISION OF WATER CONTROL PLANNING, HYDRAULIC DATA BRANCH <u>FLOODS ON LAUREL AND BEAVERDAM CREEDS IN THE VICINITY OF DAMASCUS, VIRGINIA: SUPPLEMENT NO.1,</u> 1960 AND DEWBERRY, NEALON AND DAVIS, <u>COMPREHENSIVE FLOOD DAMAGE REDUCTION STUDY FOR THE</u> <u>TOWN OF DAMASCUS, 1979.</u>			

The Dewberry, Nealon & Davis report specifies six possible plans of action that could be undertaken by Damascus. The Town Council has adopted this study and its recommendations and the implementing suggestions will be incorporated in the recommendations of this plan. Damascus is presently participating in the National Flood

Insurance Program. Under the provisions of this program the federal government subsidizes individual flood insurance policies.

E. Soils

Damascus has both sewage and water systems thus soil limitations to development due to slope, soil type and location or relation to the flood plain are the major deterrents to future growth. There are nine general soil types in the Town. The most prominent soil type is the Allegheny series that comprises 43.1 percent of the Town. The Allegheny series includes deep well-drained soils made of material deposited by Beaverdam and Laurel Creeks. The soils map shows, these soils comprise most of the flat land and developed area in Damascus. These soils make good agricultural land and are well suited for all types of development.²

The Jefferson Series underlies 21.2 percent of Damascus. This soil is formed from material that has washed down from nearby hillsides and is found in many locations with different slope characteristics. The Jefferson series is similar to the Allegheny series in its capability to support agriculture and development. However, these capabilities decline quickly with the steepness of the slope.

The next most prominent soil is the Braddock series comprising 13.9 percent of the town. The Braddock series is made up of material carried by the creeks and washed down from higher elevations. The Braddock soil type, while productive for agriculture, is unstable for building purposes due to its elasticity.

²Soil information is Soil Survey of Washington County, Virginia, 1945, and Soil Survey Interpretations, by U.S. Soil Conservation Service, U.S. Department of Agriculture.

The Ramsey series is found on the hills surrounding Damascus and comprises 11.1 percent of Damascus. Ramsey series soils are poor for agriculture and pose problems to building because the slopes are generally too steep and hard rock is usually encountered within seven to 20 inches of the surface. The Weikert series, which accounts for 4.6 percent and the Gilpin series, which accounts for 2.5 percent of Damascus have similar characteristics. Both types are found on hillsides. Bedrock can be encountered at between 18 and 30 inches in depth, thus limiting development.

Remaining soil types are the Frederick (2.5 percent) Elliber (0.7 percent) and the Whelling series (0.4 percent). These soils account for only a small percentage of the land in Damascus. The Frederick series poses moderate limitations to development due to its slope and its clayey consistency that restricts its ability to support buildings. The Elliber series poses problems to development due to its stony nature. The Whelling series poses only slight difficulty to development where the slope is moderate but poses serious problems where slope exceeds 15 percent.

F. Vegetation

Most of the original forests in the Town have been removed as development has taken place. However, in the surrounding mountains are found scarlet oak, chestnut, oak, locust, pitch pine, sourwood, hickory, white oak, red oak, black gum, tuliptree, hemlock, white pine, linden, cucumbertree, beech, maple, willow, sycamore, holly, elm, scrub pine, black walnut, red cedar, several types of cherry, mountain laurel, huckleberry, and

rhododendron. Other vegetation includes broomdedge, greenbrier, blackberry, dewberry, raspberry, strawberry, ironweed, riverweed, neetle, thistle, mullein, ragweed, narrow-leaved plantain, mint, daisy, aster and watercress.³

G. Physical Constraints to Development

As noted earlier in this chapter, the three physical constraints to development are flooding, slope, and soil conditions.

The 100-year floodplain occupies approximately 113 acres that is about 21 percent of the land area of Damascus. The 100-year floodplain is that area that has a 1.0-percent chance of being flooded in any single year. Lower lying areas within the floodplain have a greater chance of being flooded. Those areas outside the 100-year floodplain have a lesser chance of being flooded.

The 100-year flood is a limitation to development for three reasons. The first and most obvious reason is that a 100-year flood will reach any structure placed in the floodplain. Secondly, any development in the floodplain or in the watershed area will replace existing ground cover. A change in ground cover from forestland or another natural ground cover to non-porous materials like buildings or asphalt will greatly increase surface runoff and therefore the severity of the flood. A third factor is that a building inundated by water will displace a specific amount of water and will raise the flood level by the water displaced. Thus as development takes place in a flood prone area such as Damascus the cost of flood damage increases through increased runoff and higher flood elevations.

³Vegetation information is from Soil Survey of Washington County, Virginia by U.S. Soil Conservation Service, U.S. Department of Agriculture.

Soil characteristics are another impediment to building. Some soils are too elastic or clay-like to support the weight of a structure. The Frederick series is such a soil found in Damascus. These soils are generally 70 to 80 inches deep and would require specialized construction methods. A conventional foundation would not be stable and basements have a tendency to crack or buckle. A soil may also be shallow or contain large stones that would require that foundations be set in hard rock thus increasing the expense of construction as drilling and blasting are needed. Examples of these soils found in Damascus are the Elliber, Ramsey, Weikert, and Gilpin series.

Because most hillsides are underlain with these types of soil, steep slopes are another deterrent to development. Generally construction is made more difficult with slopes of 10 percent or more. With a slope of 20 percent, construction costs usually make development impractical. Slopes of 20 percent or more comprise 30.9 percent of Damascus' land area.

Future development is limited by flood hazards, suitable soils and excessive slope. These limiting characteristics are not absolute. Land can and has been developed in these areas. In areas where soil characteristics may pose problems, specific soil analysis must be done to set exact capabilities.

In a comprehensive plan these restraints should be kept in mind. Land that is found unsuitable for such development can still be effectively used as parkland, open space and agriculture. The land that is uneconomical for intense development due to excessive slope and flood hazards in the 100-year flood plain includes about 255 acres or

50 percent of the Town. A good amount of the remaining land is already developed and other portions may not be developable due to soil constraints. These factors and others to be discussed in this plan suggest that the potential for future development within the corporate limits be restricted to a small area of land.

CHAPTER III POPULATION

A. Historical Trend

During the first half of the 1900's, the population of the Town of Damascus was on the rise, peaking at 1,726 in 1950. This trend was not smooth, however, as Damascus experienced wide fluctuations in population during that time period. Between 1910 and 1920 population increased, then leveled off through 1930. The population declined during the Depression era, but increased again in the 40's, finally reaching its peak in 1950. The next forty years posted a dramatic loss of over 800 persons; over half of that decline occurred between 1980 and 1990. The 1990s and first five years of the 2000s posted a slight growth trend in population; however, by 2010, the population of the town had declined to 814.

Most of the decrease in population during the 1980s in Damascus, Washington County, and the rest of the Mount Rogers Planning District occurred primarily because people left the area. Net out-migration of some 1,460 people occurred in Washington County. This number was determined by comparing the change in population over the time period to the natural increase (births minus deaths) that occurred over the same time period.

The early 2000s showed a return to population growth in Damascus, as well as the eastern portion of Washington County. The Town of Abingdon and Washington County as a whole experienced a much slower population growth during the same period, with increases of 1.9 percent in both localities. While population continued to increase in Abingdon and Washington County, the population in Damascus declined after 2003 due to out-migration. Table III-1 shows the population trends between 1910 and 2010.

**Table III-1
Population
Damascus, Glade Spring, Abingdon, Washington County
By Census Period
1910 - 2010**

Year	Damascus	Glade Spring	Abingdon	Washington County
1910	1,299	324	1,757	32,830
1920	1,599	281	2,532	32,376
1930	1,610	669	2,877	33,850
1940	1,441	686	3,158	38,197
1950	1,726	827	4,709	37,536
1960	1,485	1,407	4,758	38,705
1970	1,230	1,615	4,376	40,835
1980	1,330	1,722	4,318	46,587
1990	918	1,435	7,003	45,887
2000	981	1,374	7,780	51,103
2010	814	1,456	8,191	54,876

Source: U.S. Census Bureau, Decennial Census

The rate of population growth for Damascus, Washington County, the Mount Rogers Planning District, and the Commonwealth of Virginia between Census years 1940 to 2010 is depicted in Table III-2.

Table III-2
Percentage Change in Population
Town of Damascus, Washington County, Mount Rogers PD, and Virginia
By Census Period
1940-2010

Year	Damascus	Washington County	Mount Rogers PD	Virginia
1940 - 1950	19.8	-1.7	4.1	23.9
1950 - 1960	-14	1.4	2.3	19.5
1960 - 1970	-17.2	7	-0.5	18.9
1970 - 1980	8.1	13.8	13.6	15
1980 - 1990	-31	-1.3	-1.6	15.7
1990 - 2000	6.9	11.4	6.6	14.4
2000 - 2010	-17	7.4	1.9	13

Source: U.S. Census Bureau, Decennial Census

B. Age and Sex Distribution

In 2010 there were 385 males and 429 females in the Town of Damascus. The town had a slightly higher proportion of females (52.7 percent) than did the county (50.7 percent) or the state (50.9 percent).

Table III-3
Age Distribution
Town of Damascus
By Number and Percent
1980 – 2010

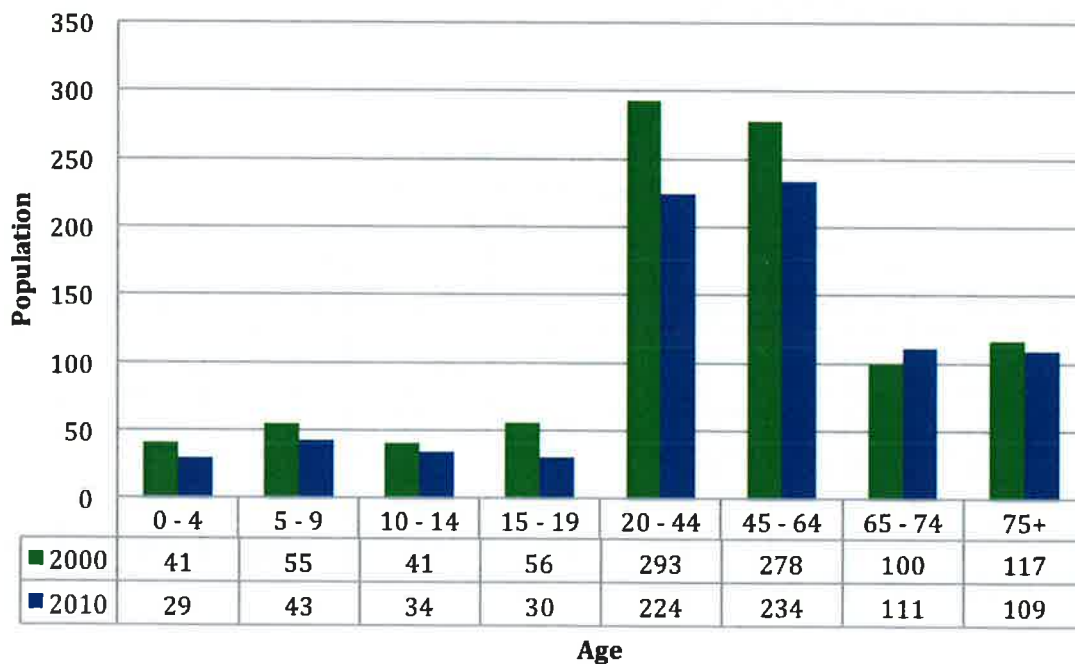
Age Group	1980		1990		2000		2010	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-14	252	18.9	145	15.8	137	14.0	106	13.0
15-24	199	15.0	76	8.3	100	10.2	63	7.7
25-44	315	23.7	246	26.8	249	25.4	191	23.5
45-64	331	24.9	225	24.5	278	28.3	234	28.7
65+	233	17.5	226	24.6	217	22.1	220	27.0
Total	1,330	100	918	100	981	100	814	100

Source: U.S. Census Bureau, Decennial Census

Table III-3 shows the age distribution for 1980, 1990, 2000, and 2010. A careful review of these data, shows that the population of Damascus is aging. In 1980, the

proportion of persons age 44 and under was 57.6 percent. In 1990 that proportion had dropped to 50.9 percent, and by 2000 the proportion of persons age 44 and under fell below the majority to 49.5 percent of the total population. By 2010, the proportion of person age 44 and under had dropped to 44.2 percent of the total population. Damascus has a relatively high percentage of persons over 45 years, 55.7 percent, versus Washington County at 48.3 percent and the State at 39.3 percent. In 2010 the median age for Damascus was 49.8 years, compared to 45.3 in 2000 and 44.4 years in 1990. Median age was 43.7 years in Washington County and 37.5 years in Virginia, as calculated by the U.S. Census Bureau in 2010. These trends can also be seen in Chart III-1, population by age groups in 2000 and 2010.

**Chart III-1
Population
Town of Damascus
2000 & 2010
By Age Groups**



Source: U.S. Census Bureau, Decennial Census

C. Migration

The declining percentage of younger persons in Damascus can be primarily attributed to out-migration. Table III-4 presents data on net migration for Washington County. Between 2003 and 2012, Washington County experience continual population growth. This growth was due entirely to net migration, as natural increase in the county during the time period was negative. Negative natural increase is a result of more deaths than births. Overall, the population change varied drastically year to year with the highest growth and migration in 2008.

**Table III-4
Components of Population Change
Washington County
2000 - 2012**

Period	Population Change	Natural Increase	Net Migration
2000 to 2001	-15	39	-54
2001 to 2002	239	37	202
2002 to 2003	21	27	-6
2003 to 2004	243	-28	271
2004 to 2005	373	-67	440
2005 to 2006	741	-65	806
2006 to 2007	583	-79	662
2007 to 2008	581	6	575
2008 to 2009	758	-71	829
2009 to 2010	187	-33	220
2010 to 2011	303	-84	387
2011 to 2012	300	-77	377

Source: U.S. Census Bureau & Virginia Department of Health. Calculated by Mount Rogers Planning District Commission using the Demographic Equation.

D. Racial Distribution

In 2000 the non-white population percentage for Damascus was estimated to be 3.1 by the U.S. Census Bureau. This was similar to the percentage for Washington County but well below the state. The non-white population in Damascus decreased

slightly by 2010, and the town continued to have a much less diverse population than the Commonwealth of Virginia. Statistically, the non-white population in both Damascus and Washington County were similar in both 2000 and 2010.

**Table III-5
Non-White Population
Damascus, Washington County, and Virginia
By Jurisdiction
2000 and 2010**

Jurisdiction	2000		2010	
	Number	Percent	Number	Percent
Damascus	30	3.1	23	2.8
Washington County	1,249	2.4	1,627	3.0
Virginia	1,958,405	27.7	2,514,172	31.4

Source: U.S. Census Bureau, Decennial Census

E. Population Density

Based on the 2000 population estimate, the population density for the Town of Damascus was 1.5 persons per acre. In 2010, the population density in Damascus was approximately 1.7 persons per acre. Because of physical constraints, particularly the flood-prone areas and steep mountain land, very little developable land for residential and housing development exists in Damascus.

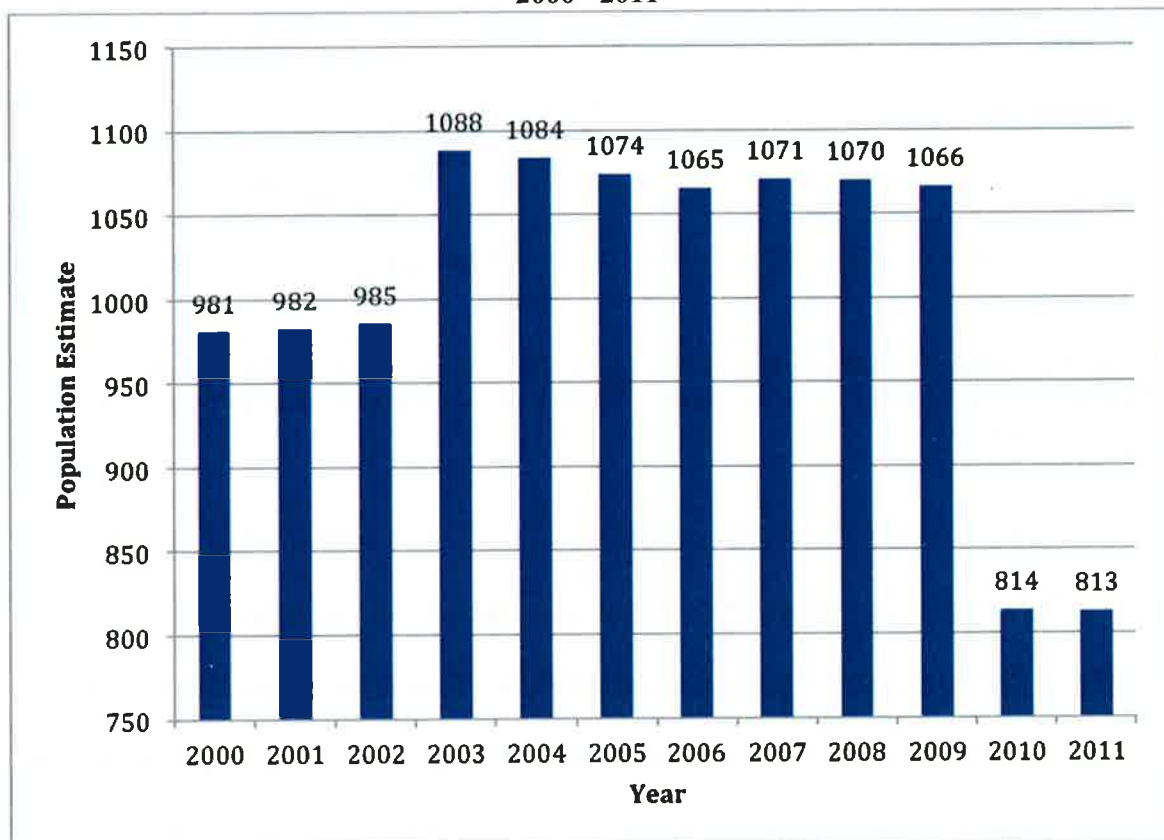
F. Population Projections

Population is expected to show gradual, steady growth through the year 2040 in Damascus, based on the projected population growth in Washington County. Much of this growth could be a result of the desire many people have to live in less urban environments and to seek the scenic mountain vistas of Washington County. Due to the limited amount of developable land within the corporate limits, private development and growth is more likely to take place adjacent to the town. For these reasons, population

growth will be limited unless the town expands its boundaries to surrounding developable areas.

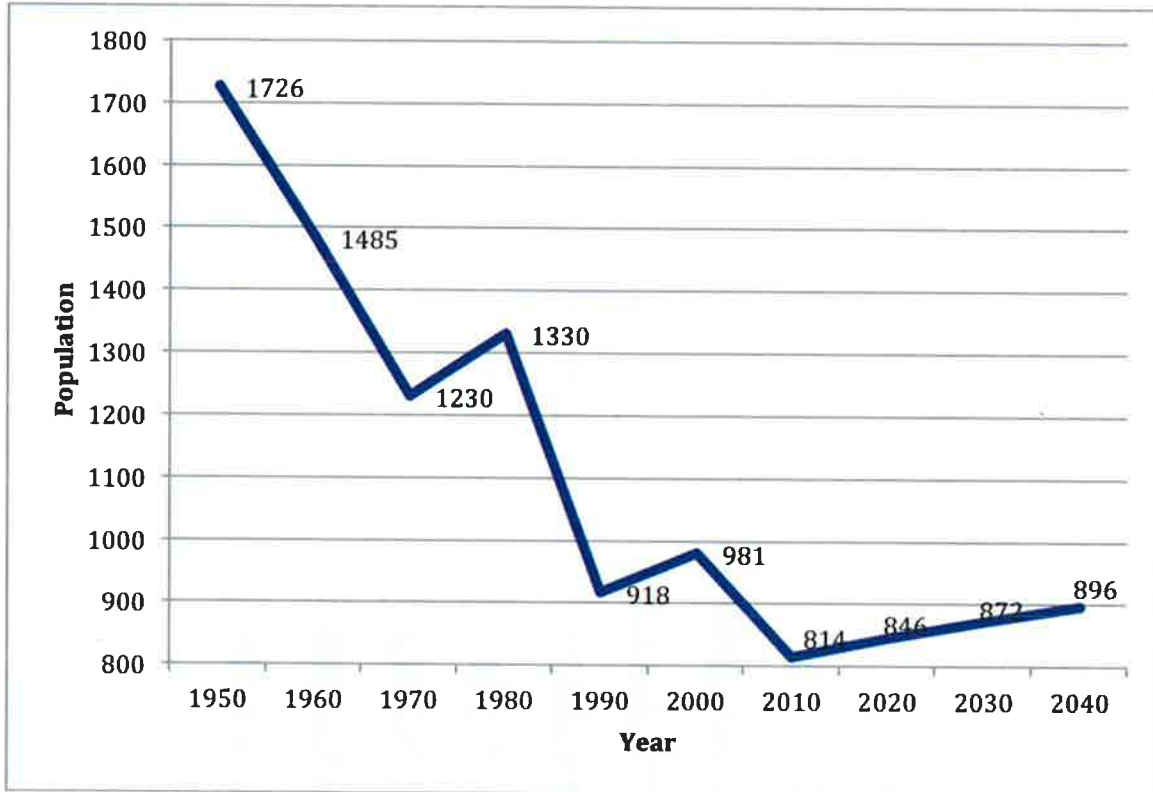
Population estimates calculated by the U.S. Census Bureau for the years between 2000 and 2011 are depicted in Chart III-2. Chart III-3 shows historical population counts and population projections through 2040 for the Town of Damascus. Population projects for the town were calculated by the Mount Rogers Planning District Commission based on Washington County population projections released by the Weldon Cooper Center.

Chart III-2
Population Estimate
Town of Damascus
By Year
2000 - 2011



Source: U.S. Census Bureau, Annual Estimates of the Population for Incorporated Places in Virginia

**Chart III-3
Population Projections
Town of Damascus
By Year
1950 - 2040**



Source: 2005 Town of Damascus Comprehensive Plan & Mount Rogers Planning District Commission (Based on previous Comprehensive Plan chart and Washington County population projections from the Weldon Cooper Center)

The basis for any projected increase in a community's population is the continued growth of the local economy and the availability of housing and developable land for housing. It is anticipated that the continued development of tourism opportunities, such as the Crooked Road, and other community and infrastructure improvement projects will initiate an additional boost in the population of the Damascus area. The Town of

Damascus is strategically located to make the most of the tourism projects being developed and marketed in Southwest Virginia. Furthermore, the town's status as a prime eco-tourism destination will generate continued opportunities for economic growth and entrepreneurial activity.

CHAPTER IV

ECONOMY

A. General Description

Like many small towns in the planning district, Damascus has a declining commercial business district, a light manufacturing base in and around the town, and a heavily seasonal service providing industry; the residents of Damascus are still reliant on Washington County and Abingdon, as well as areas in Tennessee and North Carolina, for jobs, consumer goods, major health care, entertainment, and dining.

The central business district is bisected by U.S. Highway 58 and includes: retail establishments selling clothes, general merchandise, groceries, used automobiles, repair services for automobiles, flowers, bikes, camping and outfitting equipment, professional medical services, banking, dining, churches, a fire station, town hall, and library. Several small dining establishments are located in the community; however, as the town continues to attempt to expand the tourism industry, there will be a need for dining facilities that can accommodate large groups. The Old Mill is the only establishment that has the capacity to serve approximately 100 customers and also provides conference facilities. The Old Mill has also been opened and closed several times in the past five years proving that such an establishment will find it hard to survive in the current economic climate.

Over the past decade the town fostered and developed a primary economic engine to its economy – tourism/recreation, travel, and lodging. Damascus is a destination point for people who want to leave behind the traffic, smoke, and hectic pace of city life. The town is at the crossing of seven significant trail systems for hiking, biking, and horseback riding. The Appalachian Trail is routed along Laurel Avenue, the community's main

street. The Mount Rogers National Recreation Area, a congressionally designated parcel within the Jefferson National Forest, surrounds the town. The Crooked Road: Virginia's Heritage Music Trail and the Virginia Birding and Wildlife Trail also run through Damascus. Special events bring thousands of visitors, hikers, bikers and outdoor enthusiasts, converging in the town to sightsee, lodge, eat, and purchase crafts. The Trail Days Festival, a three day celebration and event to honor the Appalachian Trail brings as many as 2,000 hikers and over 15,000 visitors to share in the events of the weekend. The town offers a unique lodging experience that includes bed and breakfasts, vacation rentals, and 12 rooms available at the Old Mill. Complete trail services are available for hikers and bikers, including outfitters, shuttles, and guide service. These all bring tax revenue to the town. In recent years however the Town has seen a decline in meals and lodging tax revenues demonstrating that less tourism dollars are being spent in town.

B. Income Levels

Income levels for Damascus are directly linked to the age distribution of the town's population. The 2010 population of the town was reported by the U.S. Census at 814 persons. Twenty-seven percent of the population was age 65 and over. Approximately 18 percent of the population in Damascus lives below the poverty level. Almost 66 percent of the population (536 persons) of the Town is in the 'working age' group with wage and salary income. In 2011, 376 residents were not in the labor force; those consisted primarily of homemakers, the elderly and retirees. Examination of income brackets, per capita income, mean income, median household and family income aid in describing income and disparities and inequities in the town versus Washington County and Virginia.

As shown in Table IV-1, the majority of households in Damascus earn less than \$24,999 per year. This household group accounted for 52.0 percent of all household earnings. The largest income group for families was the \$35,000 to \$49,999 group at 24.7 percent. Fifty-two percent of the households in Damascus earned less than \$24,999 compared to only 27.3 percent in Washington County. The percentage of non-family households earning less than \$24,999 was a dramatic 75.9 percent, pointing to Damascus' high proportion of elderly population living on fixed incomes.

Table IV-1
Count of Households
Town of Damascus and Washington County
By Income Groups
2011

Income	Washington County	Percent	Damascus	Percent
HOUSEHOLDS	23,064	100.0%	480	100.0%
Less than \$10,000	1,799	7.8%	80	16.7%
\$10,000 to \$14,999	1,661	7.2%	90	18.8%
\$15,000 to \$24,999	2,837	12.3%	79	16.5%
\$25,000 to \$34,999	3,252	14.1%	92	19.2%
\$35,000 to \$49,999	3,967	17.2%	74	15.4%
\$50,000 to \$74,999	4,336	18.8%	35	7.3%
\$75,000 to \$99,999	2,237	9.7%	14	2.9%
\$100,000 to \$149,999	1,891	8.2%	13	2.7%
\$150,000 to \$199,999	577	2.5%	3	0.6%
\$200,000 or more	507	2.2%	0	0.0%
Median household income	\$41,526		\$24,297	

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-2
Count of Families
Town of Damascus and Washington County
By Income Groups
2011

Income	Washington County	Percent	Damascus	Percent
HOUSEHOLDS	16,565	100.0%	223	100.0%
Less than \$10,000	712	4.3%	3	1.3%
\$10,000 to \$14,999	629	3.8%	16	7.2%
\$15,000 to \$24,999	1,739	10.5%	39	17.5%
\$25,000 to \$34,999	2,153	13.0%	47	21.1%
\$35,000 to \$49,999	2,816	17.0%	55	24.7%
\$50,000 to \$74,999	3,711	22.4%	33	14.8%
\$75,000 to \$99,999	2,071	12.5%	14	6.3%
\$100,000 to \$149,999	1,839	11.1%	13	5.8%
\$150,000 to \$199,999	447	2.7%	3	1.3%
\$200,000 or more	447	2.7%	0	0.0%
Median family income	\$69,424		\$45,910	

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-3
Count of Non-family Householders
Town of Damascus and Washington County
By Income Groups
2011

Income	Washington County	Percent	Damascus	Percent
HOUSEHOLDS	6,499	100.0%	257	100.0%
Less than \$10,000	1,228	18.9%	77	30.0%
\$10,000 to \$14,999	1,066	16.4%	74	28.8%
\$15,000 to \$24,999	1,170	18.0%	44	17.1%
\$25,000 to \$34,999	1,014	15.6%	41	16.0%
\$35,000 to \$49,999	1,098	16.9%	19	7.4%
\$50,000 to \$74,999	585	9.0%	2	0.8%
\$75,000 to \$99,999	136	2.1%	0	0.0%
\$100,000 to \$149,999	65	1.0%	0	0.0%
\$150,000 to \$199,999	91	1.4%	0	0.0%
\$200,000 or more	45	0.7%	0	0.0%
Median household income	\$22,834		\$12,750	

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

(A non-family householder is a householder living alone or with non-relatives only)

There are a high percentage of households and householders living alone with low- to moderate-income, which is below the median income in the community. Fifty-two percent of households and 75.9 percent of non-family households had income below \$24,999 in 2010.

Income inequality, as compared to the state, is of great concern across Southwest Virginia. Per capita income for Damascus fell to 47.6 percent of the state in 2010, compared to 75.8 percent for Washington County and 64.0 percent for the Mount Rogers Planning District. Median family income shows a similar pattern with Damascus at 60.4 percent of the state level.

Table IV-4

**Per Capita and Median Family Incomes
Town of Damascus, Washington County
MRPD and Commonwealth of Virginia
2011**

Jurisdiction	Per Capita Income	Median Family Income
Damascus	\$15,739	\$45,910
Washington County	\$25,043	\$51,082
Mount Rogers Planning District	\$21,153	\$44,991
State of Virginia	\$33,040	\$75,962

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

The number of households by income type and the number of persons determined to be below the poverty levels are shown in Tables IV-5 and IV-6. These tables again point to a dominance of elderly and retired persons on fixed incomes of social security and retirement, while only 55.0 percent of the households in Damascus work and have wage and salary income. Approximately 2.9 percent of households were on public assistance income while 17.9 percent of persons in Damascus are considered to be living in poverty.

**Table IV-5
Household Income
Town of Damascus
By Type
2011**

Damascus	Number of Households	Percent
Households	480	100.0%
With Wage and Salary Income	264	55.0%
With Self Employment Income	55	11.5%
With Social Security Income	222	46.3%
With Retirement Income	62	12.9%
With Public Assistance Income	14	2.9%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-6
Poverty Status
Town of Damascus and Washington County
2011

	Damascus	Percent	Washington County	Percent
Total Persons for Whom Poverty Status is Determined	906	100.0%	53,220	100.0%
Total Persons Below Poverty	162	17.9%	7,255	13.6%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

C. Education, Labor Force, and Employment Distribution Analysis

Education

Table IV-7 shows the educational attainment levels of Damascus' population versus Washington County and the state. A total of 116 persons (17.1 percent) in the town age 25 and over had less than a ninth grade education. This compares to 5.4 percent for Virginia. An additional 16.5 percent in the Town had a ninth to twelfth grade education, but no high school diploma. While the percentage of persons age 25 and over with less than a high school diploma in the town exceeds both Washington County and state percentages, the percentage of high school graduates is only slightly higher than the county. The town's workforce has the ability to be trained and fully employed in skilled and semi-skilled occupations in the town and surrounding county; however, of concern is the number of persons with no diploma, especially if they are actively participating in the workforce or unemployed and seeking a job.

Table IV-7
Educational Level for Persons Over 25 Years Old
Town of Damascus/Washington County/Virginia
2011

	Damascus		Washington County		Virginia	
School Years Completed	Persons	Percent	Persons	Percent	Persons	Percent
Less than 9 th	116	17.1%	3,110	7.9%	282,932	5.4%
9 th to 12 th grade – no diploma	112	16.5%	4,016	10.2%	424,932	8.0%
High School Graduate	186	27.4%	12,822	32.5%	1,353,561	25.6%
Some College – no degree	118	17.4%	8,068	20.5%	1,050,703	19.9%
Associate Degree	59	8.7%	3,115	7.9%	354,025	6.7%
Bachelor's Degree	48	7.1%	5,203	13.2%	1,064,406	20.2%
Graduate or Professional Degree	41	6.0%	3,094	7.8%	749,438	14.2%
TOTAL	680	100.0%	39,428	100.0%	5,279,997	100.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Labor Force

Table IV-8 breaks down labor force data by sex for the Town of Damascus and Washington County. The figures show that unemployment, which had been a persistent problem in Damascus during the 1980s, improved during the 1990s to 2000. In 2000, the unemployment rate was 3.5 percent with little difference between the male (2.8 percent) and female (4.5 percent) populations. The unemployment rate decreased from 10.9 percent to 3.5 percent between 1990 and 2000. By 2011, the unemployment rate in the town had increased dramatically, with a total unemployment rate of 13.3 percent according to the 2007-2011 American Community Survey 5-year estimate.

Approximately 67.2 percent of the male population age 16 and over were in the labor force in 2010 compared to 36.8 percent of the female population. Table IV-9 show more detailed information about females in the labor force in 2011. As expected, there are always persons counted as unemployed that lack the skills, education, and experience to match employer's needs, which also contributed to the unemployment rate.

Table IV-8
Persons by Labor Force Age 16 and Over
Town of Damascus and Washington County
By Gender
2011

	Damascus						Washington County		
	2011			2000			2011		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total Labor Force	375	221	154	394	215	179	25,130	13,755	11,375
Employed	321	189	132	378	207	171	24,627	13,445	11,182
Unemployed	50	32	18	14	6	8	1,602	959	643
Percent of Unemployed	13.3%	14.5%	11.7%	3.6%	2.8%	4.5%	6.4%	7.0%	5.7%
Not in Labor Force	376	108	268	472	174	298	18,861	7,546	11,315
Percent of Persons in Labor Force	50.2%	67.2%	36.8%	45.5%	55.3%	37.5%	55.7%	62.6%	49.1%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

For women to actively participate in the labor force without barriers, the community should ensure that day care services are available either in the town and/or surrounding community.

Table IV-9
Female Labor Force
Town of Damascus
2011

LABOR FORCE STATUS	NUMBER OF PERSONS
Total females 20 to 64 years	253
With own children under 6 years	21
Percent in labor force with children under 6 years	14.30%
Under 6 years and 6 to 17 years	7
Percent in labor force with under 6 years and 6 to 17 years	0.00%
With own children 6 to 17 years only	43
Percent in labor force with children 6 to 17 years	100.00%
No children under 18 years	182
Percent in labor force with no children under 18 years	41.80%
Total females employed or in Armed Forces	108
Total females unemployed	14
Total females not in labor force	131

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-10 shows a breakdown of the employed residents of the Town of Damascus by industry group. Manufacturing, retail trade, and services accounted for three quarters (75.0 percent) of the total employment for town residents in 2010. As would be expected in a small rural town, wholesale and retail trade accounted for a large proportion (18.7 percent) of employment. Table IV-11 depicts residential employment by occupation. Approximately 18.1 percent of residents hold executive, administrative, managerial, and professional positions, while 12.8 percent of the labor force is self-employed. Overall, 80 percent hold private sector wage and salary jobs.

Table IV-10
Employed Labor Force
Town of Damascus
By Industry and By Place of Residence
2011

INDUSTRY	NUMBER	PERCENT
Employed persons 16 and over	321	100.0%
Agriculture, forestry, fishing and hunting	6	1.9%
Mining	0	0.0%
Construction	21	6.5%
Manufacturing	39	12.1%
Wholesale trade	18	5.6%
Retail trade	44	13.7%
Transportation and warehousing, and utilities	11	3.4%
Information	11	3.4%
Finance, insurance, real estate and rental and leasing	2	0.6%
Professional, scientific, management, administrative, and waste management services	25	7.8%
Educational, health and social services	63	19.6%
Arts, entertainment, recreation, accommodation and food services	49	15.3%
Other services (except public administration)	21	6.5%
Public Administration	1	0.3%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-11
Employed Labor Force
Town of Damascus
By Occupation and By Place of Residence
2011

OCCUPATION	NUMBER	PERCENT
Employed persons 16 and over	321	100.0%
Management, professional, and related occupations	58	18.1%
Service occupations	98	30.5%
Sales and office occupations	69	21.5%
Natural resources, construction, and maintenance occupations	49	15.3%
Production, transportation, and material moving occupations	47	14.6%
Class of Workers		
Private wage and salary workers	259	80.7%
Government workers	21	6.5%
Self-employed in own not incorporated business workers	41	12.8%
Unpaid family workers	0	0.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Employment Trends by Industry Type

Table IV-12 depicts the number of business establishments in Damascus in 2000 and 2011. During that period, the total number of establishments decreased by 15 with the largest shift occurring in the number of retail trade establishments. The retail trade industry continues to have the largest number of establishments in town, which supports the town's goals of tourism development and downtown revitalization. The number of jobs in Damascus decreased by 67 during the same period.

Table IV-12
Number of Establishments
Zip Code 24236
By Industry Type
2001 and 2011

Industry Type	2011	2001	Percent Change 2001-2011
Construction	7	8	-12.5%
Manufacturing	1	4	-75.0%
Wholesale trade	0	1	-100.0%
Retail trade	13	18	-27.8%
Transportation & warehousing	2	2	0.0%
Finance & insurance	5	4	25.0%
Real estate & rental & leasing	2	1	100.0%
Professional, scientific, and technical services	2	0	200.0%
Admin, support, waste mgt, remediation services	1	1	0.0%
Health care and social assistance	6	7	-14.3%
Arts, entertainment & recreation	0	1	-100.0%
Accommodation & food services	7	10	-30.0%
Other services (except public administration)	5	9	-44.4%
TOTAL	51	66	-22.7%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table IV-13 further illustrates the decline in manufacturing and the dominance of trade and service sectors in the local economy. Like many towns, the Town of Damascus is land-locked in terms of available land and property to recruit new manufacturing industries. Without any further infusion of manufacturing jobs to Damascus, the town's most important economic assets are its commercial district and tourism/outdoor recreation.

**Table IV-13
Employment
Town of Damascus
By Industry Type
2000 and 2011**

Industry Type	2011	2000	Percent Change 2000-2011
Construction	21	32	-34.4%
Manufacturing	39	80	-51.3%
Transportation, Communications, & Utilities	22	28	-21.4%
Wholesale & Retail Trade	62	93	-33.3%
Finance, Insurance, & Real Estate	2	10	-80.0%
Services & Education	158	119	32.8%
Government (Public Admin.)	1	10	-90.0%
TOTAL Non-Agricultural	305	372	-18.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Manufacturing

Over the past several years, many of the many manufacturing employers have closed in the Town of Damascus. According to the American Community Survey, there was only one manufacturing firm in the Damascus zip code in 2011. That company, Columbus McKinnon Corporation, manufactures material handling products and employs approximately 250 persons. Columbus McKinnon is physically located less than one mile outside the town's corporate limits.

Wholesale and Retail Trade

Wholesale and retail trades are one of the most significant providers of jobs for Damascus residents accounting for over 18 percent of the total employment. In 1962, wholesale and retail establishments in the region employed 450 residents, which was 67.6 percent of the total employment. By 1990, these numbers had decreased to 86 residents. The dramatic decrease from 1962 to 1990 was due primarily to out-migration and population loss. The development of commercial centers in Abingdon and Bristol has

drawn businesses away from places like Damascus, because of Abingdon's status as the governmental, cultural, medical, and educational center of Washington County. The town did experience a small growth in trade sector employment during the 1990s, however, and by 2010 there were 62 residents employed in the trade sector.

Although the trend away from small town shopping has been influenced by an increase in online shopping and the presence of Wal-Mart, K-Mart, and Lowe's in Washington County and Bristol, Damascus experienced an increase of small commercial businesses in the town's central business district. Commercial retail sales in town have increased along with the development of the tourism opportunities in and around Damascus. Attractions like the Crooked Road: Virginia's Heritage Music Trail have led to improved marketing of the town's assets and the number of tourists flocking to local shops and downtown establishments, especially during the town's many festivals, has grown accordingly. As reflected in revenue trends from taxable retail sales, shown in Table IV-14, Damascus has certainly benefited from tourism and commercial sales.

Table IV-14
Taxable Retail Sales
Town of Damascus
2008 - 2012

Year Ending	Taxable Retail Sales	Percent Change	
		Year	Percent
2008	\$51,854		
2009	\$55,313	2008-2009	6.67%
2010	\$55,564	2009-2010	0.45%
2011	\$57,694	2010-2011	3.83%
2012	\$60,210	2011-2012	4.36%

Source: Town of Damascus

Service Sector

Over the last 30 years, the service sector of the Damascus economy has been stimulated and driven by the needs of the population and a growth in tourism and recreation oriented activities. The addition of the Damascus Medical clinic, apartments, and tourism- and recreation-related businesses, including bed and breakfasts, transient lodging, a 9-hole public golf course, and mountain outfitters, bike rental, and trail guide services have put Damascus on the map as a destination point for travelers. The demands of hikers, backpackers, horseback enthusiasts, and bikers have elevated the demand for various services.

Tourism and Travel

Damascus continues to be a as a desirable destination for thousands of hikers and outdoor enthusiasts, converging on the Town during Appalachian Trail Days, and Fourth of July Celebrations and concerts.

Damascus serves as a crossroads for seven significant trail systems and is adjacent to Whitetop Laurel Creek, one of Virginia's premier trout streams. The tourist

‘generators’ create demands in hiking, biking, horseback riding, lodging, and personal service industry. Damascus is bordered by both the Jefferson and Cherokee National Forests and Backbone Rock, a popular tourist stop. Additionally, one of the highest rated trout streams in Virginia and Tennessee, Beaverdam Creek, runs through the town. Virginia’s tallest mountains, Mount Rogers and Whitetop trail heads are located within a short drive from Damascus. Damascus tourism has been bolstered by the celebration of the Appalachian Trail Days Festival which takes place in May of each year. As many as 2,000 hikers return to Damascus to celebrate, renew acquaintances, share stories, and eat, shop, and lodge in the Town. Trail Days brings some 15,000 visitors to the weekend events. Trail services have blossomed with businesses to meet the needs of visitors including backpacking supply stores, shuttle services, full service bicycle shops, guide service and bed-and-breakfasts. Multiple lodging opportunities are located in the Damascus area to serve visitors and vacationers desiring a scenic mountain retreat and vacation. A relatively new aspect to Damascus’ tourism opportunities is motorcycle tourism. Motorcycle tourism in and around Damascus is growing, as every year more motorcycle enthusiasts travel from Damascus to Shady Valley, Tennessee enjoying the area’s natural beauty.

In 2012 the Washington County Library built a new Damascus branch library including a tourism information center. In 2013 the Town received grant money from VTC to market the town as more than a one day attraction and planning funds from DHCD to create an economic restructuring plan to address the current problems of its cyclical economy.

CHAPTER V HOUSING

A. Existing Housing Conditions

Housing conditions must be looked at from a number of viewpoints. While an inspection of exterior conditions may give one impression, an examination of the interior may yield a different picture. A comprehensive examination must be made in order to determine correctly how well housing conditions are providing for the needs of people. The major factors that should be examined include physical considerations such as the age of the house, the structural condition, and plumbing facilities, as well as other conditions such as overcrowding and the ability of residents to afford the housing in which they live.

Housing in Damascus is generally older than Washington County or Virginia. As shown in Table V-1, 27.3 percent (163 houses) of the housing in Damascus were built before 1940. Many of these homes have seen substantial improvements, but more still have outdated antiquated electrical wiring and plumbing, including lead pipes, and are in poor condition. These homes continue to be candidates for Community Development Block Grant housing rehabilitation.

Table V-1
Year of Construction
Of Housing for Damascus, Washington County, and Virginia
To 2011

Year	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Built 2005 or later	23	3.9%	1,199	4.7%	179,863	5.4%
Built 2000 to 2004	13	2.2%	2,205	8.7%	306,996	9.2%
Built 1990 to 1999	56	9.4%	4,589	18.0%	541,505	16.2%
Built 1980 to 1989	82	13.8%	4,649	18.2%	579,460	17.3%
Built 1970 to 1979	32	5.4%	4,858	19.1%	572,270	17.1%
Built 1960 to 1969	79	13.3%	2,432	9.5%	393,799	11.8%
Built 1950 to 1959	62	10.4%	1,908	7.5%	325,294	9.7%
Built 1940 to 1949	86	14.4%	1,244	4.9%	172,375	5.2%
Built 1939 or earlier	163	27.3%	2,396	9.4%	274,336	8.2%
TOTAL	596	100.0%	25,480	100.0%	3,345,898	100.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

A windshield survey conducted by Mount Rogers Planning District Commission staff in 2006 indicated a significant percentage of homes in Damascus that are substandard or deteriorated. Conditions were assigned using a ranking system that included an analysis of siding, shingles, windows, and exterior paint. Generally, if two of these characteristics appeared to be in poor condition (cracked or broken windows, missing shingles, etc.) the structure was considered to be substandard. A deteriorated structure appeared to have more than two of these characteristics in poor condition and seemed unsuitable for habitation.

Table V-2
Condition of Residential Structures¹
Town of Damascus
2006

Condition	Number	Percent
Standard	344	76.6
Substandard	86	19.2
Deteriorated	19	4.2
Total	449	100

Source: Mount Rogers Planning District Commission

1. Based on exterior conditions

Plumbing conditions are shown on Table V-3 (A-C) for Damascus, Washington County, and Virginia. The U.S. Census Bureau lists any dwelling which does not have hot piped water, a flushing toilet, and a bathtub or shower as substandard. Under these guidelines, Damascus has made significant strides in reducing the number of houses with substandard plumbing facilities. In 2000, 9 houses had substandard plumbing compared to none in 2011 as shown in Tables V-3A and V-3B.

Table V-3A
Plumbing Facilities
Damascus, Washington County, and Virginia
2011

Plumbing Condition	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Complete	596	100.0%	24,838	97.5%	3,287,490	98.3%
Lacking	0	0.0%	642	2.5%	58,408	1.7%
TOTAL	596	100.0%	25,480	100.0%	3,345,898	100.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table V-3B
Plumbing Facilities
Damascus, Washington County, and Virginia
2000

Plumbing Condition	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Complete	552	98.40%	22,431	97.60%	2,870,927	98.90%
Lacking	9	1.60%	554	2.40%	33,265	1.10%
TOTAL	561	100.00%	22,985	100.00%	2,904,192	100.00%

Source: U.S. Census Bureau, 2000 Census

Table V-3C
Plumbing Facilities in Damascus
2011 and 2000

Plumbing Condition	2011		2000	
	Number	Percent	Number	Percent
Complete	596	100.0%	552	98.40%
Incomplete	0	0.0%	9	1.60%
TOTAL	596	100.0%	561	100.00%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate and 2000 Census

The town has no houses lacking one or more plumbing facilities. These figures show that the percentage of houses with substandard plumbing in Damascus is lower than the average for the county and district. Plumbing conditions are no longer a problem in the Town of Damascus with the exception of older homes with lead pipes.

Table V-4
Overcrowded Units (1)
Damascus and Washington County
2000 and 2011

Overcrowded	Damascus		Washington County	
	No.	%	No.	%
2000	3	0.6%	199	1.0%
2011	7	1.5%	271	1.2%
Change 2000 - 2011	4	133.3%	72	36.2%

Source: U.S. Census Bureau, Decennial Census and 2007-2011 ACS 5-Year Estimate

(1) Units having over 1.01 persons per room.

Conditions of overcrowding are shown in Table V-4. Overcrowding has been defined as over 1.01 persons per room. Damascus, with only (1.5) percent of all housing units identified as being overcrowded, compares favorably with Washington County. The number of overcrowded households has decreased dramatically in both the town and county.

B. Cost of Renter and Owner-occupied Housing

Tables V-5 A-C depicts the number and percent of owner-occupied, rented, and vacant housing units for Damascus, Washington County, and Virginia. The Town of Damascus had a 19.5 percent vacancy rate in 2011, which is higher than the 9.3 percent vacancy rate in 2000. Owner-occupied rates are considerably lower in Damascus than in Washington County; however, the percentage of renter-occupied housing is much higher in Damascus than in Washington County.

The overall number of owner-occupied housing units declined over the last decade, with 301 units in 2000 and 246 units in 2011. Nevertheless, renter-occupied units in Damascus increased by approximately 12.5 percent during the 2000s. This trend can be attributed to several factors, including an increase in seasonal employment and housing turnover due to an increasing death rate.

**Table V-5A
Count of Housing by Tenure
Damascus, Washington County, and Virginia
2011**

Tenure	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Owner-occupied	246	41.3%	17,279	67.8%	2,046,845	61.2%
Renter-occupied	234	39.3%	5,785	22.7%	944,180	28.2%
Vacant	116	19.5%	2,416	9.5%	354,873	10.6%
TOTAL	596	100.0%	25,480	100.0%	3,345,898	100.0%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table V-5B
Count of Housing by Tenure
Damascus, Washington County, and Virginia
2000

Tenure	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Owner-occupied	301	53.70%	16,268	70.80%	1,837,958	73.60%
Renter-occupied	208	37.10%	4,788	20.80%	861,215	34.50%
Vacant	52	9.30%	1,929	8.40%	205,019	8.20%
TOTAL	561	100.00%	22,985	100.00%	2,496,334	100.00%

Source: U.S. Census Bureau, 2000 Census

Table V-5C
Count of Housing by Tenure
In Damascus
1990, 2000, and 2011

Tenure	1990		2000		2011	
	No.	%	No.	%	No.	%
Owner-occupied	303	62.5	301	53.70%	246	41.3%
Renter-occupied	122	25.2	208	37.10%	234	39.3%
Vacant	60	12.4	52	9.30%	116	19.5%
TOTAL	485	100	561	100.00%	596	100.0%

Source: U.S. Census Bureau, Decennial Census and 2007-2011 ACS 5-Year Estimate

Table V-6
Value of Specified Owner-occupied Houses
Damascus and Washington County
2011

Value (\$)	Damascus		Washington County		Virginia	
	No.	%	No.	%	No.	%
Less than \$10,000	3	1.2%	926	5.4%	25,223	1.2%
\$10,000 to \$14,999	0	0.0%	235	1.4%	16,555	0.8%
\$15,000 to \$19,999	2	0.8%	214	1.2%	11,881	0.6%
\$20,000 to \$24,999	0	0.0%	116	0.7%	12,351	0.6%
\$25,000 to \$29,999	3	1.2%	41	0.2%	9,847	0.5%
\$30,000 to \$34,999	24	9.8%	313	1.8%	9,906	0.5%
\$35,000 to \$39,999	3	1.2%	179	1.0%	7,866	0.4%
\$40,000 to \$49,999	3	1.2%	552	3.2%	17,907	0.9%
\$50,000 to \$59,999	5	2.0%	481	2.8%	22,573	1.1%
\$60,000 to \$69,999	2	0.8%	750	4.3%	25,629	1.3%
\$70,000 to \$79,999	33	13.4%	964	5.6%	32,145	1.6%
\$80,000 to \$89,999	26	10.6%	1067	6.2%	39,527	1.9%
\$90,000 to \$99,999	9	3.7%	636	3.7%	37,095	1.8%
\$100,000 to \$124,999	30	12.2%	1970	11.4%	103,047	5.0%
\$125,000 to \$149,999	35	14.2%	1243	7.2%	108,175	5.3%
\$150,000 to \$174,999	36	14.6%	1914	11.1%	146,642	7.2%
\$175,000 to \$199,999	2	0.8%	812	4.7%	127,919	6.2%
\$200,000 to \$249,999	14	5.7%	1645	9.5%	250,677	12.2%
\$250,000 to \$299,999	3	1.2%	983	5.7%	200,375	9.8%
\$300,000 to \$399,999	7	2.8%	1,095	6.3%	298,111	14.6%
\$400,000 to \$499,999	0	0.0%	488	2.8%	184,794	9.0%
\$500,000 to \$749,999	3	1.2%	353	2.0%	233,387	11.4%
\$750,000 to \$999,999	0	0.0%	61	0.4%	75,185	3.7%
\$1,000,000 or more	3	1.2%	241	1.4%	50,028	2.4%
TOTAL	246	100.0%	17,279	100.0%	2,046,845	100.0%
Median Value	\$108,300		\$128,900		\$254,600	

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

The 2011 median value of owner-occupied houses in Damascus is significantly less than Washington County, \$108,300 and \$128,900 respectively. Between 2000 and 2011, the value of owner-occupied housing increased from \$62,000 to \$108,300. Table

V-7 compares housing costs to income of owner-occupied units by taking the median housing value and dividing it by the median family income. These figures show that homeowners in Damascus must pay a lower percentage of their family income for housing than do average homeowners in the county, which is a change over the 2000 figures. During the 2000s, housing prices in Damascus increased 74.7 percent while incomes increased by only 30.7 percent. In Washington County, housing prices increased 42.6 percent while incomes increased 29.0 percent.

Table V-7
Median Family Income as Percent
Of Median Housing Value (Owner-occupied)
Damascus, Washington County, and Virginia
2000 and 2011

Jurisdiction	Median Family Income		Median Housing Value		Percent Yearly Income of Value of Home	
	2000	2011	2000	2011	2000	2011
Damascus	\$29,250	\$38,229	\$62,000	\$108,300	47.20%	35.30%
Washington County	\$40,162	\$51,820	\$90,400	\$128,900	44.50%	40.20%
Virginia	\$54,169	\$75,962	\$125,400	\$254,600	43.20%	29.84%

Source: U.S. Census Bureau, 2000 Census and 2007-2011 ACS 5-Year Estimate

Table V-8
Monthly Rent of Specified Renter-occupied Housing
Damascus and Washington County
2011

Contract Rent	Damascus		Washington County	
	Housing Units	Percent	Housing Units	Percent
Less than \$100	0	0.0%	66	1.1%
\$100 to \$149	33	14.1%	153	2.6%
\$150 to \$199	25	10.7%	171	3.0%
\$200 to \$249	20	8.5%	161	2.8%
\$250 to \$299	25	10.7%	247	4.3%
\$300 to \$349	8	3.4%	439	7.6%
\$350 to \$399	11	4.7%	687	11.9%
\$400 to \$449	12	5.1%	694	12.0%
\$450 to \$499	18	7.7%	531	9.2%
\$500 to \$549	8	3.4%	554	9.6%
\$550 to \$599	23	9.8%	214	3.7%
\$600 to \$649	11	4.7%	364	6.3%
\$650 to \$699	0	0.0%	148	2.6%
\$700 to \$749	8	3.4%	156	2.7%
\$750 and higher	0	0.0%	425	7.3%
Total With Cash Rent	202	86.3%	5,010	86.6%
No Cash Rent	32	13.7%	775	13.4%
TOTAL	234	100.0%	5,785	100.0%
Median Rent Value	\$296		\$442	

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

Table V-8 depicts the monthly rent and median rent of renter-occupied housing for Damascus and Washington County. When compared with Washington County, the median monthly rent in Damascus is lower by \$146; however, renters in Damascus generally pay an equal percentage of their monthly income to rent as those in Washington County. Average yearly rent as a percentage of median family income for Damascus, Washington County, and Virginia are depicted in Table V-9.

Table V-9
Average Yearly Rent as a Percent
Of Median Family Income
Damascus, Washington County, and Virginia
2011

Jurisdiction	Median Family Income	Yearly Rent Based on Monthly Median Rent	Percent Yearly Rent of Yearly Income
Damascus	38,229	\$3,552	9.29%
Washington County	51,820	\$5,304	10.24%
Virginia	75,962	\$10,272	13.52%

Source: U.S. Census Bureau, 2007-2011 ACS 5-Year Estimate

C. Inadequately Housed Households

Census figures provide indication of housing inadequacies using age of structure, overcrowding, and lack of complete plumbing or kitchen facilities.

Inadequately housed households are defined by the Department of Housing and Urban Development as those houses which have plumbing deficiencies, are overcrowded, or housing built before 1940. Using housing built before 1940 as the prime criteria for ‘inadequately housed households’ 27.3 percent of all housing units in Damascus are inadequate and in need of rehabilitation for such problems as electrical wiring, poor insulation, plumbing standards, etc.

Low- and moderate-income households are defined as those whose average yearly income is 80 percent or less of the median household income of the county. According to this methodology the 80-percent median is \$33,221 and there were approximately 341 low- and moderate-income households in Damascus in 2011.

D. Manufactured Homes

There were approximately 76 manufactured homes in Damascus in 2000. Damascus, which needs low priced housing and has potential for attracting tourists, needs

to plan for orderly and attractive manufactured home development. In the past, the development of manufactured homes within Damascus has been haphazard. This was perhaps due to poor regulation or the lack of legislation to sufficiently regulate the growth of manufactured homes. Presently the Damascus Zoning Ordinance only allows manufactured homes if they are greater than 12' feet in length and are placed on a permanent foundation. This has been done to keep the number of manufactured homes from growing. However, an existing manufactured home can be replaced with a manufactured home of the same size as long as the replacement is done within a ninety day time period and the replacement home is less than five years old.

E. Current Housing Program

Currently, there are two housing programs in effect in the Town of Damascus, the Farmers Home Administration Section 502 program and the Rock School House Program. Under the latter program, the Rock School has been renovated to provide low-income housing. The Farmers Home Administration program guarantees loans to low- and moderate-income families for the construction, repair or purchase of homes. Also included in this program are funds for development of sewage facilities, weatherization, purchases of land, and in special cases, refinancing of mortgages. They must also have an adequate dependable income which is able to meet present financial obligations plus the debt incurred by the loan. In addition, individuals must not be able to obtain a loan at a reasonable rate from private lending institutions without the FmHA guarantee.

F. Housing Problems and Needs

As described in this chapter, the two major housing problems are physical housing conditions and inadequately housed low-income families. Money to rehabilitate

blighted homes can be obtained through the Department of Housing and Urban Development (HUD) Block Grant program or through Farmers Home Administration Section 502 or 504 funds.

Houses that are uneconomic for rehabilitation should be removed. The first step toward removal of dilapidated housing would be the adoption and enforcement of a town housing code. The demolition of dilapidated houses can then be funded through a HUD Block Grant or the town can demolish the house and charge the cost to the owner in the form of a lien on the property.

In the case of inadequately housed households which are owner-occupied, the programs available for rehabilitation of blighted homes would also provide relief to these families. Where inadequately housed households are renters, the owners of the property, a developer, or a public housing agency can apply for HUD Section 8 rent subsidy funds. The town can, by referendum, institute a housing authority for the purpose of receiving and administering public housing funds.

The Town of Damascus needs:

- Rehabilitation of existing blighted and substandard homes, where feasible, to improve conditions for low and moderate income citizens and thereby providing more safe housing;
- To prevent the large number of blighted houses from becoming dilapidated;
- Demolition of unsafe, unoccupied housing structures;
- Assistance in financing homes and housing renovations for low- and moderate-income citizens to help retain an available, affordable housing supply;
- Housing that accommodates the special needs of the aging population and disabled.

CHAPTER VI COMMUNITY FACILITIES

Community facilities and public services play an important role in the vitality of a town. For the purpose of the Comprehensive Plan, community facilities will include a brief description of the following: education, libraries, health care, social services, recreation, public utilities, fire, police, public water supply, wastewater treatment, and solid waste collection and disposal. The Town of Damascus, Washington County, the Commonwealth of Virginia, the Federal Government and private corporations provide a broad array of public services. This chapter will also include a discussion of the Town's needs in these areas as well as recommendations for long-term and continued improvement of these services. The benefits of effective public services and community facilities are essential for attracting new businesses, residents, tourists and industries while improving the overall quality of life for the Town's inhabitants.

A. Education

The Washington County Public School System provides most of the educational facilities and services for the Town's residents and surrounding communities. Income eligible preschool children ages four through five may attend the Damascus Headstart Center run by People Incorporated, a non-profit Community Action agency. Rhea Valley Elementary School, Damascus Middle School and Holston High School teach students from kindergarten through the twelfth grade. The public schools each provide a library, computers, a gymnasium, and athletic fields. High school students have access to vocational training through the Neff Center in Abingdon. Maintaining community schools is a high priority of the Town. Table VII-1 summarizes data concerning Damascus area public schools.

Table VI-1
School Enrollment and Number of Teachers
Fall 2012

School	Enrollment 2006	Number of Teachers	Student to Teacher Ratio
Damascus Head Start	17	2	8.5 to 1
Rhea Valley Elementary	483	24	20.1 to 1
Damascus Middle School	243	26	9.3 to 1
Holston High School	295	29	10.1 to 1

Source: Superintendent's Office, Washington County Schools

Opportunities for job training and higher education within commuting distance include the Washington County Technical School, Virginia Highlands Community College, Emory & Henry College, Virginia Intermont College, King College and the Southwest Virginia Higher Education Center. Appalachian State University, East Tennessee State University, Milligan College and Appalachian School of Law are further options, though they necessitate longer commutes. At present, Town residents have convenient access to a variety of educational facilities.

B. Libraries

A new 6,500 sq.ft. branch of the Washington County Library serves Damascus residents. The new Library, which opened in August of 2012, includes a 500 sq.ft. visitor center with restrooms. The library is open to the public for 44 hours per week; and has Internet access on 10 computers along with Wifi for public use. There is a large Community Room for meetings and library programs as well as a Study Room for Tutoring and Adult Education opportunities. The library offers more than books for its patrons, there are DVD's, audio books, and CD's as well as ebooks. In addition, for

reference purposes, Damascus residents can access the local public school libraries and the libraries of the region's colleges and universities.

C. Health Care

The primary health care provider in the Town of Damascus is the Holston Family Health Center. The center is managed by Stone Mountain Health Services of Pennington Gap, VA. One family practitioner, one Nurse Practitioner, a lab and a limited license x-ray technician, and support personnel staff the office. Medical services are provided for 35 or more patients per day.

Town residents have easy access to the Johnston Memorial Hospital, Inc., a not-for-profit corporation, in Abingdon. The hospital is licensed to operate 116 acute care beds with a staff of more than 900 persons that provide a broad range of inpatient and outpatient services. Residents also have access to a new Urgent Care Facility located within one half mile of Johnston Memorial Hospital. The Washington County Department of Health offers services to all eligible residents including family planning, immunization and well-child check-ups and the WIC (Supplemental Nutrition for Women, Infant and Children) Nutritional Program. Health care services for Damascus are adequate to meet present and future needs.

D. Human Services

The Washington County Department of Social Services, located near Bristol, provides a wide range of human services to Damascus residents. People Incorporated provides skills training, financing and marketing for potential entrepreneurs, summer jobs and training for area students, a home ownership program, low income housing assistance, housing rehabilitation services and a weatherization program as well as senior

citizen services and a variety of projects designed to help low-income residents become more self-sufficient. District 3 (three) Governmental Cooperative provides nutritional support, transportation services, meeting facilities and other related services for Damascus' senior citizens.

E. Recreation

The Town has two baseball fields in Backer Park and a junior Olympic-sized pool near the Creeper and Appalachian Trails. Washington County built a new recreation facility on the Bayer property including a Tee-ball field, two little league baseball fields and a multi-use field. Town Park has restroom facilities, picnic tables, benches, a playground and a gazebo for every day use and for the seasonal festivals that occur in the spring and summer months. Water and electrical service with multiple hook-ups is available for festival vendors' booths. Finally, Damascus residents have access to the Coomes Center in Abingdon as well as all other facilities operated by the Washington County Recreational Department.

The close proximity of the Jefferson National Forest and the Mount Rogers National Recreation Area to the Town provides an excellent opportunity for a wide-range of outdoor activities. The Beaverdam and Laurel Creeks provide some of the best trout fishing opportunities in the state.

The Town is the local access point for many highly popular recreational trails. The Virginia Creeper Trail, the Appalachian Trail, the Iron Mountain Trail, the Virginia Wildlife Trail and the Transamerica 76 National Bicycle Route transect Damascus, as do the driving routes of the Daniel Boone Heritage Trail and Crooked Road Music Heritage Trail. The Virginia Creeper Trail, a non-motorized 33 mile converted Norfolk and

Western railbed, runs from Abingdon through Damascus and the Jefferson National Forest to the North Carolina border. This combination hiking, biking, and horse trail attracts more than 250,000 annual visitors. The Appalachian Trail, a hiking trail of national significance that traverses the Appalachian Mountains from Maine to Georgia, passes through the Town. The Damascus United Methodist Church has a hostel located near the trail for thru-hikers. The Iron Mountain Trail, the Daniel Boone Heritage Trail and the Transamerica 76 National Bicycle Route all pass through Damascus, making it a hub of activity for trail enthusiasts and eco-tourists. As noted earlier, the Town celebrates several festivals and celebrations throughout the year such as the Appalachian Trail Days, and a Fourth of July celebration.

The abundance of outdoor activities within and surrounding the Town continues to encourage the growth of tourism-related businesses. In response to the widespread and increasing use of recreational trails, the Town is spearheading the development of the Beaverdam Creek Trail, a rail-to-trail conversion which will follow the now retired Virginia-Carolina Railroad bed and spur lines. The design phase of this project is currently 90% completed.

The development of a variety of outdoor recreational activities to both encourage tourism and provide for local residents is considered a priority. The Town council has recently applied for and received Virginia Tourism Commission marketing funds to draw people to our current outdoor attractions and create a stable flow of outdoor enthusiast to spark growth in the Town's outdoor recreation economy.

F. Fire Department

Damascus is served by a volunteer fire department. Their equipment includes two large pumpers, one small light-duty pumper, a fully equipped light and air truck, a small light-duty rescue truck, a four wheel off road rescue vehicle and a large utility truck. The department responds to approximately 140 calls per year. Seventy percent of those calls are for automobile accidents. Washington County provides dispatch service for the fire, police, and rescue departments. The fire department responds to calls from areas both inside and outside the immediate Damascus area.

G. Rescue Squad

The Damascus Volunteer Rescue Squad Incorporated has been in independent operation since 1986. The Damascus squad has three ambulances and serves a thirty square mile area and more than 3,000 people. They answer calls from any part of the county; however, they are primarily responsible for the Damascus area.

H. Law Enforcement

Damascus Town Police have a reciprocal agreement with Washington County that frequently requests their services outside the town's corporate limits. The police department staff consists of the police chief, one lieutenant, one detective, two patrolmen, 12 auxiliary officers and 5 part-time officers. The officers share five equipped vehicles and seasonally patrol on bicycles. The Virginia State Police, Virginia Department of Game and Inland Fisheries and Jefferson National Forest Law Enforcement also provide policing services to the town and Washington County.

The offices of the Police Department are in the Town Hall building and space is limited. The facility is currently undergoing an upgrade. A new physical facility, new and upgraded equipment, and interfacing software for effective coordination with both Washington County and the Sheriff's Office could positively impact the efficiency and performance of the Town's officers.

I. Water Supply and Treatment

The Washington County Service Authority, in Abingdon, supplies treated water to the town. The Service Authority provides a sufficient supply of water to meet the present and future needs of the Town.

J. Wastewater Transport and Treatment

Since 1976, the Town of Damascus had owned and operated its own sewer system but in 2012 the Town transferred ownership to the Washington County Service Authority. The treatment plant is located three miles west of town on U.S. Route 58. Historically, the Town's gravity flow sewer system has been plagued by excessive infiltration and inflow (I/I) compounded by frequent flooding of the Beaverdam and Laurel Creeks, high groundwater levels in general, and the mountainous terrain. Excessive amounts of I/I have caused hydraulic overloading of the wastewater treatment plant resulting in untreated wastewater and raw sewage bypassing the treatment plant to the South Fork of the Holston River and eventually into the Tennessee-Big Sandy River Basin.

Washington County Health Department approved a Preliminary Engineering Report for the detection, identification, and remediation of direct I/I sources in the sewage collection system and Rural Development financed an upgrade of the entire sewer system. The upgrades are ongoing and the plant is now operating under capacity.

K. Solid Waste

Residential solid waste pick-up is available to citizens of the town by private contract. Washington County operates self-serve convenience stations throughout the county. Industrial and commercial solid waste collection is open to free market competition.

L. Public Utilities

Electric service is provided by American Electric Power. Adequate electric power is available for future growth. Centurylink, provides long distance and local telephone, with Sprint providing cellular service to the Town. A new Verizon cell tower was recently installed. Telephone service is reliable and adequate, and existing facilities will support future growth. Cable television is available to citizens by private contract.

M. Internet Access

Centurylink also provides DSL Internet access for the Town. Public Internet access is available at several downtown retail establishments courtesy of the “Adam Committee” which was funded by the Town. The Town has recently installed free public Wi-Fi covering approximately seventy five percent of the Town. A town website, Damascus.org , has been established on which local businesses can advertise to promote both their services and Damascus in general.

CHAPTER VII TRANSPORTATION

A. Roads and Highways

The main transportation infrastructure in Damascus is the road and highway system which includes all public roadways ranging from primary to secondary state roads. The quality of such a network is vital to the safe and efficient movement of people and goods. The following section provides background data, traffic volumes and trends, pertinent Six-Year Plan elements and finally, a summary of problems and opportunities.

Interstate

The nearest interstate highway is Interstate 81 which extends from Interstate 40 east of Knoxville, Tennessee, to Canada. The Interstate passes through Bristol, Abingdon, Glade Spring, Marion, and Wytheville. At Wytheville, I-81 intersects with Interstate 77, which links Columbia, South Carolina, and Cleveland, Ohio. Travelers from Damascus to points south can reach I-81 via U.S. Route 58 to Abingdon in approximately 12 minutes. For northward travel, the interstate can be reached via Route 91 at Glade Spring in the same amount of time.

Traffic volume on I-81 in southwestern Virginia has risen by approximately 75 percent over the past 30 years. A major contributor to the rise in traffic volumes is tractor-trailers and other freight trucks that comprise approximately 20 percent of the vehicles on the roadway system in Virginia. However in the last five years traffic volumes recorded at the Interstate 81 / Route 58 intersection have fallen from 42,000 vehicles per day to 41,000 vehicles per day. During this same time period the traffic volumes recorded at the Interstate 81 / Route 91 intersection have fallen from 29,000 vehicles per day to 28,000 vehicles per day. These recent changes show that Interstate 81

traffic growth is beginning to level out but years of growth have left the interstate inadequate to safely handle traffic volumes at peak hours. This leveling trend may be caused by the last five years of economic recession.

The Virginia Department of Transportation (VDOT) defines an Interstate Highway as: limited access roads designed for high-speed travel. They have a minimum of four lanes and are divided by a median strip.

Arterial Highway

VDOT defines a Rural Arterial Highway as: roads which range from two-lane to multilane, divided highways with controlled-access, designed to move high volume traffic at high speeds between rural and urban areas of concentrated activity. At full design, rural arterials include the Interstate System and most rural freeways. The primary arterial route serving Damascus is U.S. Route 58, which is the main east-to-west corridor for through traffic. Route 58 runs northwest to I-81 near Abingdon, which is 10.87 miles in length; and east to Volney which is 33.74 miles in length. The section of Route 58 connecting Abingdon to Damascus is currently under construction and when finished will be converted from two to four lanes throughout the majority of its 10.87 miles. In the easterly direction Route 58 connects Damascus with Mount Rogers National Recreation Area and the communities of Konnarock and Whitetop.

The Daniel Boone Heritage Trail is a regional highway established in the early 1920s and 30s to follow the route Daniel Boone took on his first journey to Kentucky. The highway travels Route 91 from Mountain City, Tennessee. In Damascus, the trail joins Route 58 where it remains throughout the State of Virginia.

Major Collectors

Route 91 is the major collector in Damascus. The route runs north to I-81 at Glade Spring which is 13.08 miles in length; and south to the Tennessee line is 1.62 miles. In the southerly direction Route 91 connects Damascus with the Wildlife Management Area of the Cherokee National Forest, the communities of Taylor's Valley, Virginia and Laurel Bloomery and Mountain City, Tennessee.

VDOT defines a Major Collector as: roads having two to four lanes and usually undivided. They are intended to link neighborhoods or areas of homogeneous land use with arterial streets. It is usually a public highway serving moderate traffic volumes. Collectors serve dual functions: collecting traffic between local roads and arterial streets and providing access to abutting properties.

Minor Collectors

A minor collector that serves Damascus is Virginia Route 716. Route 716 runs south from Damascus toward Shady Valley, Tennessee. It becomes Tennessee Route 133 at the state line. This route connects Damascus with Backbone Rock Recreation Area and the Wildlife Management Area of the Cherokee National Forest. VDOT defines a Minor Collector as: a two lane road that serves to collect low density local traffic and carry it to local centers or to traffic distributors of a higher order. The collector road or street should allow access to abutting properties consistent with the level of service desired.

Scenic Highways

The closest designated Scenic parkway is the Blue Ridge Parkway at the southeastern tip of Grayson County. The section of Route 91 from Glade Spring to the

Tennessee line is designated as a Virginia Scenic Byway. Route 58/603 from Damascus to Konnarock is also designated as a Scenic Byway, and Route 58 from Damascus to Volney is designated as a Scenic Road. These designations are decided by VDOT. The Scenic Roads Maps for the Commonwealth states “This road meet(s) the agencies’ standards of high aesthetic or cultural value and lead to or (is) within areas of historical, natural, or recreational significance. The designations are made in cooperation with local governments”.

B. Design Standards

Design standards for roads are established by VDOT. Required right-of-ways (ROW) are based on the annual average daily traffic volumes (AADT) and the physical constraints of the project area.

C. Traffic Volumes

The following information was provided by VDOT, Traffic Engineering Division in Richmond and Abingdon. According to the office of the TMPD, the year 2012 figures are based on historical trend lines and on the Six Year Improvement Plan, Surface Transportation Plan. VDOT no longer takes a visual count of traffic that would provide a breakdown in vehicle type and identify out of state cars, trucks and buses. Instead electronic devices are used.

Table VII-2
Annual Average Daily Traffic Volume Estimates
Route 58

Section	2005	2012
Rt. 708 to Rt. 91 W (Damascus)	5,200	4,600
Rt. 91 W to Rt. 91 E (Damascus)	4,000	3,300
Rt. 91 E to Rt. 603 (Damascus)	710	620
Rt. 603 to Grayson County Line	440	550
Washington County Line to Rt. 362	620	650
Rt. 362 to Rt. 740	390	380

Table VII-3
Annual Average Daily Traffic Volume Estimates
Route 91

Section	2005	2005
Tennessee State Line to S. Rt. 58	2,600	2,600
Rt. 58 South to Rt. 58 North	4,000	3,300
Rt. 58 North to Rt. 803 South of Lodi	3,500	1,600
Rt. 803 South of Lodi to Rt. 762 North of Lodi	2,000	1,800
Rt. 762 North of Lodi to Rt. 11 South	2,300	2,200

D. VDOT Six Year Improvement Plan

New construction and major expansion projects taking place on state maintained roads are set out in VDOT's Six Year Improvement Plan. The project list is updated yearly by removing completed projects and adding newly needed construction items. While the projects are listed by county, the current SYIP has the projects listed in Table VII-4 that will directly affect Damascus.

Table VII-4
VDOT SYIP Projects in Damascus Area

Project Parameters	Reason for Project	Distance	Cost
US 11 (Main St) / US 58, exit 19 north bound on-ramp I-81	Congestion with opening of Lowes and other new and existing businesses.	0.4 mile	unknown
US 11 (Main St) exit 19 southbound on-ramp I-81	Congestion due to multiple entrances and 3-lanes only (5 lanes needed)	0.8 mile	unknown
US 11 (Main St.) exit 19 southbound off ramp I-81	Congestion and delays. Need for signals and turn lanes	intersection	unknown
US 58 (JEB Stuart Hwy) VA677 to VA712	Improvement	5.0 miles	\$55,409

Although the current SYIP does not list any projects inside town limits there are two projects on the list that will directly affect Damascus. First, Route 58 from Abingdon to Damascus is being converted from a two-lane undivided highway to a four-lane divided highway. The project is composed of three phases and the second phase of construction has just begun. The final result will be a four-lane divided highway from the intersection of Route 58 and Interstate 81 to just outside of town limits. Another SYIP project which will affect Damascus is the improvement to be made to the entrance and exit ramps for the I81 and Route 58 intersection at interstate exit 19. This exit serves as one of two of Damascus' main interstate access points. Another VDOT funded project of considerable size is the rebuilding of the Orchard Hill Road Bridge. The one lane bridge was shut down due to safety concerns in 2012 and is planned to be reopened in 2015. This project falls under VDOT's maintenance program. The accompanying map shows the location of the projects listed above.

E. Transportation Enhancements Federal Fund (MAP-21)

The Commonwealth Transportation Board (CTB) allocates funds to specific projects on a statewide, competitive basis. Project proposals are examined by a VDOT

Transportation Enhancement Selection Panel. Based upon the recommendations of the Selection Panel and a review by the CTB's Environmental Committee, projects are selected for implementation. Examples of eligible transportation enhancement projects include some of the following categories:

Bicycle and Pedestrian Facilities; Acquisition of Scenic Easements and Scenic/Historic Sites; Scenic or Historic Highway; Landscaping and Scenic Beautification; Preservation of Abandoned Railway Corridors by Converting them to Rail-Trails; Archaeological Planning and Research; Provision of Safety and Educational Activities for Pedestrians and Bicyclists.

Tea-21 funded projects locally include the restoration of bridges and trestles on the Virginia Creeper Trail, the construction of White Top Station, and the construction of a multi-use rail-trail at Beaverdam Creek.

F. Airports

Commercial air passenger service is provided by Tri-Cities Airport, located near Blountville, Tennessee. Tri-Cities Airport is served by Delta, USAir, and United

Airlines which provide service to airports throughout the country. Also available at Tri-Cities Airport are air freight and charter services.

Virginia Highlands Airport, located three miles southwest of Abingdon, is the nearest general aviation facility to Damascus. Airport facilities include a 75 foot wide, 4,470 foot long paved runway, dusk-to-dawn lighting, hangar space, and fuel.

G. Rail Service

Rail service to and from Damascus was discontinued in April of 1976. Prior to this time, rail service was provided by the Norfolk and Western Railway, formerly the Virginia-Carolina Railway. The railroad tracks have since been removed and the main railroad bed has been converted to the Virginia Creeper Trail, a non-motorized shared-use trail.

The nearest rail service is the Norfolk and Southern Railway terminal in Bristol, which provides freight connections throughout the country. There is no passenger rail service in Washington County; however, a feasibility was completed in 2001 which outlines the projects needed and their cost to extend passenger service to Bristol.

H. Public Transit

District Three Governmental Cooperative – The Area Agency on Aging, District Three Governmental Cooperative, provides rural transportation services to elderly, handicapped and other individuals in Damascus. The service is branded as “District Three Public Transit (DTPT) and is open to general public as well as providing elderly and handicapped persons with transportation to Abingdon for meals and to shopping centers.

The routes listed below serve Damascus:

- WA5 – Damascus, Taylors Valley Friendship, Rhea Valley, Wideners Valley and Rt. 58. Primary destination is Abingdon. Runs every Tuesday.
- WA7 – Damascus, Taylors Valley Friendship, Rhea Valley, Wideners Valley and Rt. 58. Primary destination is Damascus. Runs every Wednesday.
- WA8 – Rt. 600, Konnarock, Green Cove, Whitetop, Rt 58 West (passes through Damascus). Primary destination is Exit 7 in Bristol. Runs every 1st, 3rd and 5th Friday.

I. Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is the use of programs and services to make the entire transportation system (roads, HOV/HOT lanes, buses, trains, automobiles, etc.) more efficient. Damascus does not currently offer TDM services

J. Non-Motorized Transportation

The existing bikeway and pedestrian system in the Town of Damascus has developed over the last 50 to 75 years. Bicycle and horse paths and hiking trails exist throughout the Mount Rogers region traversing some of the most beautiful scenery in Virginia. Damascus' centrality to the recreational trails and many outdoor amenities as well as its close proximity to the National Recreation Area make planned pedestrian and bicycle facilities a necessity and make tourism important to the economy. The purpose of this section is to present the town's existing pedestrian and bicycle transportation corridors and facilities in a format that focuses upon the future of that transportation

network. This pedestrian and bicycle plan will guide the development, maintenance, and future of on- and off-road bike and pedestrian facilities with planned sidewalk and streetscape improvements that will encourage non-motorized travel throughout the town. One of the goals of this plan is to connect outlying residential areas with Laurel Avenue and downtown, the Town Park, Backer Park, the new Sports Complex and regional hiking and biking trails through an established sidewalk and bicycle network.

The on- and off-road bike paths, horse, and pedestrian trails are a unique and integral part of Damascus' transportation system. The Virginia Creeper Trail, the Appalachian Trail, the Iron Mountain Trail, the Bike 76 Route, and the Trail at Beaver Dam Creek all interconnect and pass within the corporate limits of the town. The Daniel Boone Heritage Trail is a regional highway that is more fully described in the motorized transportation section.

Virginia Creeper Trail

The Virginia Creeper Trail is a multi-use (footpath, bicycle, horse) trail that connects Abingdon with the Virginia-North Carolina border 1.1 miles east of Whitetop Station, Virginia. Its total length is 33.4 miles. From the Town of Damascus, Abingdon is 15.5 miles northwest and the Virginia-North Carolina line is 17.9 miles southeast. Approximately three miles of the Virginia Creeper Trail lies within the corporate limits of the town. The Town of Damascus owns the former railroad right-of-way from its corporate limits west to Drowning Ford. The town jointly owns the right-of-way (with the Town of Abingdon) from Drowning Ford west to Abingdon. Since its designation by Congress in 1985 as a National Recreation Trail, there has been a tremendous increase in

its use. This has had a positive impact on tourism in Damascus and has led to substantial growth in town businesses, such as bike shuttle services.

Appalachian National Scenic Trail

The Appalachian National Scenic Trail is a continuous, marked footpath extending approximately 2,180 miles from Katahdin, Maine to Springer Mountain in Georgia, along the crest of the Appalachian mountain range. In 1968, Congress established a national system of trails and designated the Appalachian Trail and the Pacific Crest Trail (in the west) as the initial components. Virginia has the longest section of the Appalachian Trail, with about 536 miles. Approximately 1.2 miles of the trail lies within the corporate limits of the town. Usage has increased tremendously since the 1966 Act of Congress designating the area around Damascus as a National Recreation Area. Surveys show that the greatest increase is among weekend and week-long hikers utilizing not only the Appalachian Trail but also the many loop trails to which it connects. This type of use offers the potential to impact tourism in Damascus and outdoor recreation business development.

Iron Mountain Trail

The Iron Mountain Trail is one of many recreational trails in the Mount Rogers National Recreation Area and Jefferson National Forest. A trailhead is located at the end of Fourth Street in the Mock Hollow section of the town where the trail travels down Damascus Drive to join the Virginia Creeper and the Appalachian Trail within the corporate limits, continuing to Orchard Hill Road, where it reenters the woods and proceeds south into Tennessee.

Bike 76 Route

The Bike 76 Route is presently the only designated on-road bike route in the corporate limits of the town. The bike route coincides with Route 58 to the east of the corporate limits. It joins Route 91 in town where it remains on Route 91 north to the town limits and then travels westerly toward Meadowview, Virginia. The bike route currently has limited signage throughout its length.

Trail at Beaver Dam Creek

The Trail at Beaver Dam Creek is the newest addition to Damascus' pedestrian and bicycle network. This rail-trail conversion will utilize what remains of the old Virginia-Carolina Railway and the Beaverdam Railroad railbed and corridor that ran from Damascus to Shady Valley, Tennessee; a link that was shut down in 1926. This trail has received funding through the Federal Highway Administration's T-21 program for trails, bicycles, and pedestrian facilities. The Trail at Beaver Dam Creek will be a multi-use, partially paved recreational trail with handicap accessible trail and fishing pier access. The trail will link to the Virginia Creeper Trail at Beaver Dam Creek where it heads south and circles the old Smethport Extract Company (Bayer Chemical Corporation) site. The trail will then follow Route 716 to the Jefferson National Forest in Phase I, approximately 1 mile. Phases II and III of this project (if supported) will follow Route 716 into the Cherokee National Forest, Backbone Rock, and Shady Valley, Tennessee (TN Route 133), potentially converting nearly 15 miles of abandoned railbed.

The attached map inventories, identifies, and designates Damascus' present and future non-motorized transportation system. The improvements needed to enhance and

"fill the gaps" in the sidewalk system are shown. On-road bike lanes are hereby designated and future road and signage improvements should address these designations.

K. Problems and Opportunities

Roads and Highways

Presently, traffic growth has leveled off but traffic at peak tourist season is increasing in Damascus and the impact of any highway improvements and/or further increases in tourist traffic should be closely monitored. The topography and physiographic features in and around the town impede the development of an arterial highway system based on a cost/benefit factor and environmental impacts. There are presently no officially designated on-road bike lanes within the corporate limits. The opportunity is present to develop bike lanes and signage prior to any road construction improvements or sidewalk and curbing decisions.

In May 1992, the CTB recommended that, as money becomes available, the curve and grade hazards be eliminated on existing two-lane Route 58 between Damascus and Volney; and, that Route 58 from Interstate 81 to Damascus be improved to a four-lane facility. Route 58 improvements from Abingdon to Damascus are currently included in VDOT's six-year plan. Phase one improvements have been completed making Route 58 a four lane highway from its intersection with I 81 until its intersection with Watauga road. The second phase of the project is in the Preliminary Engineering/Right-of-Way phase. This project is supported by a resolution passed by the Town Council in 1999.

There is concern regarding the traffic safety problem at the intersections of Routes 91 (N) and 58. The intersection is presently controlled by a stop sign on Route 91, which is unexpected and subsequently often missed by drivers not familiar with the town.

Several proposals have been made regarding the construction of a four-lane Route 58 through the Town of Damascus. This proposal covers an area between Abingdon and Volney and includes a four-lane beltway. Need, location, costs, environmental impacts and economic benefit to the Town will be studied to determine the best alternative. VDOT and the CTB have not approved any of the above proposals.

VDOT has performed a full length study of Interstate 81 including the environmental impact of widening from four to six lanes. The construction has been completed from exit three to exit seven. Further widening is in VDOT's Six Year Improvement Plan for Washington County.

A lack of parking facilities on Laurel Avenue in the commercial district creates potentially unsafe entrances from side streets. Another problem is the location of bridges in floodplains.

Airport

The topographic constraints inhibit a closer airport than Virginia Highlands, however, Damascus is well-served by this facility.

Rail Service

There is no passenger rail service in Washington County, however; the Bristol Rail Passenger Study to determine the feasibility of providing service from Bristol to Richmond and Washington, D.C., could prove beneficial to Damascus.

Public Transit

The nearest fixed route transit system is in Bristol. Damascus is served by District Three Governmental Cooperative, which operates District Three Public Transit (DTPT), and

local shuttle services. There are opportunities for exploring both commuter-oriented bus service (for example: to Abingdon, Bristol, and Mountain City) and ridesharing. A local ridesharing program involving area employers would not only assist those persons in need of transportation to work but would conserve energy and lessen traffic loads. Welfare-to-work initiatives can help fund transit services and may offer some solutions in the future.

Transportation Demand Management (TDM)

Damascus does not currently offer TDM services however the Statewide Transit and TDM Plan envisions new TDM services by 2040. In non-urban areas, TDM programs are primarily residence based and focus on commuting within and outside the area. They usually focus on telework and long distance commutes and coordinate with neighboring employment areas. TDM programs can be administered by county governments, planning district commissions or transit agencies.

Non-Motorized Transportation

There has been a tremendous increase in usage of pedestrian, bicycle, and horse paths and these systems are recognized as the backbone of the local economy. Paramount to the planned development of tourism, it is important that these facilities be identified and that future development or construction, maintain, preserve or improve the visual and structural integrity of these systems. The development of complementary facilities, information centers, and rest areas should be encouraged.

CHAPTER VIII

LAND USE AND DEVELOPMENT ISSUES

A. Introduction

A major part of comprehensive planning is determining how land is used within the corporate and planning boundaries of the Town of Damascus. The character of a community is created by the combination of various land uses. There are competing demands for land use: residential, commercial, office, industrial, open space, recreation, and public & semi-public institutions such as schools, medical facilities/offices, and religious uses.

The present and future character of the community will depend on the balance of various land uses and the intensity to which each is developed.

The guiding principal behind comprehensive land use analysis is creating a balanced community where current and future residents have a wide range of housing choices, employment opportunities, consumer opportunities, and a full range of government and semi-public services. Residential areas should include housing for individuals and families throughout the various life-stages. Employment opportunities should include full and part-time work, provide entry-level positions, and exist in all major sectors of the economy: industrial, office/service, and retail. The consumer needs of the residents should be met by a variety of settings, including retail shops, service-related businesses, and community centers.

In addition, the town should encourage a broad spectrum of business interests, ranging from larger firms to small local businesses and entrepreneurs and should market the Town as inviting to these activities. In all instances, the town seeks to work with the

private sector to protect and enhance the natural features of the area, protect existing development and to insure that the infrastructure necessary to serve proposed development is available. Developers are encouraged to work with the town, and other public bodies, so that appropriate contributions of land, money or improvements will be made in concert with the timing of development. This process ensures that planned and existing development can proceed without overextending the existing infrastructure, the transportation and public services systems, which benefit existing residents and business. A creative partnership between the various governments and the private sector can provide the physical, social, and government structure needed to ensure a well-run thriving community in the future.

B. Current Land Use by Categories

In past years three land use surveys have been conducted in Damascus. All three were conducted by the Mount Rogers Planning District Commission, one in 1980, one in 1999, and the other in 2006. The results of these three surveys (Table IX-1) have made it possible to examine past trends of land use in Damascus.

Table VIII-1
Land Use by Acre
Town of Damascus
1980, 1999, 2006

CATEGORY	Residential	Commercial	Industrial	Public/ semipublic	Vacant	Roads and Streams
1980	145	11	57	16	223	51
1999	203	19	25	67	169	54
1980 – 1999 Change	58 acres	8 acres	-32 acres	51 acres	-54 acres	3 acres
1980 – 1999 % Change	+40 %	+72.7 %	-56.1 %	+318.7 %	-24.2 %	5.8 %
2006	308	28.5	1	14.1	128.4	54
1999-2006 Change	105 acres	9.5 acres	-24 acres	-52.9 acres	-40.6 acres	0 acres
1999 -2006 % Change	+51.7 %	+50 %	-96 %	-78.9 %	-24 %	0 %

Source: Mount Rogers Planning District Commission, Land Use Survey, 1980, 1999, 2006.

It should be noted that through better surveying methods and technologies it was found that the total land area within the Damascus corporate limits has changed to a total of 534 acres. This is a 3 acre decrease from the 1999 estimate of 537 total acres, and a 24 acre increase from the 1980 estimate of 510 total acres.

The greatest acreage change of land use in Damascus during this time period occurred in the residential category. Since 1980 residential land use has increased from 145 acres to 308 acres representing a 163 acre increase. The majority of this growth has occurred in the last seven years. Between 1999 and 2006 the residential acreage has grown 105 acres representing a 51.7 % change. This means that the Town's residential area has grown twice as much in the last seven years than it did in the previous 19 years. The 308-acre total is the largest of all the land use categories in Damascus. While there has been an increase in residential land use the population of Damascus has slightly decreased, meaning that growth in this category corresponds to a decrease in the number of people per household. This increase in residential land use has caused a significant decrease in the amount of vacant and public/semipublic lands.

A sharp drop in Industrial land use has also created an opportunity for Residential and Commercial growth. Commercial land use has grown more in the last seven years than it did in the 19 years prior. From 1999 to 2006 Damascus saw a 50% increase in commercial land use. This can mostly be contributed to tourism generated by the Town's close proximity to various hiking, biking, and equestrian trails.

A large portion of the vacant land in Damascus lies within the 100- year flood plain, which takes up a total 135.5 acres or approximately 25 percent of the total land area. The majority of the remaining vacant land is not suitable for development due to flood hazard or excess slope. This will cause the decreases in the amount of vacant land seen in the past to taper off in the next few years.

The amount of land used for industry has dropped significantly since 1980. Fifty-seven (57) acres of land was used for industrial purposes in 1980, while in 1999 only 25 acres remained in use by industry. This 56.1 percent decrease has allowed for the increase of residential and commercial land use. A further drop in industry has occurred leaving only 1 acre of industry in the Town of Damascus.

Roads and streams were put in a category separate from public land use. This was done so it would be easier to understand how much land there was that could not be used for other land uses. Roads and streams cover 54 acres in Damascus. The amount of land that fell in this category increased only by four acres, or ten percent from the 1980 total of 50 acres. The primary uses of developed land in Damascus at the present time are depicted in Table IX-2.

Table VIII-2
Use of Developed Land
Town of Damascus
2006

CATEGORY	ACRES	PERCENT
Residential	308	87.60%
Commercial	26.5	8.10%
Industrial	1	1%
Public/semipublic	14.1	14.10%
Total Developed Land	351.6	100%

Source: Mount Rogers Planning District Commission, 2006.

C. Current Land Use Controls

Zoning Ordinance

The present zoning ordinance for the Town of Damascus was originally adopted in 1982. A revised version of the original zoning ordinance was adopted in 2002 under the official name “2002 Damascus Zoning Ordinance”. The 2002 Damascus Zoning Ordinance has since been amended to better guide development within the town limits. A zoning ordinance is needed to put the comprehensive plan into action. This ordinance can be referenced in the Town Code of Damascus.

Subdivision Ordinance

A subdivision ordinance for Damascus was adopted by the Town Council on August 18, 1977, after its preparation and recommendation by the Planning Commission. With a few exceptions, the subdivision ordinance sets standards for the division of land into two or more parcels for the purposes of development or sale. Article 8.2 of the ordinance prohibits the subdivision of land for building purposes within the Floodway District as specified in the Flood Study done by the Tennessee Valley Authority in 1957.

Flood Control Ordinance

In addition to the provisions of the subdivision ordinance concerning areas subject to flooding, section nine of the Damascus Town Code specifies that, unless approved by the Planning Commission, no structures may be built within the floodway district.

D. Development Issues

As is true with most of Southwest Virginia, physical factors have played a significant role in the development of Damascus and its land use. The primary factor that limits further development in Damascus is the shortage of land both available for and suitable for development. Approximately six percent of the land in the corporate limits of Damascus is not developable due to excessive slope, flooding, or previous use.

Slope is and will continue to be one of the major constraints to development in and around the Town of Damascus. A large portion of the land in Damascus has a slope in excess of 20 percent. Although all slopes of 20 percent and greater do not exclude development, it would be more difficult and more costly.

There are two approaches to solving the land availability problem. One solution is through boundary adjustment. The Town of Damascus already provides a number of municipal services to areas outside the corporate limits. Therefore, boundary adjustment may be financially feasible for the town and would allow room for development to occur within the new corporate limits.

A second way to increase the amount of land with developmental potential in Damascus is through more efficient use of existing land. Land that is currently available for development or becomes available in the future could be developed into condominiums or clustered housing. This type of development would allow the town to achieve more efficient use of its present territory. This would allow for further development through increased density of buildings (more per gross acre).

CHAPTER IX GOVERNMENT

A. Town Government

The town government in Damascus is a strong mayor form of government composed of a Mayor and six Town Council members who are elected every four years. The terms of these offices are staggered. If there is a vacancy on the council between elections, a successor is appointed by a majority vote of the council until the next election. The council elects a chairman who serves as the vice-mayor. In the case of a tie vote of the Town Council, it is the responsibility of the mayor to break the tie. The mayor is by charter the chief administrative officer. The Council is responsible for appointing a planning commission to advise the Town Council on matters affecting land use within the town. One member of the Town Council also serves on the planning commission.

The Town Council employs a clerk, a treasurer, a police chief, and a maintenance superintendent. In addition, since 1978 the town has been a participant in the circuit rider town manager program through the Mount Rogers Planning District Commission. These individuals are responsible for their departments and employees of the town under those departments. Public services including trash pick up and disposal are provided by the private sector via procurement and competitive negotiation.

B. Local Government Services

Through the aforementioned offices, the Mayor and the Town Council ensure the provision of the following services to the residents of Damascus: police protection, fire protection, the maintenance and lighting of streets, solid waste removal, land use controls, and the provision of recreation facilities.

C. Revenue Sources

Finances to provide these services in order of size, come from real estate and personal property taxes, merchant licenses, Washington County sales tax, a bank franchise tax, food and lodging tax, cigarette stamps fines, automobile tags, miscellaneous income, interest, and ABC profits. The total revenues projected for the Town of Damascus were \$1,176,945 in fiscal year 2013-2014.

D. Expenditure by Type

The primary expenditures of the town can be grouped in the following rank order: general fund; public works; general government administration; public safety; and parks and recreation. The town has an operating fund balance of \$61,954 which is approximately three months of operating expenses. The town should strive to attain at least one year of an operating fund balance. This would allow the Town Council to aggressively pursue growth opportunities without having to wait on revenues from tax increases. A more detailed report of expenditures and revenue for the town can be found in the budget available from the treasurer's office in the Damascus Town Hall.

E. Tax Rates and Development Impact

The real estate tax rate is .46 per 100 and the personal property tax rate for 2013 is .52 per 100 in the Town of Damascus. The County real estate rate in 2013 is .63 per 100. The conclusion to be drawn from this is that business and industry wanting to locate in Damascus should not find tax rates to be a deterrent.

F. Intergovernmental Cooperation

In the area of providing public services, Damascus has working agreements with the Washington County Sheriff's Department, Fire Department, Rescue Squad, Parks and Recreation Department, School Board, and Public Service Authority. One member of the Damascus Town Council is appointed by the Washington County Board of Supervisors to serve on the Mount Rogers Planning District Commission. The Town of Damascus has contracted with the MRPDC for professional town management services since 1978.

Close cooperation also exists between Damascus and the Washington County Industrial Development Authority; the First Tennessee Development District; the Virginia Department of Transportation; the U.S. Forest Service; the National Park Service; the Appalachian Trail Conference; the Tennessee Valley Authority; the Virginia Health Department; the Virginia Department of Environmental Quality; Virginia Highlands Community College; People, Inc.; District Three Governmental Cooperative; the Mount Rogers Development Partnership d.b.a. Virginia's ACorridor; the Virginia Southwest Blue Ridge Highlands, Inc.; and the Mount Rogers Planning District Commission.

The town also maintains close ties with the County Executive in Johnson County, Tennessee, the Mayor and Alderman in Mountain City, Tennessee, and the Board of Supervisors in Grayson County, Virginia. In addition, the population of Damascus accounts for a large part of the Taylor District of Washington County. Thus, residents of Damascus often represent the District in County affairs.

G. Governmental Issues

The government of Damascus serves its residents in an efficient manner with the terms of the Town Council staggered for four-year terms. The Mayor is elected every two years. This prevents a complete turnover of elected officials. The effective government of a town is a delicate task requiring some skills which can only be acquired by experience. Thus, because of the overlap between terms of council members, the council can be more effective in maintaining and improving services to the citizens.

Boundary Adjustment

Given the proposed changes to the major arterials that intersect in Damascus, the Town needs to prepare a boundary adjustment feasibility study. If an adjustment appears feasible the Town should initiate discussion with the Taylor District Representative on the Washington County Board of Supervisors to determine if the Board of Supervisors would work with the Town to achieve this objective.

Highway Improvements

The Town should stay permanently engaged in the planning process to determine the location of U.S. 58 and State Route 91. The future direction and growth of the Town will be determined when the road improvements are made. The direction taken by the roads around the Town will be the greatest determinant in the future of the Town of any single factor not controlled by the Town Council.

CHAPTER XI

GOALS AND RECOMMENDATIONS

The findings of the comprehensive plan are based on two considerations. First, the existing conditions are described and evaluated (preceding chapters). Next, the results of these evaluations are compared with the goals and objectives of the town. The comparison of future goals and past accomplishments then indicate the needs of the town.

A. Goals and Objectives

A goal is the general direction toward which future actions are directed. Goals are general, long term statements of purpose which provide a target toward which town development can be directed. Generally, goals are not easily measurable nor are they attainable in the near future. An objective is a measurable part of a goal. Thus, a number of objectives are directed toward each goal. The objectives provide the manner in which the town should develop in order to achieve the goals. The following are the goals and objectives for the orderly and effective development of the Town of Damascus.

There are several over-arching goals which apply to all aspects of development for the Town of Damascus. The following are those goals:

- Become a town that's recognized as being encompassed by outdoor recreation, and make that a priority
- Provide adequate police, fire, and rescue services to all citizens and tourists;
- Preserve historic sites and other unique characteristics of the town;
- Retain and develop the scenic beauty of the region;
- Protect the town from flooding; and

Residential Zones and Structures

Traditional residential development requires land with stable soil conditions, minimal slope characteristics and protection from flooding. In addition to these requirements, residential growth requires more acreage than most other land uses. Thus, the shortage of developable land within the corporate limits has the effect of restraining residential land use more than other uses. In addition, to satisfy the housing needs in Damascus, the Town must first identify the areas with the highest concentration of substandard homes, especially those where the owners are of low-to-moderate income. Taking these factors into consideration, specific goals for residential development in Damascus are as follows:

- Maintain the best possible living conditions for all citizens;
- Provide housing opportunities for all, regardless of income;
- Prevent blighted houses from becoming dilapidated;
- Increase growth of residential areas;
- Protect the investment of current property owners;
- Plan residential development in order to blend with and protect the surrounding environment; and
- Plan and prepare for an aging population.

The objectives required to achieve these goals are as follows:

- Bring all blighted homes up to HUD Section 8 criteria via participating in government grant programs, such as the Community Improvement Grant program and Rural Development housing opportunities;
- Demolish all unsafe, unoccupied housing structures;
- Ensure adequate sewage, water and transportation facilities are provided prior to allowing any new or replacement residential development;
- Identify residential developable properties with utilities that can be added to the town by boundary adjustment;
- Ensure zoning promotes the outdoor recreation aspects of the Town
- Bring existing facilities and future facilities up to ADA code
- All new construction will use protection measures recommended by the flood reduction plan as adopted by the Town Council and the building codes as adopted by the authority having jurisdiction as a standard for development;
- Ensure all new and replacement residential development is compatible with existing and future land use;
- Enforce Zoning Code and insure compliance of all new activity with the Town Ordinance;
- Acquire funding to rehabilitate or substantially reconstruct the LMI homes through the Virginia Department of Housing and Community Development's Community Development Block Grant Program;
- Complete Orchard Hill Road and east Damascus Phase II housing projects;
- Prioritize housing renewal efforts;
- Identify remaining substandard housing;
- Apply for a "scattered housing" CDBG grant once the Orchard Hill Road and east Damascus Phase II housing projects are complete;
- Enforce the public nuisance part of the ordinance; and
- Conduct a study of potential residential developable properties with utilities in order to decide if a boundary adjustment is necessary.

Industrial

Damascus has a limited industrial base and there is a notable need for jobs that are high paying and attractive to a young population. Thus, the industrial goals for the Town of Damascus are:

- To promote the retention and expansion of existing industries; and
- To attract environmentally-responsible, light industry that will be compatible with the recreational and tourist aspects of the local area.
- The objectives required to achieve these goals are as follows:
 - Identify promising locations for new industries taking into account the need to maximize compatible land use and minimize pollution and traffic congestion;
 - Search for new environmentally-responsible, light industry that are nonpolluting in their operations and clean in appearance and encourage their relocation to the area;
 - Expand the town's boundaries to make available developable properties for industry;
 - Extend public water and sewer service to developable properties in boundary adjustment areas;
 - Ensure the availability of affordable high-speed telecommunications capabilities in and around the town; and
 - Provide opportunities for the development of industrial skills in our community.

In the past, commercial growth in Damascus has been limited due to the proximity of major commercial hubs, such as Abingdon and Bristol. With the continued expansion of tourism support services and development of the National Recreation Area, however, the commercial growth trend has reversed. Commercial growth and development should be expected. Toward this end, the following specific goals are as follows:

- Strengthen the town's economic base through commercial development;
- Guide the development of the commercial sector of Damascus in accordance with approved development plans, town ordinances, codes, and zoning regulations and;
- Promote new commercial growth within the Town of Damascus.

With these goals in mind, commercial development should be encouraged according to the following objectives:

- Support commercial development which will integrate and complement the tourism-related economy of Damascus including dining, transient lodging, bed and breakfasts, shopping, biking and hiking support activities;
- Facilitate the establishment of new commercial enterprises, particularly banks, grocery stores, specialty shops, and dining within the Town of Damascus;
- Locate commercial establishments in areas that are most accessible to residents and tourists alike;
- Plan all new commercial activity to ensure harmony with existing land uses;
- Ensure adequate walkways, parking, road capacity, sewage, and solid waste collection are provided for existing and future commercial activity; and
- Support local and regional programs offering entrepreneurship and small business development.

Tourism

Damascus is endowed with a number of recreation and tourism attractions, and the town has become the model for a successful tourism economy in Southwest Virginia. Nevertheless, there are several opportunities for Damascus to grow the local economy and improve the tourism- and recreation-related attractions. Tourism goals are as follows:

- Strengthen the town's economic base through tourism;
- Establish a workable plan for the Bayer property and the Beaverdam Creek Trail;
- Ensure appropriate and attractive tourism development through proper planning efforts;
- Retain and develop the scenic beauty of the region;
- Coordinate the town's goals and objectives with the surrounding recreation areas;
- Promote and encourage tourism and its related activities;
- Continue to market Damascus as a prime tourism destination for families, heritage tourists, hikers, bikers, motorcyclists, and outdoor enthusiasts; and
- Use floodplains, and other land that is not suitable for other uses, for recreational purposes that will not create flood hazards.
- Establish a method through planning to dealing with the cyclical economy

The Town of Damascus is using the following objectives to accomplish these tourism goals:

- Maintain existing multi-use recreation facilities year round to meet the needs of both the tourists and local citizens throughout the year. An example of this type of facility is the community center/information center/library;
- Extend the hours of the tourist information center through local volunteers during the tourist season;
- Maintain existing recreation activities and/or facilities for youth and senior citizens;

- Provide new recreation activities and/or facilities for youth and senior citizens where a need is identified;
- Extend wireless internet accessibility throughout the town;
- Develop and implement a workable plan to utilize the Bayer property as a multi-use facility supporting recreational activities and Beaverdam Creek Trail;
- Plan and develop a comprehensive Bicycle/Pedestrian plan;
- Improve signage along Creeper Trail to direct tourist to desired business locations;
- Maintain restroom facilities to continually provide clean, well-stocked, and functioning facilities;
- Provide additional signage for the existing public parking areas;
- Create more centrally located public parking in Town;
- Expand Creeper Trail maintenance activities to make the Trail more user friendly and aesthetically pleasing;
- Improve fishing opportunities to support recreation, tourism, and retirement activities, including stream stocking;
- Plan the creation of additional trails and non-motorized facilities to link existing facilities with Tennessee and North Carolina;
- Build upon the town's many cultural heritage and outdoor recreation assets through activities such as regularly held music jams, concert series, artisan festivals, and outdoor competitions (fishing, hunting, etc.);
- Participate in and support regional tourism projects, such as The Crooked Road: Virginia's Heritage Music Trail and 'Round the Mountain: Southwest Virginia's Artisan Network; and
- Promote and encourage tourism/recreation related activities, i.e., dining and lodging such as camping, bed and breakfasts.
- Increase awareness of attractions other than the creeper trail creating more overnight stays through a VTC Marketing Grant.
- Create an economic restructuring plan with DHCD planning funds to address the town's cyclical economy

- Use the created economic restructuring plan to apply for a Community Development Block Grant for Downtown revitalization.

Recreation

Damascus is endowed with a number of outdoor recreation opportunities.

However, there remains a need for indoor facilities and for a greater variety of facilities.

Recreation goals are as follows:

- Provide the best possible recreational opportunities for all citizens;
- Guide the growth of recreational activities to comply with other stated goals; and
- Promote and encourage new recreational activities.

Thus, recreational objectives are as follows:

- Plan development of floodplains and land that is not suitable for other uses for recreational purposes in a way that will not cause flood hazards;
- Maintain multiple-use recreation facilities such as a community center/information center/library to meet the needs of all citizens throughout the year;
- Plan and implement adequate recreation activities and/or facilities for its youth and senior citizens;
- Support fishing opportunities to encourage recreation, tourism, retirement activities, and fund raising;
- Plan and implement development of the Bayer property as a multi-use facility supporting recreational activities; and
- Work with other government and/or private organizations to create additional trails and non-motorized facilities to link existing facilities with those in Tennessee and North Carolina.

Transportation

At present, there are no severe problems concerning vehicular traffic through Damascus. However, increased traffic can be expected with the development of the tourism industry, the National Recreation Area, and the highway improvements underway in neighboring states. Plans for future transportation improvements will be critical to the Town's prosperity. Transportation goals for Damascus are:

- To support the Commonwealth Transportation Board's decision to improve the curve and grade hazards on existing U.S. 58;
- To provide bikeways and sidewalks in order to encourage bicycle and pedestrian travel rather than vehicular travel around town;
- To plan street improvements in such a way that the town will be prepared for increased traffic and will not adversely effect neighboring land uses;
- To require future transportation improvements maintain or improve the visual and structural integrity of existing and proposed non-motorized transportation facilities;
- To promote operation and utilization of public-alternative transportation systems.

Objectives for the implementation of transportation goals are as follows:

- Participate in the planning, engineering, route selection and construction of improvements to U.S. Route 58 and State Route 91;
- Provide bike lanes and sidewalks in order to allow people to bicycle or walk rather than drive for travel around town;
- Develop a bike and pedestrian transportation plan coordinated with the Virginia Department of Transportation for future roadway enhancements; and
- Investigate acquisition and development of off street parking to alleviate down town congestion.

Future Land Use

Land use in Damascus is illustrated on the accompanying map. Future land use is governed by the Damascus Zoning Ordinance and Map. The Damascus Planning Commission, Board of Zoning Appeals, along with the Zoning Administrator are responsible for upholding the Zoning Ordinance. The goals of the ordinance and these administrative bodies are as follows:

- To minimize loss of life, injuries, and property damage in case of a flood or natural disaster; and
- To promote and protect the downtown area.

Future land use objectives are:

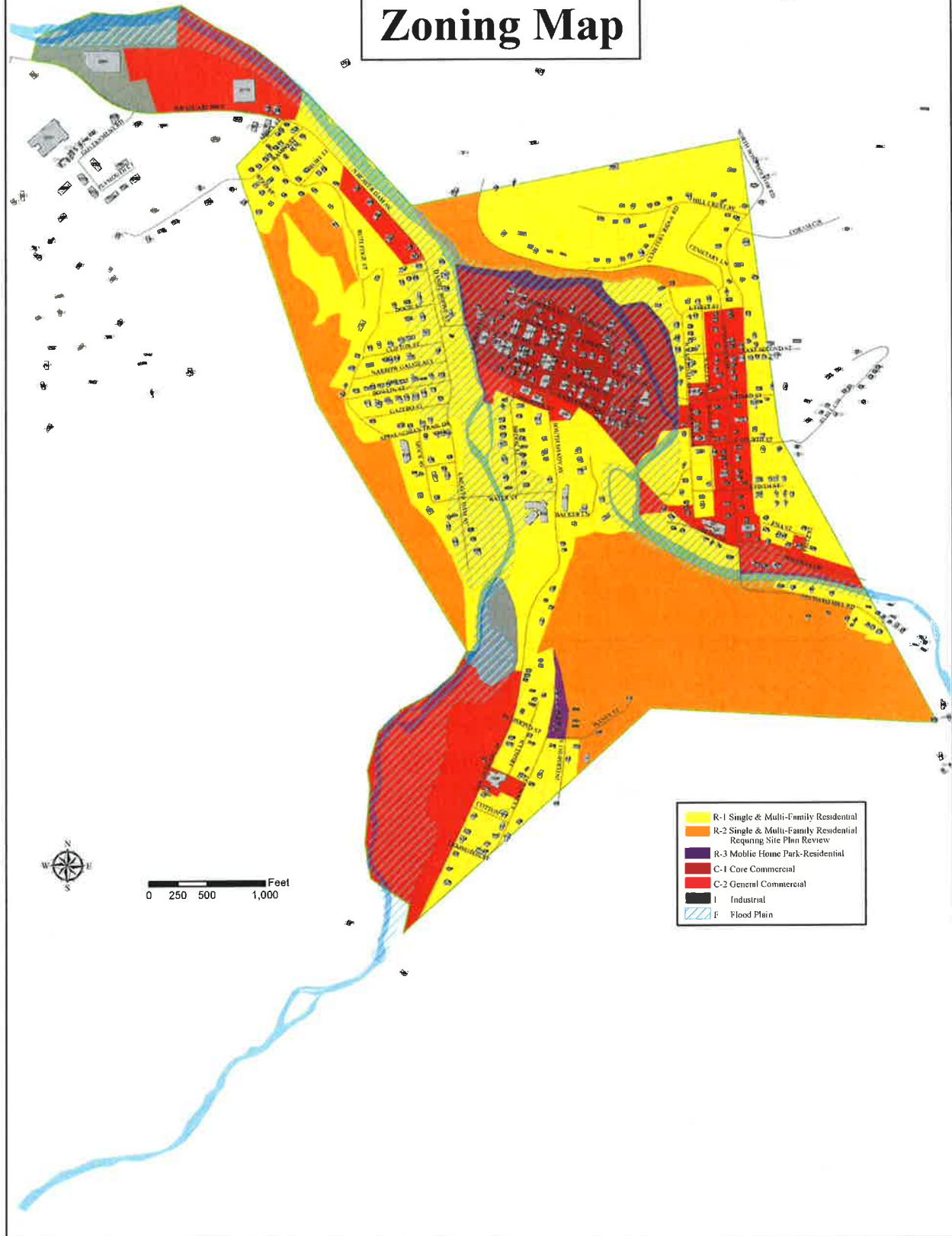
- All buildings presently in the flood plain should be flood proofed or relocated;
- All new construction in the flood plain will be flood proofed;
- All new construction will use protection measures recommended by the flood reduction plan as adopted by the Town Council and the building codes as adopted by the authority having jurisdiction as a standard for development;
- Pursue the conversion of an area of the 100-year flood plain into linear recreational parks;
- Promote the downtown area as a center for retail stores, restaurants, and tourism related businesses;
- Protect the strips of commercial growth along Route 58 on either side of the downtown as an area for shops and restaurants to accommodate tourists.

B. Summary of Recommendations

After reviewing existing conditions in Damascus, the following actions are recommended by the comprehensive plan in order to meet the present needs of the town. The justifications for these recommendations are found in the preceding chapters. These recommendations are in order of the preceding chapters and not in order of importance.

- The comprehensive plan should be reviewed every five years after its adoption and revised as conditions warrant.
- Environmentally-friendly industrial and commercial activity should be encouraged.
- Municipal parking, and town beautification projects are needed to help attract commercial growth.
- Water supply, sewage, solid waste collection and public facilities should be upgraded as State and Federal Regulation requires.
- Street improvements should keep pace with traffic demands and provide for walking and biking paths.
- Any new commercial buildings which locate in the downtown area should provide safe public access ways and parking facilities/capabilities for its customers.
- A boundary adjustment feasibility study should be conducted to determine if adjusting the boundary of the Town would be advisable.

Damascus Zoning Map



Mount Rogers PLANNING DISTRICT'S

Pre-Disaster Hazard Mitigation Plan



**MOUNT
ROGERS**
SOUTHWEST VIRGINIA

Prepared by the Mount Rogers Planning District Commission for the Counties of Bland, Carroll, Grayson, Smyth, Washington, and Wythe, the Cities of Bristol and Galax, and the Towns of Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville.

Funding through the Virginia Department of Emergency Management and the Federal Emergency Management Agency.



A different side of Virginia

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INTRODUCTION

The Mount Rogers Hazard Mitigation Plan 2017 update is a revision to the region's original plan, adopted and approved by FEMA in December 2005. In this updated plan, new data and analysis has improved the hazard identification and risk assessment used to determine mitigation strategies. All sections of this plan have been updated to include the newest information and data available. In the past five years, the participating local governments (Bland, Carroll, Grayson, Smyth, Washington, and Wythe Counties, the Cities of Bristol and Galax, and the Towns of Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville), have participated in a yearly overview and update of the strategies and goals set forth in the original plan.



The Pre-Disaster Hazard Mitigation Update is meant to describe natural hazards and their impacts to people and property; recommend mitigations to reduce or eliminate those hazards; and outline the strategy for maintaining and updating the Plan.

This Plan addresses natural hazards of importance to the Mount Rogers Planning District region of southwest Virginia. This is a rural, mountainous region covering 2,777 square miles that stands within both the Ridge & Valley and Blue Ridge geologic provinces. This plan will focus primarily on natural hazards: dam safety, drought, earthquakes, flooding, karst & sinkholes, landslides, severe winter storms/ice, thunderstorms/lightning, tornadoes/hurricanes, wildfires and windstorms.

HAZARD MITIGATION PLANNING

The purpose of this plan is to meet the requirements set forth in the Disaster Mitigation Act 2000 (DMA 2000). The DMA 2000 requires state and local government to identify hazards, assess their risks and community vulnerability, and to describe actions to mitigate those risks and vulnerabilities. The plan is meant to be a framework for decreasing needs for post disaster funds for recovery and reconstruction through pre-disaster actions.

Adoption of the Hazard Mitigation Plan and approval from FEMA is required for localities to remain eligible to apply for the five Hazard Mitigation Assistance (HMA) Programs. They include the four annual grant programs; Pre-Disaster Mitigation Program (PDM), Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and Severe Repetitive Loss (SRL) and the post-disaster Hazard Mitigation Grant Program (HMGP). Three of these programs (FMA, RFC, and SRL) are directly linked to the National Flood Insurance Program (NFIP). HMGP and PDM can also be used to fund tornado safe rooms, wildfire mitigation, etc. Adoption of this plan is also required to receive a declaration of a federal major disaster or emergency from FEMA.

There are four basic phases of emergency management: mitigation, preparedness, response, and recovery. Preparedness and mitigation measures occur prior to a disaster event. Preparedness refers to plans and strategies for efficiently handling disasters as they occur. Response and recovery occur during and after a disaster event, respectively, to return the community to normal operations as quickly as possible. Mitigation includes the long-term strategies determined to reduce risk to life and property from a disaster event.

The benefits of planning to mitigate for natural hazards include a systematic approach for identifying hazards, their risks, and strategies for minimizing those risks. In planning prior to a disaster, the high emotions and rushed environment are absent allowing a diverse group of stakeholders to collaborate to develop strategies from which the community derives the most benefits. The opportunities offered by approaching mitigation planning proactively allow local communities to shape not only post-disaster recovery, but also achieve additional community objectives, such as recreation and housing and economic development.

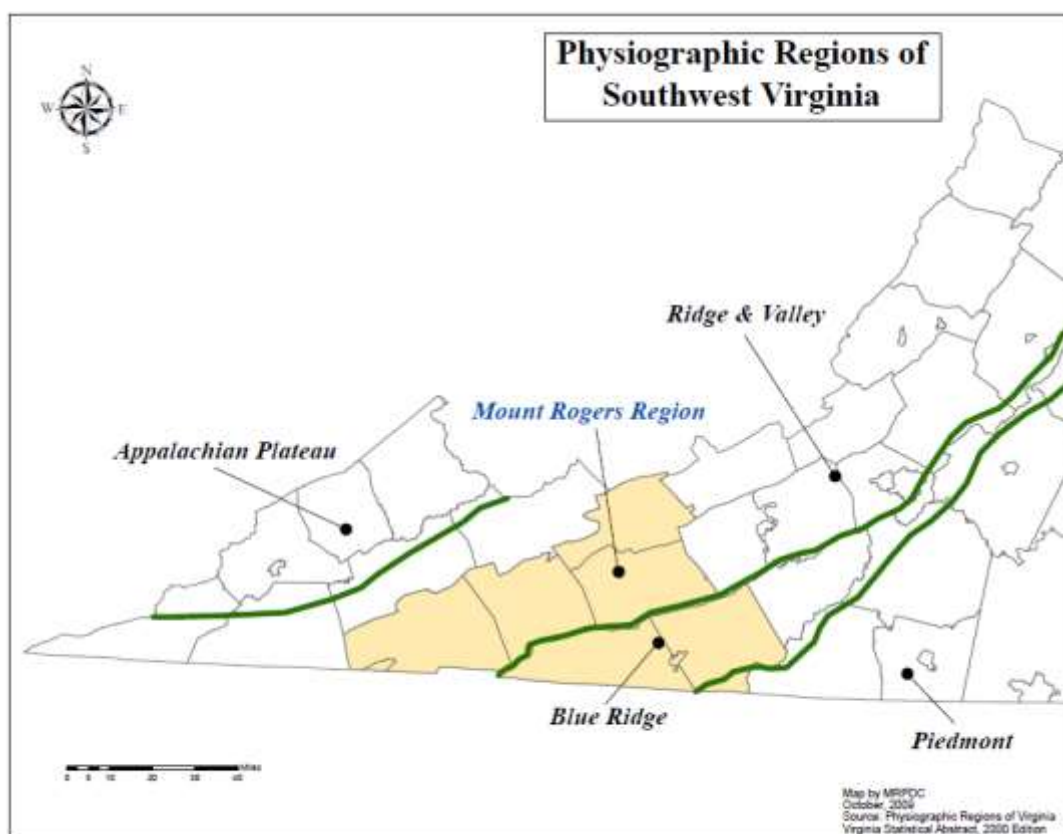
Implementation of mitigation strategies is the final step of these planning efforts. Mitigation strategies can take many forms, most commonly directed towards flooding, hurricanes, and

earthquakes, three historically catastrophic events. The true community benefits of mitigation planning are not realized until the construction or installation of these projects is completed.

Community Profile

Natural Features

The region covers 2,777 square miles and stands within both the Ridge & Valley and the Blue Ridge geologic provinces of Virginia. An image (Physiographic Regions of Southwest Virginia) is shown below.

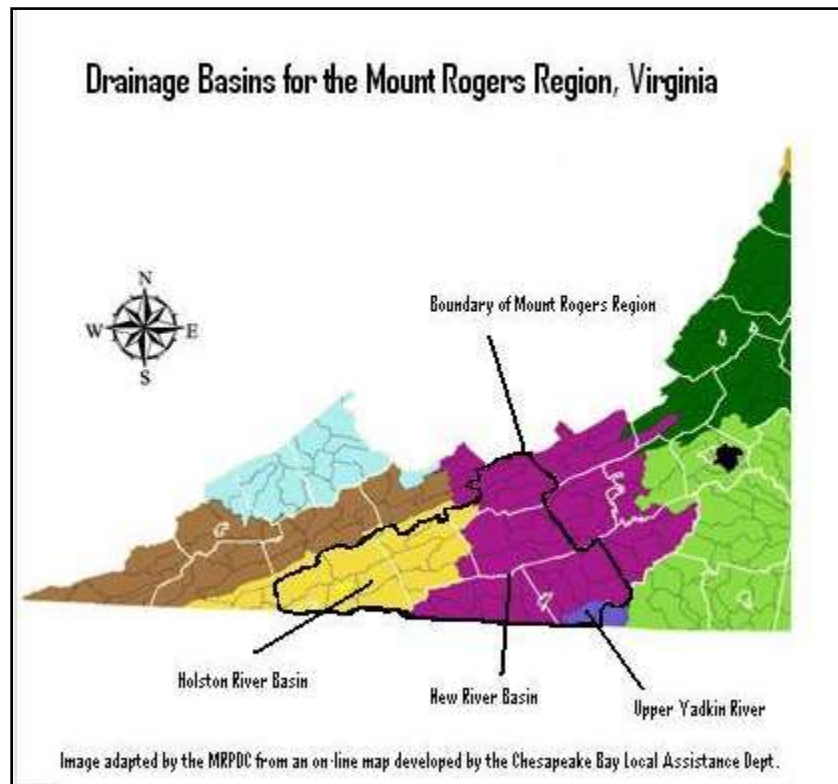


In the Ridge & Valley section, the land is characterized by valleys with low to moderate slopes underlain by carbonate rocks; this area starts in Bristol and runs in a northeasterly direction through Washington, Smyth and Wythe counties in a track toward Roanoke. Elevations generally range between 1,200 and 2,300 feet. The Blue Ridge portion generally includes Grayson and Carroll counties. The land appears as a broad upland plateau with moderate slopes. The elevations are higher, generally ranging from 2,400 to 3,000 feet, and sometimes

much higher. Mount Rogers itself, located near the junction of Grayson, Smyth and Washington counties, stands at more than 5,729 feet.

Natural Resources

The principal watersheds that drain the region include the Holston River system (including the North, South and Middle Forks), the New River, and a small portion of the Upper Yadkin River drainage as shown on the map below.



The Holston River Basin flows in a southwesterly direction to join with the Tennessee River system. The New River flows in a northerly direction into West Virginia, while the Upper Yadkin flows south into North Carolina. Much of the Mount Rogers region contains state and national forest, including the Mount Rogers National Recreation Area. The mountainous terrain generally precludes intensive development other than in the limited valley regions of the district.

Mineral resources of the region include limestone, sandstone, granite, gravel, sand, shale, iron oxide, quartzite and salt. All are actively mined, according to the state Department of Mines, Minerals and Energy. Historically important minerals in the region included coal, iron, lead, zinc,

salt, gold, and gypsum. The richer mineral resources of the west have long since replaced much of the local mining activity in the Mount Rogers region.

Temperatures and Climate

The local region stands within a temperate climate zone influenced by the mountainous nature of southwest Virginia. Temperatures range from average lows of 15° F-25° F (in January) to average highs of 80° F-90° F (in July). The differing elevations and lay of the land account for the range of differences in local weather. The MRPDC ranges in elevation from 5,729 feet at its highest point on Mount Rogers in western Grayson County, to 1,110 feet along Lovills Creek on the Carroll Surry County line. Local annual precipitation also is highly variable. It ranges from 62" annually in the highest mountains (Mount Rogers and surrounding area in the Blue Ridge) to 46" annually in other parts of the district. Weather patterns and climate are influenced by the Appalachian and Blue Ridge mountain ranges, the direction of airflow and the effects of the major river valleys. Weather systems typically move from west to east. Cloud systems may pass up and over the mountains. As clouds rise, their moisture content condenses and falls as rain or snow; that often results in heavy precipitation on the western slopes of the mountains and little or no precipitation on the eastern (or rain shadowed) slopes of the mountains. Weather systems and storms also may follow the river valleys, running parallel to the mountain ranges.

Political Boundaries

The Mount Rogers region, as designated by the Virginia General Assembly, includes six counties Bland, Carroll, Grayson, Smyth, Washington, and Wythe, two cities Bristol and Galax, twelve towns Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville.

Key transportation systems within the region include the interstate highways (I-81 and I-77), U.S. Route 58 and U.S. Route 11, several local airports, some limited public transit service, and service from local taxicabs and Greyhound Bus Lines. The Norfolk Southern Railway is an important private hauler of freight. Passenger rail service presently is lacking in the region.

The region is variable in nature. It ranges from the very rural character of Bland County, with a population of 6,511 (a decrease of 4.6% since the last plan update) to the rapidly urbanizing character of the largest county, Washington, with a growing population of 53,789 (a decrease of 2.0% since the last plan update). Grayson and Carroll counties are known as places for

second home development, especially in areas with views of the New River. The two mid-size counties, Smyth and Wythe, with populations of roughly 30,000 each, serve as centers of commerce and manufacturing. The three largest towns, each with populations greater than 5,000, are Abingdon, Marion and Wytheville.

Population

As of 2017 the region-wide population numbered 188,498, according to the Weldon Cooper Center for Public Service at the University of Virginia. The population of the Mount Rogers Region was 193,595 as of the 2010 Census, up approximately 2.4% from the 2000 level of 188,984. Currently the region wide population has decreased 2.6% since the last census in

Locality	2017	2012	% Population Change
Bland	6,511	6,824	-4.6%
Carroll County	29,212	30,042	-2.8%
Grayson County	15,669	15,533	0.9%
Smyth County	30,686	32,208	-4.7%
Washington County	53,789	54,876	-2.0%
Wythe County	28,723	29,235	-1.8%
City of Bristol	17,160	17,835	-3.8%
City of Galax	6,748	7,042	-4.2%
Mount Rogers Planning District	188,498	193,595	-2.6%
<i>Source: Weldon Cooper Center for Public Service, 2012 and 2017 Population Estimates</i>			

2010. The decline is distributed unevenly within the region. Only one locality saw a slight increase in population. This occurred in Grayson County. Bland County, Carroll County, Smyth County, Washington County, Wythe County, and the Cities of Bristol and Galax saw a slight decrease in population in the past five years since the last update of the Hazard Mitigation Plan.

Median family income for the region as of 2016 came to \$39,655¹, which lags behind the statewide level of \$66,149¹, as reported by the U.S. Census Bureau. This number reflects a 3% decrease in median household income for the Mount Rogers region over the past ten years. Incomes in the Mount Rogers region have traditionally lagged behind statewide averages, along with the region's rate of new job creation. At the same time, unemployment generally runs higher than the statewide average, reflecting disparities between the high job growth rates in northern Virginia compared against job growth rates in southwest Virginia.

¹ U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

Ethnically, the Mount Rogers region is dominated by whites (95.4%)². Of a total population of 193,595 in the region the largest significant minority populations are African American totaling 2.2% and Hispanics totaling 2.1%.

Economy

Manufacturing stands as one of the key employment sectors for the Mount Rogers region, though foreign competition is undermining the sector. From 2000 through 2011, the region lost 10,000 manufacturing jobs, with the total going from 24,274, to 14,106 a decrease of 41%. By end of the third quarter of 2017, the number of manufacturing jobs had stabilized at 13,477², a decrease of only 4.5% over the 6-year period. The sector includes production of refrigeration and heating equipment, clothing, truck trailers and motor vehicle parts, glass products, furniture, wood products, hardware, sporting and athletic goods, and mining equipment.

The next largest employment sector falls in the government category, with 13,405² jobs in third quarter 2017, 8,944 in local government, 3,963 in state government, and 498 in federal government. The next highest employment by category is retail trade (10,103) and health care and social assistance (8,495).

Agriculture and forestry offer relatively few jobs but remain an important industry to the Mount Rogers region. Chief products include livestock, poultry, with a growing sector raising produce. Christmas trees, raised in the higher elevations, also are important to the region.

Planning Process

Planning Team

Since 2017 the Mount Rogers Planning District staff has been working with its localities to update the Pre-Disaster Hazard Mitigation Plan that was approved by FEMA in 2012. Between the years of 2005-2012 each year VDEM provided us with a spreadsheet outlining the recommended mitigations for each locality. The staff at Mount Rogers facilitated a yearly update of the mitigation strategies. VDEM did not provide/require this after the last plan update in 2012. This process is scheduled to start again after the 2018 adoption of the plan on a biennial basis. The hazard mitigation steering committee was composed of county

² Virginia Employment Commission Community Profile, 2018

administrators, town managers, emergency management personnel, local and state personnel, regional governmental employees, members of the business and public utility community, and any interested stakeholders from the public. The steering committee oversaw the plan update process as well as coordinated with local fire, rescue, and police personnel.

Planning Process

The Mount Rogers Planning District Commission initiated the plan update process in the spring of 2017. A regional kick-off meeting was held at the offices of the Mount Rogers Planning District Commission in Marion, Virginia on May 25th, 2017. At this meeting, the MRPDC and the stakeholders from the various localities reviewed the process for updating the plan, as well as outlining how the old plan would be improved upon.

The Mount Rogers staff met with the steering committee members weekly or monthly in small groups or on a one on one basis throughout the rest of the year. All members were also contacted through telephone conversations or emails. A second meeting at the Mount Rogers PDC was called on November 30th, 2017. After that meeting with representatives from VDEM and FEMA some new input was requested to be added into the plan update. Another round of meetings with each locality was conducted in December of 2017 and January of 2018, in addition with meeting with other members of the community outside of local government. Please see the table below for a listing of meetings and conversations with stakeholders.

Meetings/Conversations with Stakeholders	
Month	Stakeholder (Day of Month)
May 2017	Kickoff Meeting (25), All localities (31)
June 2017	Town of Chilhowie (1), Smyth County (2), Town of Abingdon (7), Bland County (21)
July 2017	Bland County (5), Town of Damascus (20), Bland County (24)
August 2017	Town of Damascus (10), City of Galax (24), All localities (29), Town of Marion (30)
September 2017	Grayson County (1), Town of Chilhowie (1), Town of Marion (1), Smyth County (1), Washington County (11), Smyth County (18)
October 2017	Wythe County (24), Town of Wytheville (24), Bland County (24)
November 2017	VDEM (1, 2), FEMA (2), All localities (8), FEMA (16), Washington County (27), Town of Chilhowie (27), Grayson County (28), Meeting at MRPDC (30)
December 2017	Town of Saltville (1), FEMA (4), Washington County (6), All localities (6), FEMA (11), NOAA (14, 15)
January 2018	VDEM (3), Appalachian Power (4), DCR (9, 10), City of Bristol (23), Town of Glade Spring (24)
February 2018	Emory & Henry College (7)
March 2018	VDEM (8), All localities (28), Town of Abingdon (30)

April 2018	Wythe County (2), Town of Wytheville (2), Town of Rural Retreat (2), Washington County (3), Grayson County (12)
August 2018	All localities (6)

Sign-In Sheet

Hazard Mitigation Kick-Off Meeting

May 25, 2017

Print Name	Locality	Title	Email
BRIAN MARTIN	BEARE SPRING FRIES, TROUTMAN	Town Mgr	B.MARTIN@MRPDC.ORG
Brian Reed	RR	"	breed
Jenna Dunn	Blanco County	All/Emr. Sec. Coord	jldunn@blanco.org
Everett Lineberry	Carroll Co.	EM Coordinator	elineberry@carrollcountypa.org
Retta Jackson	Hillsville	Town Manager	hillsville@townofhillsville.com
Jason Busick	Wythe Co	EM Coordinator	jbusick@wytheco.org
Tim Estes, Sr	WASH. Co.	EM Coordinator	timestes@washcova.com
Mike Ayers	Galax	RR Coordinator	mayers@galaxva.com
Gavin A. Blevins	Tamascus	Town Manager	gblevins@mrpdc.org
Aaron T. Smith	Chilhowie	Lieutenant PD	chilhowie.a.smith@chilhowie.org
Brendan Moore	Bristol, VA	Lieutenant	brendan.moore@bristolva.org
Mike Armstrong	Bristol, VA	Fire Chief - EM	mike.armstrong@bristolva.org
Aaron Sizemore	MRPDC	Director	asizemore@MRPDC.org
Rocky Warren	MRPDC	Planner	RWARREN@mrpdc.org
Scott McCoy	MRPDC	Intern	smccoy14@chc.edu
Jimmy Moss	Grayson Co.	EM Coordinator	jmos@graysoncova.gov
James Dillon	MRPDC	GIS Dir	j.dillon@mrpdc.org

Sign-In Sheet			
Hazard Mitigation Meeting		November 30, 2017	
Print Name	Locality	Title	Email
<i>Charles Harrington</i>	<i>Smith County</i>	<i>EM Coordinator</i>	<i>CHarrington@SmithCounty.org</i>
TYLER VENCILL	ABINGDON	TOWN ENGINEER	tvencill@abingdon-va.gov
DAVE HAYNES	CHILHOWIE	FIRE CHIEF	cdhaynes2201@gmail.com
Jason Basick	Wythe County	EM Coordinator ES Director	jbasick@wytheco.org
Justin Haga	VDWM	DRRU	justin.haga@vdwm.virginia.gov
Sara Harrington	VDWM	All Hazards Planner	Sara.harrington@vdwm.virginia.gov
John Clark	Chilhowie	Town Manager	chilhowie.townmgr @chilhowie.org
Aaron Sizemore	MRPDC	Executive Dir	asizemore@MRPDC.org
Rocky Warren	MRPDC	PLANNER	RWARREN@mrpdc.org
Mari Radford	FEMA	Comm. Planning Lead	mari.radford@fema.dhs.gov

The committee members first reviewed the existing data that was included in the last Hazard Mitigation Plan update. Throughout the 2017 Hazard Mitigation Plan Update process the materials from each section of the original plan as well as any new changes were looked over. For the most part in the past five years there were few changes the committee felt needed to be added to the updated plan due to the fact that little has changed in our region in the past five years. Focus and discussion was placed on each hazard identified to be a potential threat to the district. The committee brought in their own knowledge of any disasters that had happened in their districts within the past five years since the plan's original adoption. The committee took these ideas back to their localities and met with their local representatives in the emergency services field and gathered any additional information they could find concerning how natural disasters are dealt with, as well as any areas where the localities had vulnerabilities or difficulties in responding to disasters. All meetings were open to the public.

Following any reviews of the data gathered, the group then brainstormed mitigation objectives and strategies to include in the plan update. The final component of the committee meetings

was a capabilities and vulnerability assessment. Each member of the committee was encouraged to discuss with any person or group, or with an agency or the public that may have valuable input to add to the plan update. This cast a wider net enabling the steering committee members to consult with many people outside of local government.

Plan Participation

Below are two tables, the first outlining the localities and agencies that had input in developing the Hazard Mitigation Plan update. Some participated on the steering committee that met at the Mount Rogers PDC offices. Others participated by personal visits, phone calls, or through email. The second outlines the localities that participated in the plan update as well as the original drafting of the Hazard Mitigation Plan.

Planning Committee Member	Representing	Title/Department
Tyler Vencill	Abingdon	Civil Engineer Public Works
Jenna Dunn	Bland County	911 Emergency Services Coordinator
Mike Armstrong Brandon Moore	Bristol	Fire Chief Lieutenant
Everett Lineberry	Carroll County	Emergency Services Coordinator
John Clark Dave Haynes	Chilhowie	Town Manager Fire Chief
Gavin Blevins	Damascus	Town Manager, Planner
Scott McCoy	Fries	Town Manager
Mike Ayers	Galax	R&R Director Fire Department
Aaron Sizemore	Glade Spring	Town Manager
Jimmy Moss	Grayson County	Emergency Services Coordinator
Retta Jackson	Hillsville	Town Manager
Jimmy Moss	Independence	Emergency Services Coordinator
Bill Rush	Marion	Town Manager
Jason Childers	Rural Retreat	Town Manager
Brian Martin	Saltville	Town Manager, Planner
Charles Harrington	Smyth County	Housing Authority
Brian Martin	Troutdale	Town Manager, Planner
Tim Estes	Washington County	Emergency Management Coordinator
Jason Busick	Wythe County	Emergency Management Coordinator
Al Newberry	Wytheville	Director of Public Safety
Sara Harrington	VDEM	All Hazards Planner
Justin Haga	VDEM	DRRO
Brian Reed	MRPDC	Planner

James Dillon	MRPDC	GIS Director
Rocky Warren	MRPDC	Planner
Phil Hysell	NOAA	Warning Coordination Meteorologist
Donny Necessary	VDOT	Bristol District Planner
Tony Miller	APCO	Distribution Systems Supervisor
Steve Gibson	LENWISCO PDC	GIS Analyst
Tom Roberts	DCR	Regional Dam Safety Engineer
Angela Beavers	Cumberland Plateau PDC	GIS Internet Technology
Patrick Wilson	NOAA	Meteorologist Intern

Locality Participation 2005, 2011, & 2017

Locality	2005 Participation	2011 Participation	2017 Participation
Abingdon	X	X	X
Bland County	X	X	X
Bristol	X	X	X
Carroll County	X	X	X
Chilhowie	X	X	X
Damascus	X	X	X
Fries	X	X	X
Galax	X	X	X
Glade Spring	X	X	X
Grayson County	X	X	X
Hillsville	X	X	X
Independence	X	X	X
Marion	X	X	X
Rural Retreat	X	X	X
Saltville	X	X	X
Smyth County	X	X	X
Troutdale	X	X	X
Washington County	X	X	X
Wythe County	X	X	X
Wytheville	X	X	X

Plan Update

For the five-year update for the Mount Rogers Hazard Mitigation Plan, the planning team and steering committee reviewed and updated each chapter of the plan. Each of the Hazard Identification and Risk Assessment (HIRA) sections were revised based on current information and the updated analysis conducted by the Mount Rogers Staff. The committee discussed both historical information focused on each hazard as well as brainstorming new mitigation objectives and strategies. These new strategies are included in each hazard section and in the

mitigation strategy chapter. The Community Summaries chapter was updated through discussions with each community's representative to the steering committee. Information was also gathered by the staff from emergency management personnel as well as interest individuals in the public. Through these discussions, new information was added where necessary and specific mitigation projects identified by the localities were included. The planning team reviewed numerous local documents to include in various sections of the updated plan, including but not limited to local comprehensive plans, emergency operations plans, and capital improvement plans. In some cases, the 2005 original Hazard Mitigation plan was included in discussions and updates of these plans. For example, in the 2011 update process for the Town of Marion comprehensive plan, the Mount Rogers Hazard Mitigation Plan was referred to specifically in reference to the developed floodplain along the Middle Fork of the Holston River. The 2017 Plan was referenced in the updates of the comprehensive plans of Town of Saltville, Grayson, County, and the Town of Chilhowie. The information gathered from these sources was included as data in the HIRA chapter, as well as providing some of the basis of the capabilities assessment section.

Public Involvement

Public input was solicited throughout the planning process. All committee members were asked to go to their localities and solicit input from their citizens. All meeting at the Mount Rogers PDC were open to the public as well. A project website was created so the public could review the original Hazard Mitigation plan and provide input toward sections of the plan update they were interested in. The website allowed the public to view the plan and share input if they could not attend the called meetings. The plan was also advertised on social media to make it easier for the public to be involved. Also at least one public meeting will be held during the adoption process to give anyone an opportunity to comment on the entire plan before its official adoption by each locality.

Other Involvement

Mount Rogers also discussed update ideas with our neighboring regional government offices Cumberland Plateau, and the LENWISCO Planning District Commissions. Emory and Henry College, Appalachian Power, the Department of Conservation and Recreation, the National Weather Service, and the Virginia Department of Transportation, and the Mount Rogers Health District were also invited to give their input into the plan update. In our meetings with our local officials we stressed to not limit data gathering and input to local governments, fire and rescue.

We asked them to talk to anyone in their community as well as local business owners and land owners to make the fact-finding process as thorough as possible.

HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA)

Introduction

The Mount Rogers Region is susceptible to a wide range of natural hazards. Fortunately, the inland and mountainous setting of the Mount Rogers region protects it from most coastal phenomena such as hurricanes and tropical storms. This also shelters us from the brunt of most tornados. However, the parts of the region suffered severe damage in the spring of 2011 from an F3 tornado. We also suffered minor damage from an F1 tornado in fall of 2017. The mountains, steep slopes, forests, and other geographic factors subject the region to many kinds of other natural hazards. These include:

- Dam Safety
- Karst & Sinkholes
- Tornadoes/Hurricanes
- Drought
- Landslides
- Wildfires
- Earthquakes
- Severe Winter Storms/Ice
- Flooding
- Windstorms
- Thunderstorms/Lightning
- Hazardous Material Spills (HAZMAT)

This section discusses each of the natural hazards possible in the region, including history, risk assessment and vulnerability, and past or existing mitigation. The hazard risk assessment and vulnerability looks specifically at two criteria: locations where the hazard is most likely to have negative impacts and the probability and severity of the hazard should it occur. When information is available, the specific impacts of a hazard is discussed, sometimes based on the

usual impact in the region. These sections have been completely revised since the 2005 plan to include additional, more helpful information.

Risk Assessment and Vulnerability

Risk assessment seeks to define the probability of events and the likely consequences of events. In the past five years, the Mount Rogers Planning District has experienced a population declines, which will also decrease our risk of potential disaster. Also, as our population declines the probability of loss of life and injuries will decrease.

The risk assessment and vulnerability presented herein is a result of an extensive analysis of historic event data, scholarly research and field work.

Mitigation

Many times, mitigation seeks to prevent the impacts of hazards on life and property. The primary goal of mitigation is to learn to live within the natural environment. This plan reviews past mitigation efforts in the Mount Rogers Region and identifies both strategies and specific projects that could further mitigate these impacts.

Mitigation options fall generally into six categories: prevention, property protection, natural resource protection, emergency services, structural projects and public information. Prevention projects are those activities that keep hazard areas from getting worse through effective regulatory planning efforts, such as comprehensive planning, building code update and enforcement, burying utility lines and water source planning. Property protection activities are usually undertaken on individual properties or parcels with coordination of the property owner, such as elevation, relocation and acquisition of frequently flooded or damaged structures, eliminating fuel sources surrounding the property, installing rain catchment systems and purchasing additional insurance. Natural resource protection activities seek to preserve or restore natural areas or natural functions of floodplain and watershed areas. They are often implemented by parks, recreation, or conservation agencies or organizations. Emergency services measures are taken during a hazard event to minimize its impact. These measures can include response planning, regional coordination and collaboration and critical facilities protection. Structural projects include activities associated with building new or additional infrastructure or features to minimize impacts from a hazard. The final category of public information is possibly the most important, empowering residents to take action to protect

themselves and their property in the event of a hazard event. This category can include additional information available to the public, such as maps, brochures, and workshops.

Overview of Assessments

The following section describes each of these hazards, their history, severity and impact, and likelihood of causing damage. Describing the hazards separately is problematic because natural hazards often combine. Flooding often follows severe winter storms. Thunderstorms contain lightning, high winds, and, rarely, tornadoes. Heavy rain can cause flooding and landslides. These descriptions, however, will provide detailed information and a basis for further analysis.

Dam Safety

Description

Dams exist to serve various functions within the Mount Rogers region. These include farm use, recreation, hydroelectric power generation, flood and stormwater control, navigation, water supply, fish or wildlife ponds, debris control, and tailings (from mining operations). In some cases, a single dam structure can serve multiple functions, such as generating hydroelectric power and providing recreational opportunities to boaters and fishermen.

State and federal governments regulate dam construction, maintenance and repair. On the state level, the Virginia Dam Safety Act of 1982 serves as the guiding legislation. With certain exceptions, dams that must abide by this statute fall under one of two categories:

- Dams 25 feet tall or higher, with a maximum storage capacity of 15 acre-feet or more.
- Dams 6 feet tall or higher, with a maximum storage capacity of 50 acre-feet or more.

Dams not regulated by the state include those with an agricultural exemption (95 statewide), a federal license (114 statewide), a mining exemption (20 statewide), or a size exemption (879 in the state). Spillways are channels designed to keep water from overflowing the top of the dam and to prevent erosion at the bottom, or toe, of the dam. State law regulates spillway construction based on the dam's hazard classification and site classification. The federal government maintains an inventory of dams through the National Dam Inspection Act of 1972 and, more recently, the Water Resources Development Act of 1996. Maintained by the U.S. Army Corps of Engineers, the inventory has been available on-line since January 1999. It is called the National Inventory of Dams, and its database covers roughly 77,000 dams, including

several in the Mount Rogers region. A map showing the location of all dams in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

Dam Hazard Classification

The state and federal governments have adopted slightly different methods of classifying dam hazard potential. For the federal national inventory, dams are grouped into one of three categories, based on two criteria: the potential for loss of human life and the potential to cause economic, environmental and lifeline losses, in the event of a dam failure.

Virginia's dam classification system varies in that it classifies the state-regulated dams into one of four categories. 1.) Loss of human life probable with excessive economic impact, 2.) loss of human life possible with appreciable economic impact, 3.) no loss of human life expected with minimal economic impact, and 4.) no loss of human life expected with no economic impact.

Under the state system, dam operation and maintenance plans, as well as inventory reports, must be completed every six years. Re-inspection reports, performed by professional engineers, must be made at 2-year intervals for Class I dams and 3-year intervals for Class II dams. In addition, dam owners must inspect their own dams and submit annual reports in years when professional inspections are not required.

Dam Hazard History

In the Mount Rogers region there has been some history of dam failures over the years, although obtaining a complete record has proven difficult for the purposes of this Hazard Mitigation report. Regulatory agencies at the state and federal governments are reluctant to release full information on dams, inspection histories, and known hazards. Hazard classifications, in and of themselves, serve as a bureaucratic indicator of potential hazard in the event of dam failure, but the classification does not reflect the present physical condition or status of any given dam.

In Bland County, a failure in the Crab Orchard Creek Dam at about noon on January 29, 1957 flooded the community of Bland as a result of three days and nights of continuous rains. The water went through a crack that opened when a slate hillside on one side gave way. While no one was hurt, the flooding destroyed or severely damaged many homes and also swept away outbuildings, cars, fences, machinery, livestock, and household equipment. The flooding also

damaged several downtown businesses. One house floated a mile downstream and came to rest against a bridge and other wreckage. One home was tilted on edge and carried 200 yards downstream to come to rest against a concrete bridge in the community. Estimated damages came to \$500,000. The local unit of the American Red Cross provided \$30,363 in emergency aid, with nearly \$22,395 going for structural repairs. This photo shows the tilted home (see far right of image) that was swept 200 yards downstream during the Crab Orchard dam failure and flood of 1957.



Some now believe that Interstate 77, which passes between the dam and the community, will protect Bland from a similar occurrence in the event the dam should fail again. However, the state's hazard rating on the dam was upgraded in 2004 from significant hazard (Class II) to high-hazard status (Class I). The dam owner hired an engineer as part of an effort to show why the Crab Orchard Creek Dam does not deserve a Class I rating. Another locally known dam failure occurred on Christmas Eve in 1924, when the muck dam at Saltville broke and flooded the community of Palmertown, killing 19 people and dislodging several homes from their foundations. According to at least one news account at the time, the dam failure occurred due to human intervention; police accused a 27-year-old man named Roy Patrick of using dynamite to blow up the dam.

Risk Assessment and Vulnerability

For the purposes of hazard mitigation, this report takes note of dams classified with a potential for high or significant hazard in the event of failure, as defined under the National Inventory of Dams. Those dams classified with a low hazard potential were not considered.

High-hazard and significant-hazard dams (14 total) in the Mount Rogers region primarily consist of earthen structures built for recreational use. Four of the dams are used to generate hydroelectric power, although three of those also offer recreational uses. Several of the dams combine recreational uses with flood or stormwater control. Clear Creek Dam in Washington County, near the City of Bristol, serves multiple uses. These include flood and stormwater control, recreation, water supply, and other uses.

Of the 14 previously mentioned dams, six come under federal regulations. These include the Byllesby Dam and Buck Dam on the New River in Carroll County, Hale Lake Dam in Grayson County, and Beaver Creek Dam, Clear Creek Dam and Edmondson Dam (which has been breached), all located in Washington County. These dams mainly serve to provide hydroelectric power or flood control.

Due to recent changes in state dam safety regulations, two more of the region's dams – Laurel Creek Dam and Fields Dam, both in Grayson County – will be required to prepare Emergency Action Plans. EAPs, contained in county emergency operations plans to govern emergency response for natural and man-made disasters, define roles by dam owners and emergency services personnel for monitoring of dams' physical condition and **notification of downstream communities in the event of flooding or potential dam failure**. For more details on all the region's dams classified as High Hazard and Significant Hazard, please see the table found at the end of this section.

There is no way to predict the likelihood of a dam failure, since failures relate to the structure, condition, age, maintenance, and natural forces (and storm events) that can affect the integrity of the dam. A well-maintained dam classified as a High Hazard structure may in fact pose little risk to downstream community.

Dam regulation first began in this country due to failures of poorly built dams in the early part of the 20th century. More regulations came following a series of dam failures in the 1970s. Legally, dam owners hold the responsibility for the safety, upkeep, and maintenance of dam structures. Of the 75,000 dams listed by the National Inventory of Dams, 95% fall to the regulation of state governments

The possibility of failure generally increases with age, with many dams designed for an effective life of 50 years. Six of the 14 high-hazard and significant-hazard dams in the Mount

Rogers region are at least 50 years old. Dams with known structural problems can be given conditional operating permits, which point to the need to make improvements. There are 30 such dams in Virginia, with none located in the Mount Rogers region.

Property Exposure Data for Downstream Communities

Legally dam owners must properly monitor and maintain their dams, while state and federal regulators act as overseers and enforcers. But the Association of State Dam Safety Officials and others point out that the effectiveness of regulation vary among states and dam owners often lack the financial resources necessary to undertake costly repairs.

Events that can lead to dam failures include the following: overtopping, structural failure, loss of stability in the dam's foundation, cracking in the dam structure from natural settling, poor upkeep, and piping (resulting from improper filtration in the dam structure, allowing seepage and passing of soil particles to gradually create sinkholes in the dam). The vulnerability of structures and homes at risk of dam failure has not changed since the drafting of the original Hazard Mitigation Plan, and no dam failures have occurred in that time.

High-Hazard and Significant-Hazard Dams Mount Rogers Region, Virginia

Dam and Location	Nearest Downstream Community	Dam Height and Max. Capacity*	Drainage Area (Sq. Miles)	Year Done	Hazard Potential**	Emergency Action Plan in Place***	Owner Type	Main Use	Structures at Risk	Notes
Crab Orchard Creek Dam (Bland County)	Bland	51 ft high 550 acre-ft	4.98	1953	High (recent upgrade)	Yes	Private	Recreation	19 occupied homes, 18 businesses	Based on 1995 Emergency Operations Plan for Bland County. The state now regulates this as a Class I dam.
Byllesby Dam (New River, Carroll County)	Ivanhoe Austinville	63 ft. high 2034 acre-ft	1,310	1912	High	Federal Regs	Public Utility (AEP)	Hydroelectric	N/A	Data not available. This is a federally regulated hydroelectric dam.
Buck Dam (New River, Carroll County)	Ivanhoe Austinville	45 ft. high 708 acre-ft	1,320	1912	High	Federal Regs	Public Utility (AEP)	Hydroelectric	N/A	Data not available. This is a federally regulated hydroelectric dam.
Stewarts Ck-Lovills Ck Dam #9 (Carroll County)	Mt. Airy, NC	88 ft. high 7415 acre-ft	20.92	1990	High	Yes	Local Govt (Carroll County)	Recreation	N/A	
Hidden Valley Estates Dam (Grayson County)	Not given	29.4 ft. high 77 acre-ft	0.2	1989	Significant	Yes	Private	Recreation	N/A	
Laurel Creek Dam (Laurel Creek, Grayson County)	Fox Creek	24 ft. high 60 acre-ft	0	1974	Significant	Not Yet (formerly size exempt)	Private	Recreation	N/A	Downstream risks have not yet been assessed due to prior size exemption for this dam. The state will require an EAP under new rules adopted in 2002.

Dam and Location	Nearest Downstream Community	Dam Height and Max. Capacity*	Drainage Area (Sq. Miles)	Year Done	Hazard Potential**	Emergency Action Plan in Place***	Owner Type	Main Use	Structures at Risk	Notes
Fields Dam (New River, Grayson County)	Fries	14 ft. high 2000 acre-ft	0	1930	Significant	Not Yet (formerly size exempt)	Private	Hydroelectric	N/A	Downstream risks have not yet been assessed due to prior size exemption for this dam. The state will require an EAP under new rules adopted in 2002.
Hale Lake Dam (Wolf Pen Branch, Grayson County)	Comers Rock	30 ft. high 53 acre-ft	0	1965	Significant	Federal Regs	Federal (U.S. Forest Service)	Fish & wildlife	N/A	Data not available. This is a federally regulated fish & wildlife dam.
Hungry Mother Dam (Smyth County)	Marion	45 ft. high 2500 acre-ft	12.9	1934	High	Yes	State (DCR)	Recreation	Campground A few houses	
Beaver Creek Dam (Washington County)	Bristol	85 ft. high 5020 acre-ft	13.7	1965	High	Federal Regs	Federal (TVA)	Flood control	N/A	Data not available. This is a federally regulated flood control dam owned by TVA.
Clear Creek Dam (Washington County)	Bristol	51 ft. high 2825 acre-ft	5.75	1965	High	Federal Regs	Federal (TVA)	Flood control	N/A	Data not available. This is a federally regulated flood control dam owned by TVA.
Edmondson Dam (Middle Fork Holston River, Washington County)	Mock Mill	47 ft. high 2620 acre-ft	0	1921	Significant	Federal Regs	AEPSCO	Hydroelectric	N/A	Data not available. This is a federally regulated hydroelectric dam.

Dam and Location	Nearest Downstream Community	Dam Height and Max. Capacity*	Drainage Area (Sq. Miles)	Year Done	Hazard Potential**	Emergency Action Plan in Place***	Owner Type	Main Use	Structures at Risk	Notes
Hidden Valley Lake Dam (Brumley Creek, Washington County)	Duncanville	40 ft. high 1975 acre-ft	1.67	1964	Significant	Yes	State (VDGIF)	Recreation	N/A	
Rural Retreat Dam (S. Fork Reed Creek, Wythe County)	State Rt. 749	41 ft. high 2266 acre-ft	3.34	1967	High	Yes	State (VDGIF)	Recreation	N/A	
<i>Sources: National Inventory of Dams maintained by the U.S. Army Corps of Engineers; consultations with local emergency services coordinators; consultations with Virginia state dam safety officials.</i>										

Mount Rogers PDC

High-risk and Significant Hazard Dams



List of All Known Dams in Mount Rogers Region

County	Name Dam
Bland County	Hunting Camp Dam
Bland County	Crab Orchard Creek Dam
Bland County	Bland County Farm Dam
Carroll County	Russell Dam
Carroll County	Byllesby Dam
Carroll County	Buck Dam
Carroll County	Olde Mill Golf Club Dam
Carroll County	Patch Inc. Dam
Carroll County	West Dam
Carroll County	Stewarts Creek - Lovills Creek Dam #9
Carroll County	Ernest Golding Dam
Carroll County	Carol Cox Dam
Carroll County	Richard Webb Dam
Carroll County	Lakeside POA Dam
Carroll County	Grassy Creek Farm LLC Dam
Carroll County	Caviness Dam
Carroll County	Vannoy Family Farms LLC Dam
Carroll County	Bruce Bryant Dam
Grayson County	Parker Dam
Grayson County	Hale Dam
Grayson County	Fries Mill Dam
Grayson County	Fields Dam
Grayson County	Hidden Valley Estates Dam
Grayson County	Laurel Creek Dam
Grayson County	Roberts Dam
Grayson County	JoAnn Arey Dam
Grayson County	Cassell Dam
Grayson County	Bolt Dam
Grayson County	Chicago Heritage Farms LLC Dam
Grayson County	Bottomley Evergreen & Farms Inc. Dam
Grayson County	John Hart Dam
Grayson County	Henry Jones Dam
Grayson County	Highlander Dam
Grayson County	Shateley Dam
Smyth County	Glade Mtn Washer Site 3 Dam
Smyth County	Umberger No. 1 Dam
Smyth County	Brushy Mtn No 2 Dam
Smyth County	Glade Mtn Washer Site No. 1 Dam

County	Name Dam
Smyth County	Billings Dam
Smyth County	Johnson Dam
Smyth County	Waddle Dam
Smyth County	Hungry Mother Dam
Smyth County	Smyth County Dam #1
Smyth County	Smyth County Dam #2
Smyth County	Smyth County Dam #3
Washington County	Clear Creek Dam
Washington County	Straight Branch Dam
Washington County	Hidden Valley Lake Dam
Washington County	Beaver Creek Dam
Washington County	Thomas Nichols Dam
Washington County	Kenneth Nicewonder Dam
Washington County	Olde Farm Dam
Washington County	Glenrochie Dam
Washington County	Texas Brine Dam
Wythe County	No. 1 Tailings Pond Dam
Wythe County	Impoundment 173 Dam
Wythe County	Rural Retreat Dam
Wythe County	Butt Dam #1
Wythe County	Harold Leedy Dam
Wythe County	Harold Leedy Horseshoe Pond
Wythe County	Reed Creek Dam
Wythe County	Paul Riefenberg Dam
Wythe County	Talley Farms Dam
Wythe County	ALC Acquisition Dam
Wythe County	Crowder Dam
Wythe County	Wythe County Dam #1
Wythe County	Harold Leedy Dam #1
Wythe County	Harold Leedy Dam #2
Wythe County	Kenneth Tibbs Dam
Wythe County	Butt Dam #2
Wythe County	Sharon Ball Dam
Wythe County	Windy Acres Dam

Drought

Description

In simple terms, drought can be defined as “a condition of moisture deficit sufficient to have an adverse effect on vegetation, animals, and man over a sizeable area.” Drought can also be defined in terms of its effects and divided into categories, as suggested by FEMA:

- **Meteorological drought:** Defined solely on the degree of dryness, expressed as departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- **Hydrologic drought:** Related to the effects of precipitation shortfalls on streamflows and reservoir, lake, and groundwater levels.
- **Agricultural drought:** Defined mainly in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- **Socioeconomic drought:** This occurs when the demand for water exceeds the supply as a result of a weather-related supply shortfall.

Drought occurs as part of the regular climatic regime in virtually all climates, and can occur throughout the entire Mount Rogers Region. Its causes are complex, and not readily predictable, especially in variable climates. Compared to storm events such as hurricanes and floods, drought has a slow onset and can last for months, years or even decades. Estimated dollar losses caused by drought can far exceed those of major storm events.

Some measures of drought, also known as drought indices, include:

- **Percent of Normal:** Calculated by dividing actual precipitation by normal precipitation (usually defined as the 30-year average) and multiplying by 100%. Effective for a single region or a single season. A disadvantage is the average precipitation is often not the same as the median precipitation.
- **Standardized Precipitation Index:** Index based on the probability of precipitation for any time scale. This is used by the National Drought Mitigation Center. It can provide early warning of drought, can assess drought severity and is less complex than some indices.
- **Palmer Drought Severity Index:** This is a measure of soil moisture and was the first comprehensive drought index created in the country, in 1965. It works best in areas of

even topography but is less suitable for mountainous areas or places with frequent climatic extremes. Palmer values may lag emerging droughts by several months.

- Crop Moisture Index: A derivative of the Palmer Index. It reflects moisture supply across major crop-producing regions. It is not intended to assess long-term droughts.
- Deciles: This approach groups monthly precipitation events into deciles so that, by definition, “much lower than normal” weather cannot occur more than 20% of the time. This provides an accurate statistical measurement of precipitation, but its accuracy relies on a long climatic data record.

History

The U.S. Geological Survey has noted four major droughts statewide since the early 1900s. These occurred in 1930-1932 (one of the most severe droughts on record for the state), 1938-1942, 1962-1971 and 1980-1982 (the least severe). Other sources suggest the record is somewhat different for the Mount Rogers region. The table below gives a brief review of the some of the major droughts that have affected southwest Virginia.

Droughts in Southwest Virginia

Date	Location	Details	Impact
September 2007	Carroll, Grayson, Smyth, and Wythe Counties	Primary disaster for Carroll, Grayson, Smyth, and Wythe Counties	\$8.0 million in crop damage
2-12-03	Carroll, Grayson, Smyth, large parts of SW VA	USDA disaster declaration due to severe drought for 46 counties. Primary disaster for Carroll, Grayson, Smyth Counties. Contiguous declaration for Galax and Washington County.	Low-interest emergency loans for farmers.
July and August 2002	Statewide	State emergency drought declaration for July and August. USDA disaster declarations for Bland, Carroll, Grayson, Smyth, Wythe Counties.	Significant crop damage. Reduced streamflow and groundwater levels.
9-1-99 (NCDC)	Bland, Carroll, Galax, Grayson, Smyth, Wythe, large parts of SWVA	Dry conditions began in July 1998, subsided for several months, then returned in June 1999 and through early Sept. Drought largely ended due to heavy rain from remnants of Hurricane Dennis on Sept. 4-5, 1999.	\$8.25 million in crop damage. Very low water levels in creeks, streams and rivers.

Date	Location	Details	Impact
July to October 1998 (NCDC)	Bland, Carroll, Galax, Grayson, Smyth, Wythe, large parts of SW VA	Dryness began in July, subsided in August, resumed in September. Low water levels in creeks, streams, rivers, lakes and some shallow wells.	Water levels low. \$7.7 million crop damage.
9-1-95 (NCDC)	Bland, Carroll, Galax, Grayson, Smyth, Wythe, large parts of SW VA.	A drought that started earlier in the summer peaked in many sections of the state during the first two weeks of Sept. State of emergency declared. Widespread rainfall on Sept. 17 helped to alleviate the dryness.	Crops damaged. Many lakes and rivers with well-below normal water levels.
1988	Mount Rogers region	Drought based on the Palmer Drought Severity Index, with the region in severe drought up to nearly 50% of the time. One of the worst droughts on record for the nation (1988-1989).	
1954-1956	Mount Rogers region	Drought based on the Palmer Drought Severity Index. Region in severe drought up to nearly 40% of the time.	
1928-1934	Mount Rogers region	Drought based on the Palmer Drought Severity Index. Region in severe drought up to nearly 20% of the time.	

For the Mount Rogers region, the worst period came in 1988, with the region in severe drought 40%-49.99% of the time. Over the long-term severe drought conditions in the Mount Rogers region occurred only up to 10% of the time.

Risk Assessment and Vulnerability

In recent years, major agricultural droughts have occurred five times from 1995 through 2003. The historical record is not as well developed for the years prior to 1995, though major droughts are known to have occurred in 1928-1934, 1954-1956 and in 1988.

For the 100-year period from 1895 to 1995, the region has been estimated to experience drought less than 10% of the time. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to drought has not changed.

History shows drought conditions reaching disaster proportions can affect the entire Mount Rogers region. For some parts of the region, especially in Carroll County, well development is difficult and often produces a dry hole.

The impacts appear to have the greatest impact for the farming community. In these cases, the U.S. Department of Agriculture makes damage assessments and provides financial aid to qualifying farmers through the local farm service agencies.

Water issues also are a concern for the general public, local governments, business and industry. Several engineering studies from the mid- to late-1990s, as well as a 1996 health department survey, identified issues regarding water quantity, water quality and reliability of supply. In the unincorporated areas, most parts of the region depend upon groundwater supplies. The reported problems include low quantity, poor quality (due to mineral or bacterial content), turbidity, petroleum contamination and dry holes. Limited quantities restrict fire-fighting capabilities. Inadequate or limited water supplies also restrict future growth potential for business and industry. The table on the following page describes in more detail water related problems in the Mount Rogers District.

Water Problems Reported to the Mount Rogers Health District	
Bland County Little Creek area Hollybrook Seddon Waddletown Laurel Creek/Dry Fork Ceres	Complaints Bacteria in recently drilled wells. Mineral quality/iron bacteria. Cisterns used for some supplies. Appearance of dry wells. Cisterns used for some supplies. Mineral quality. Poor quality with some wells and springs. Cisterns used for some supplies. Poor quality in some springs and wells. Poor quality in springs and iron bacteria in wells.
Bastian/Hicksville } Crandon/Mechanicsburg }	Mineral quality/iron bacteria concerns.
Carroll County Paul's Creek (Cana area) } Dugspur (Rt. 753) } Star (Rt. 1105) } Woodlawn } Piper's Gap } Fancy Gap (Rt. 683) } Chestnut Yard } Rt. 645 (below Laurel Fork) } Short Creek (Rt. 640/I-77) }	Complaints Iron, turbidity, low-yield wells.
Grayson County Old Town – Fries Hill Flatwood Community Helton/Cabin Creek Area Fairview Community Nuckols Curve Area Other Comments:	Complaints High iron levels. Many wells are drilled deep. Many dry holes found. Well construction difficult due to rock formations. Many springs used as private water supplies, especially in western areas of the county. Many springs have bacteria contamination.
Smyth County Walker Mountain area	Complaints High iron/sulphur content.
Washington County Mendota (Rt. 802 area) Rt. 91 (S.F. Holston to Rhea Valley)	Complaints High iron/sulphur content in private water supplies. Low-yield wells and bacteria contamination.
Wythe County Poplar Camp, Crockett, Gateway } Trailer Park (Grahams Forge), } Rosenbaum Chapel area } Sand Mountain area } Stony Fork area }	Complaints Petroleum contamination. Dry holes and low-yield wells. High iron/sulphur levels.

Earthquakes

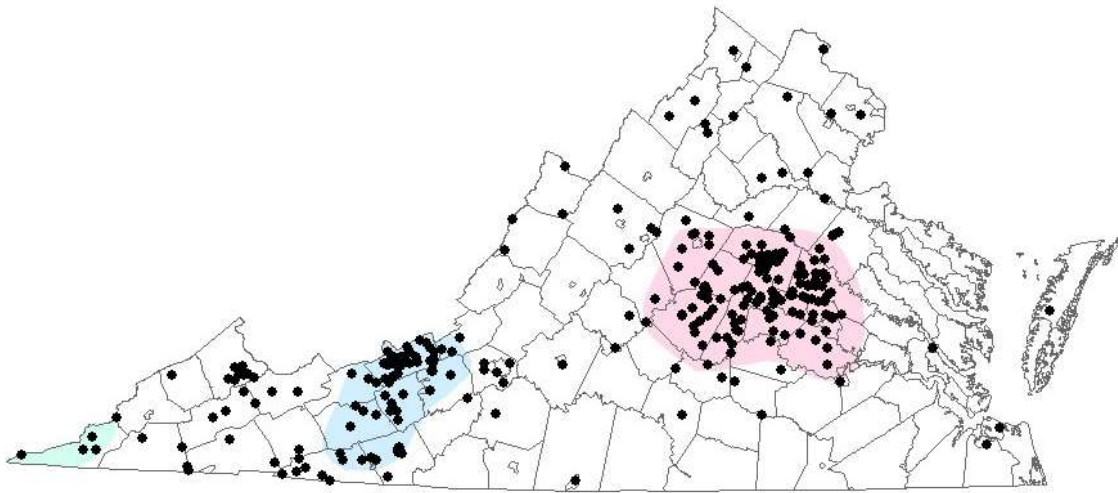
Description

An earthquake can be defined as a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the earth's crust. The theory of plate tectonics has been described since 1967 and is based on the idea the earth's crust is composed of several major plates that move slowly and continuously, at times bumping and grinding against each other and at other times creating separations.

The tectonic plates are thought to bump, slide, catch or hold as they move together. An earthquake happens when faults located near plate boundaries slip when the stress against the rock formations becomes too great. This sudden movement results in surface faulting, ground failure and tsunamis.

Surface faults are thought to occur in various forms, including strike-slip faults, normal faults (with strong vertical movement), and reverse (thrust) faults (mainly horizontal movement). Ground failure is expressed through liquefaction, when coarse soils lose their strength and act like fluids flowing over the landscape. Ground failure created by liquefaction includes lateral spreads, flow failures (the most catastrophic form), and loss of bearing strength (causing buildings to settle and tip). Tsunamis are phenomena associated with the west coast and are not considered further in this report.

Earthquakes are described in various fashions, including by intensity and magnitude. Intensity is defined as a measure of earthquake effects at a particular place on humans, structures or the land. Magnitude is a measure of the strength of an earthquake or the strain energy released by it (originally defined by Charles Richter in 1935).



This map shows the locations of known earthquake epicenters in Virginia. The Eastern Tennessee Seismic Zone is shown in green, the Giles County seismic zone is shown in blue and the Central Virginia seismic zone is shown in pink.

History

Sources such as the Virginia Department of Mines, Minerals and Energy describe the statewide risk of earthquakes as moderate, in keeping with most other states in the eastern seaboard of the United States.

Earthquake activity in Virginia has generally been, with a few exceptions, low-magnitude but persistent. The first documented earthquake in Virginia took place in 1774 near Petersburg, and many others have occurred since then, including an estimated magnitude 5.5 (VII) event in 1897 centered near Pearisburg in Giles County. A Roanoke attorney who was in Pearisburg said that for nearly fifty miles from that place he "saw hardly a sound chimney standing." In his opinion, "If the buildings throughout Giles had been largely of brick, the damage would have been very great, and serious loss of life would have occurred." The largest recorded earthquake in Virginia occurred in Louisa County on August 23, 2011 and had a magnitude of 5.8 (VII). It was felt all along the eastern seaboard by millions of people, causing light to moderate damage in central Virginia, Washington, D.C. and into southern Maryland. Since 1977, more than 195 quakes have been detected as originating beneath Virginia. Of these, at least twenty-nine were large enough to be felt at the Earth's surface. This averages out to about six earthquakes per year, of which one is felt.

Much of Virginia's earthquake activity has been in the southwest and eastern parts of the state. Counties and cities that have experienced earthquakes of intensity VI and higher include Smyth, Washington and Wythe in the local region. Local earthquake history is described by Stover and Coffman and also by the U.S. Geological Survey, through its Earthquake Hazards Program. The table below describes in more detail major recorded earthquakes in the Mount Rogers Region.

Modified Mercalli Scale

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Earthquakes in The Mount Rogers Region by Date/Location, Intensity, and Description

Date/Location	Intensity	Description
March 9, 1828 Southwest VA	V (MM)	Felt over 218,000 sq. miles, from Pennsylvania to South Carolina and the Atlantic coastal plain to Ohio. Doors and windows rattled.
April 29, 1852 Wytheville	VI (MM)	Severe earthquake shook down a chimney near Wytheville and shook down tops of chimneys at Buckingham Courthouse. Homes shook in Staunton. A brick fell from a chimney in Davie County, N.C.
Aug. 31, 1861 Southwest VA	VI (MM)	Epicenter in extreme southwest Virginia or western North Carolina. Bricks fell from chimneys at Wilkesboro, NC. Felt from Washington, D.C. to the Midwest and south to Columbus, GA.
Sept. 1, 1886 South Carolina	V (MM)	Epicenter in Charleston, S.C., with estimated intensity of X. Caused minor structural damages in various parts of Virginia (fallen plaster and chimneys, cracked walls, broken windows).
May 3, 1897 Giles County	VII (MM)	Greatest severity at Radford, where some chimneys were destroyed and plaster fell from walls. Felt in most of southwest Virginia and in a region of 89,500 sq. miles.
May 31, 1897 Giles County	VIII (MM)	Largest known earthquake originating in Virginia in history. Felt over 280,000 sq. miles. Largest effects felt from Lynchburg to Bluefield, W. Va. and from Giles County south to Bristol, Tenn. Many downed chimneys, changes in flow springs and appearance of some earth fissures.
Feb. 5, 1898 Wytheville or Pulaski	VI (MM)	Earthquake felt over 34,000 sq. miles. Bricks fell from chimneys and furniture shifted in a few houses. Effect felt throughout southwest Virginia and south to Raleigh, N.C.

April 23, 1959 Giles County	VI (MM)	Several chimneys were damaged, plaster cracked and pictures fell from walls in Eggleston and Pembroke. Felt over 2,900 sq. miles in Southwest Virginia.
Nov. 11, 1975 Giles County	VI (MM)	Windows were broken in Blacksburg and plaster cracked at Poplar Hill (south of Pearisburg, Giles County). Also felt in Pulaski County.
Sept. 13, 1976 Carroll County	VI (MM)	One of the most persistent areas of activity in recent years, with five small earthquakes felt near Hillsville. Effects felt in the Carolinas and West Virginia.
Aug. 23, 2011 Mineral, VA	VIII (MM)	The earthquake was felt in some of the eastern parts of the Mount Rogers Region, but no damage was reported.

One notable earthquake occurred in May 1897 and was based in Giles County. It was the largest Virginia-based earthquake in recorded history. Chimneys were shaken down throughout southwest Virginia, including in Wytheville and as far west as Knoxville, Tenn. Effects of the earthquake were felt from Georgia to Pennsylvania and from the Atlantic Coast to Indiana and Kentucky. The effects were strong at Pearisburg, where brick walls cracked and some earth fissures appeared. The magnitude of this quake has been estimated at VII and VIII on the Modified Mercalli intensity scale. This event, felt over 11 states, is described as the third largest earthquake in the eastern part of the country in the past 200 years.

Risk Assessment and Vulnerability

For the Mount Rogers region, the likelihood of earthquakes appears to be moderate, based on measurements related to maximum ground acceleration and as described by FEMA. This data is incorporated into probabilistic ground motion maps published in the 2015 edition of the National Earthquake Hazards Reduction Program's *NEHRP Recommended Provisions*.

The southwest Virginia region faces a moderate chance of experiencing earthquakes. While recent history shows some part of the region experiences earthquakes roughly once every 18 years, the resulting damage has been relatively minor.

The entire Mount Rogers region is subject to the effects of an earthquake, as shown by the historical record from larger events such as the Giles quake from May 1897.

The Mount Rogers region in total covers 2,786 square miles, with over 68,000 households and a population of 188,498. The region includes 71,000 buildings with an estimated structural replacement value of \$7.3 billion. An estimated 98% of the buildings and 78% of the building value is in residential housing.

While earthquakes can create widespread destruction and death, the damages experienced in southwest Virginia are more moderate, based on the historical record. It should be noted that earthquake analysis is tricky, given that the historical record covers a period of less than 175 years. A much better record for earthquakes would cover hundreds, even thousands, of years. The risk assessment in this report is based upon this limited range of data. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to earthquakes have not changed.

For the Mount Rogers region, the worst of the earthquakes experienced historically appear to correspond to an intensity of VI on the Modified Mercalli Scale. For purposes of analysis, we assumed an intensity of 6.3 and applied the HAZUS 99-SR2 computer model to reflect the characteristics of the Giles earthquake of May 1897.

At the 6.3 level magnitude, HAZUS predicted moderate damage to 3,902 buildings and slight damage to 7,423 buildings. Only 65 buildings would be completely destroyed. Other estimates by HAZUS were as follows:

- \$6.8 million damage to bridges, railways and airports.
- Minor injuries to 47 people, with 9 hospitalized and 1 dead.
- Economic losses of \$118 million (or 1% of the total replacement value of the region's buildings).
- \$3 million in damages to communication facilities.
- Significant loss of function in several schools, especially in Bland, Carroll and Wythe counties.

Flooding

Description

Flooding is regarded as the most damaging natural hazard in Virginia. Average annual flood damages statewide amount to \$100 million. Nationwide, between 1983 and 1997, Virginia ranked 14th with flood damages of \$1,507 million.

In the Mount Rogers region, flood damages can cost millions of dollars. In November 1977, flood damages to business and industry in Smyth County was estimated at up to \$8.6 million.

Flood-Related Definitions

Base Flood: Flood with a 1% chance of being equaled or exceeded in any given year. The Base Flood is the standard used by the National Flood Insurance Program.

Base Flood Elevation: The elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year.

Floodplains: Lowlands, adjacent to rivers, lakes and oceans, subject to recurring floods.

Floodway: The stream channel and that part of the adjacent floodplain that must remain open to permit passage of the Base Flood without raising the water surface elevation by more than one foot. Flooding is the most intense and poses the greatest risk in the floodway area.

In the previous flood of April 1977, damages were estimated at \$7.8 million for 16 jurisdictions.

More recently, in March 2002, Smyth County alone sustained an estimated \$2 million in flood damages, compared to \$100,000 in Wythe County and \$360,000 in Washington County. Preliminary estimates from the November 2003 flooding came to \$485,000 for Bland County, \$251,000 for Carroll County and \$878,000 for Smyth County.

Flood hazards in the local region include *riverine flooding* and the *flash floods* that result from sudden, violent storms that produce large amounts of rainfall in short amounts of time. *Riverine flooding* involves overflows from rivers and streams. The form of flooding is often more gradual in nature and may allow more time for advance warning. *Flash flooding* – such as occurred in November 2003, resulting in federal disaster declarations for several localities may occur with little warning and yet cause significant damage.

History

The Mount Rogers region of Virginia has a long history of flooding. The floods typically result from heavy rains or from melting following a severe winter storm. Heavy rains during thunderstorms can cause flash flooding in localized areas. The data in the chart below only

relates to major flood events through spring of 2018 and does not reflect the full range of flood events that have affected the region over the years.

Major Flooding Events in Mount Rogers Planning District		
Date	Affected Localities	Description
5-24-17	Carroll County	This flood caused \$75,000 in damage
5-24-17	Grayson County	This flood caused \$150,000 in damage
4-23-17	Smyth County	This flood caused \$75,000 in damage
6-27-16	Bland County	This flash flood caused \$75,000 in damage
4-19-15	Wythe County	This flood caused \$50,000 in damage
6-29-14	Smyth County	This flash flood caused \$250,000 in damage
6-9-11	Bland County	This flood cause \$250,000 in damage
5-13-11	Grayson County	This flash flood caused \$85,000 in damage
2-28-11	Bristol	Severe storms and flooding caused \$40,000 in damage
3-4-08	Smyth County	Severe storms and flooding caused \$500,000 in damage
6-12-04	Washington County	This flood caused \$250,000 in damage
11-18-03	Bland, Smyth, Galax; 12 counties and two cities in SW VA and NE TN	Heavy rains of 1.88" to more than 5" caused heavy flooding Nov. 18-19. Federal disaster declaration for Bland, Smyth, Galax in local region. \$12 million damage across entire 12-county region.
2-15-03	Southwest Virginia (Wythe County declared a disaster)	State of emergency declared on 2-17-03 due to snow & ice in northwest VA and more than 4" of rain in southwest VA that caused flooding and mudslides. Federal disaster declared 4-28-03.
2-14-03	Washington, Bristol	Flooding from 4-day rainfall of 2-6" across southwest VA. See state of emergency declaration above.
4-17-02	Smyth, Washington, Wythe	Severe storms and flooding
3-17-02	All counties in Mount Rogers Planning District	State of emergency declared on 3-18-02 due to heavy rainfall and flash flooding.
8-20-01	Washington	Severe storms and flooding
8-9-01	Smyth	Severe storms and flooding
7-26-01	Smyth, Washington	State of emergency declared on 7-29-01 and \$4.4 million in state and federal aid. This was part of the same weather pattern causing flooding on 7-8-01.
2-2-96	Bland, Grayson, Washington, Wythe	Flooding (resulting from Blizzard of 1996)

Major Flooding Events in Mount Rogers Planning District		
Date	Affected Localities	Description
5-17-94	Galax	Severe ice storms and flooding
3-28-94	Bristol	Severe ice storms and flooding
3-10-94	Bland, Carroll, Grayson, Smyth, Washington, Wythe	Severe ice storms and flooding
5-19-92	Carroll	Severe storms and flooding
5-29-84	Washington	Severe storms and flooding
5-07-84	Town of Damascus	Flooding on Beaverdam Creek. Town declared a federal disaster area for damage to sewer system, Virginia Creeper Trail and private homes.
11-17-77	Carroll	Severe storms and flooding
11-12-77	Grayson, Smyth, Washington	Severe storms and flooding
10-02-77	Bristol	This 20-year flood caused \$3 million in damage in 1977 dollars.
4-21-77	Carroll	Severe storms and flooding
4-7-77	Bland, Grayson, Smyth, Washington, Wythe	Severe storms and flooding
9-8-72	Smyth, Galax	Tropical Storm Agnes (flooding)
March 1867	Bristol	Flood of record for Beaver Creek in Bristol, TN and Bristol, VA. This was a 250-year flood.

For Bristol the flood of record occurred in March 1867. This 250-year flood on Beaver Creek and its tributaries caused \$1 million worth of damages (in 1867 dollars). More recently, in October 1977, a 20-year flood caused \$3 million worth of damages (in 1977 dollars) on the Bristol, Virginia side alone. The worst and most costly of flood damages on an annual basis occurs along the main stem of Beaver Creek.

For the Mount Rogers region as a whole, the worst flooding within the past 50 years occurred in April and November of 1977. The floods of 1977 later led to engineering reports that encouraged people to move out of the floodplain.

Engineering Studies

Town of Chilhowie

An engineering study in 1978 on flooding in Smyth County eventually led to a special project in Chilhowie that relocated 67 families and created the Chilhowie Recreation Park.

The Middle Fork Holston River Flood Control Improvements Study, completed in March 1978, studied flooding issues in Smyth County, with special focus on the Town of Chilhowie/Seven Mile Ford community and the Town of Marion/Atkins community.

Initial recommendations from that 1978 study carried a total implementation cost of \$18 million. Later the study was reduced to three sub-projects, but the price tag still proved very high. The recommendations included channelizing parts of the Middle Fork Holston River, with rip rap or concrete reinforcement, flood-proofing for selected businesses and industries, rebuilding several bridges to accommodate the widened river channel, relocations out of the floodplain, and installing some levees and pump stations. Of all the proposals discussed in the 1978 study, channelizing the river was deemed as a top priority with the potential for making the greatest impact on future flood levels.

The recommendations also included removing obstructions from the Middle Fork (including the breached dam at the old Marion Ice Plant), development of six flood storage reservoirs along six tributaries, and implementation of floodplain ordinances to limit future development in the floodplain area.

Although the 1977 floods had serious impacts for several industries located in the Middle Fork Holston floodplain, the industries declined to implement the recommendations due to the high cost. The local communities felt equally intimidated by the proposed mitigation costs, and there was little hope of major help from among a range of federal agencies to provide the 100% grant funding needed to carry out any of the proposed projects. The Planning District Commission finally decided to try to get the most for the funds available by demolishing the most flood-prone structures in Chilhowie and relocating families out of the floodplain.

The project that eventually emerged was a \$2.8 million multi-part proposal to relocate families out of the Middle Fork Holston floodplain in Chilhowie, build replacement housing in a new subdivision created for the relocation, and to provide water treatment improvements for the town of Chilhowie. The project area included 72 homes, three churches, three businesses and one lodge. To succeed at all, the effort had to overcome numerous complications created by the funding agencies, the attitudes of local residents, and the feelings of the town council, which observers felt cared more about the water treatment project than the flood mitigation project.

In the end, 67 families moved out of the floodplain. Of those, 53 families had help from the Tennessee Valley Authority and 14 had help through the Department of Housing and Urban Development. Due to the time it took to form the Chilhowie Redevelopment and Housing Authority (created in July 1979) and the new subdivision, most families relocated elsewhere. Only six families opted to relocate to the subdivision as planned. The town had the abandoned property demolished and built a community recreation park in the floodplain area (between Holston Street and Railroad Avenue). The project took seven years to complete.

Town of Damascus

Building on flood study work begun by the Tennessee Valley Authority in the late 1950s, the Town of Damascus also undertook projects to relocate 34 homes (88 residents) and three businesses out of the floodplain following the 1977 flooding. Historically a flood-prone community due to development along Beaverdam and Laurel Creeks, along with obstructions in the creeks, Damascus suffered three major floods in 1977 (in April, October, and November). Twice in 1977 the community qualified as a federal disaster area. The 1977 flood events led to a comprehensive flood mitigation study completed in 1979. An initial cost estimate of more than \$3.2 million would have built a levee emergency access route, relocated flood-prone homes out of the floodplain, flood-proofed some homes and businesses, removed two abandoned dams from Laurel Creek, installed storm drainage collection systems, and required more control of floodplain development by the town. In 1981, a follow-up flood mitigation program proposed by the town was estimated at \$4.3 million.



Image 1: 2003 Flooding in Damascus

Successful efforts by Damascus to mitigate its flooding problems over the years have included the following:

- A \$559,000 grant from the HUD in 1981 to install storm sewers along Mock, Surber, and Haney Hollows (finished in 1983).
- State and federal disaster assistance following another major flood in May 1984 helped make repairs to nearly \$86,000 worth of damage to the community.



*Image 2: Flooding in Marion, VA
View of flooding at Baughman Street Bridge in Marion. The bridge itself becomes a barrier during times of high water*

- Grant funding in 1984 (\$700,000 from the state CDBG program and \$190,000 from the Tennessee Valley Authority) to relocate 34 families (88 people) and three local businesses out of the floodplain (1985 through 1988).
- The town also converted the old Damascus Elementary School for housing under a project funded by the state CDBG program.

Recent Flood Events

The more recent flood events from 2001-2011 were less drastic in extent and damages compared to the floods of 1977. Nonetheless the floods disrupted the lives of those who had to endure them, including the first major flood in several decades for the City of Galax.

The events of 2001 occurred in late July and early August. Heavy rainstorms caused flooding that forced more than 100 Smyth County residents from their homes, according to news accounts. Smyth and Washington counties became federal disaster areas. In all the flooding affected nine counties in southwest Virginia and led to at least \$4.4 million in state and federal aid.

The next round of disaster-level flooding occurred March 17-20, 2002. Three to six inches of rain fell in a 36-hour period and led to federal disaster declarations for Smyth, Washington and Wythe counties.

The event affected numerous homes and businesses, with residential evacuations along the North Fork Holston River in Smyth County near the Town of Saltville and in remote parts of eastern Washington County near the Smyth County line. The floods also created overflows for water and sewer plants in the Towns of Saltville, Chilhowie, and Rural Retreat and in Washington County. Additionally, floods ruined some businesses and temporarily stranded some communities, such as Downtown Chilhowie. FEMA disaster aid came to more than \$500,000 in the local region as of June 2002, with an estimated \$2.5 million total in damages.

For the entire southwest Virginia region, state and federal disaster assistance had reached \$8 million.

The 2002 flooding led Chilhowie to undergo a preliminary \$100,000 study by the U.S. Army Corps of Engineers on causes of the flooding and potential solutions, including river dredging and use of levees. In March 2004, the Chilhowie Town Manager recommended buy-outs of the 15 properties that flood most often and the decision was made to buy out six homeowners located on River Bottom Circle along the North Fork Holston River.

The flood disasters continued into 2003, with a federal declaration resulting from two back-to-back snowstorms February 15-28, affecting all localities in the Mount Rogers Planning District. In total, the storm cost \$37 million in snow removal costs and \$71 million in damages to homes, businesses, public facilities, roads and other property. In the local region, Bland and Wythe counties sought federal aid for flood damages to public and private property.

On November 18-19, 2003, heavy rains caused severe flooding across 10 counties in northeast Tennessee and southwest Virginia. In Bland County damages were estimated at \$485,000, with \$878,000 in damage in Smyth County and \$251,000 in damage in Carroll County. This included major damage or destruction of numerous homes, flooded roadways, damage to public and private property, some evacuations and temporary closure of area schools.

The City of Galax suffered its first major flooding since 1940; initial reports to FEMA included damage to 10 businesses and 70 homes in an area that included the city's main business district along Chestnut Creek. Some sinkholes appeared, and there was flooding in several nearby residential communities. Total damages amounted to \$100,000, with about half consumed by the cost of cleanup by the city, according to city officials. Because Galax does not participate in the National Flood Insurance Program, the designated floodplain area was not eligible for federal disaster assistance. The city so far has resisted suggestions it consider re-joining the flood insurance program. Damaged properties located out of the designated floodplain were eligible for disaster assistance. City officials have said many flooding problems are caused by undersized and deteriorated stormwater drainage systems.

In the past five years only one flood event in the Town of Fries was recorded. In May of 2011 a flash flood caused minor flooding at the elementary school, damaged approximately 20

vehicles, and caused some minor damage at an RV park. This flood also caused a manure spill that caused some localized water contamination. The town residents were asked by officials at the water treatment plant to conserve water. The town had enough water in reserve until the spill was cleaned.

National Flood Insurance Program

Most communities with flooding issues in the local region participate in the National Flood Insurance program (NFIP). Participation in NFIP allows homeowners and commercial businesses to obtain flood damage protection. For single-family homes, the insurance provides up to \$250,000 for structural damages and up to \$100,000 for contents damages. Commercial businesses can be covered for up to \$500,000 in structural damages and up to \$500,000 in contents damages.

Flood insurance helps cover flood damages during minor and major flood events. Insurance coverage through NFIP also covers a larger amount for losses than typically would be available during a federal disaster. Emergency aid that is available following declaration of a federal disaster most often comes in the form of a low-interest loan. FEMA promotes participation in NFIP for all qualifying communities.

Community Participation in NFIP
Mount Rogers Region, Virginia

Jurisdiction	NFIP Status			
	Y	N	N/A	CRS Class
Bland County	X			N/A
Carroll County	X			N/A
Grayson County	X			N/A
Smyth County	X			N/A
Washington County	X			N/A
Wythe County	X			N/A
City of Bristol	X			N/A
City of Galax		X		N/A
Town of Abingdon	X			N/A
Town of Chilhowie	X			N/A
Town of Damascus	X			N/A
Town of Fries	X			N/A
Town of Glade Spring	X			N/A
Town of Hillsville	X			N/A
Town of Independence	X			N/A
Town of Marion	X			N/A
Town of Rural Retreat	X			N/A
Town of Saltville	X			N/A
Town of Troutdale		X		N/A
Town of Wytheville	X			N/A

As shown in table above, most of the localities participate in floodplain management and make NFIP coverage available to property owners. The City of Galax, with Chestnut Creek flowing through the city's downtown industrial district, participated in NFIP for a few years before dropping out. As a result of the November 2003 flood disaster, the city met with state and federal flood program officials. The city has opted to remain a non-participant. Galax recently submitted a request to the US Army Corps of Engineers to look at possible projects upstream of Chestnut Creek through the Flood Damage Reduction Program (Section 205 of the 1948 Flood Control Act). The end result would be a project that would reduce the 100-year flood plain to the Chestnut Creek channel. The Town of Troutdale due to its small size and the fact that relatively little water runs through the town does not find it feasible to participate in the NFIP.

The FEMA floodplain maps available for communities participating in the National Flood Insurance Program (NFIP) depict 100-year floodplains for flood-prone areas. That means, in any given year, the floodplain area faces a 1% chance of having a flood.

One major drawback for the floodplain maps in effect for the Mount Rogers region, as well as for many communities nationwide, is the age and relative inaccuracy of the maps. Although a fine effort has been made by FEMA to update the existing maps digitally, there are still existing accuracy issues, however, FEMA is in the process of rectifying these errors. We expect new data for much of the Mount Rogers Region in the next two years.

In addition, most local floodplains have not been subject to hydrological studies to determine the Base Flood Elevations; the floodplain extent in such cases has been estimated based on the local topography.

Risk Assessment and Vulnerability

The Mount Rogers region has experienced 18 presidential disaster declarations or state-level emergencies related to flooding over 30 years. That does not account for the more minor flooding that may occur from time-to-time due to a brief but severe rainstorm or thunderstorm causing small stream flooding in localized areas.

As shown in the table below, Smyth County has received a relatively large share of payments under the National Flood Insurance Program, due to the frequency and severity of flooding in that county.

NFIP Claims Data as of October 31, 2018			
Community Name	Losses	Total Payments	Average Payments
Bland County	19	177,105	9,321.32
Carroll County	19	136,910	7,205.79
Grayson County	6	14,563	2,427.17
Smyth County	89	841,130	9,450.90
Town of Chilhowie	40	222,697	5,567.43
Town of Marion	32	192,960	6,030.00
Town of Saltville	1	1,271	1,271.00
Washington County	44	499,023	11,341.40
Town of Abingdon	11	158,112	14,373.80
Town of Damascus	10	6,311	631.10
Town of Glade Spring	1	4,347	4,347.00

Wythe County	15	66,077	4,405.13
Town of Wytheville	1	35,472	35,472.00
City of Bristol	19	71,753	3,776.47
City of Galax	2	3,227.00	1,613.50

The NFIP defines Repetitive Loss Properties as those with 2 or more claims of at least \$1,000 over a 10-year rolling period. There are 21 such properties in the Mount Rogers Region. The breakdown by locality follows in the table below:

Repetitive Loss Properties for Mount Rogers Planning District, as of 2018	
Locality	Number of Properties
Town of Abingdon	2
Bland County	6
City of Bristol	2
Town of Chilhowie	3
Town of Hillsville	1
Town of Marion	1
Town of Saltville	3
Washington County	1
Wythe County	1
Town of Wytheville	1

The Hazard Mitigation Assistance program defines Repetitive Loss as having incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and, at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Flooding causes damages ranging from blocked roadways and flooded basements to severe damage and destruction of homes and businesses. People sometimes die when they attempt to cross flood-swollen creeks that under normal circumstances appear fairly harmless. Severe flooding can take out bridges and sections of roadway. Flooding can also force people out of their homes into emergency shelters as a way to save lives and prevent people in flood-prone areas from becoming stranded. Fortunately, despite the constant threat of flooding for much of the Mount Rogers region, few people have died. Many more have sustained property damage, and some have been relocated out of the floodplain through government-sponsored programs.

A map showing the 100-year floodplain for all localities in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

The localities in the Mount Rogers Region do not allow construction inside the floodplain unless the structure is elevated above the 100-year floodplain elevation. For this reason, the vulnerability of structures inside the floodplain have either not changed or become less vulnerable since the original writing of the 2005 Hazard Mitigation Plan.

At-risk Structures in the 100-year Flood Plain				
Locality	Number of Structures	% of Total Structures	Total \$ Value of Structures*	Estimated Potential Damage (25% of Total Structure \$ Value)
Bland County	237	6.25%	\$11,376,000	\$2,844,000
Carroll County	31	0.16%	\$1,488,000	\$372,000
Grayson County	48	0.44%	\$2,304,000	\$576,000
Smyth County	425	2.44%	\$20,400,000	\$5,100,000
Washington County	216	0.76%	\$10,368,000	\$2,592,000
Wythe County	226	1.42%	\$10,848,000	\$2,712,000
City of Bristol	146	1.77%	\$7,008,000	\$1,752,000
City of Galax	53	1.54%	\$2,544,000	\$636,000
<i>* Average value of structure in flood plain is \$48,000</i>				

Hazardous Material Spills

Description

Hazardous materials can be found in many forms and quantities that can potentially cause death; serious injury; long-lasting health effects; and damage to buildings, homes, and other property in varying degrees. Such materials are routinely used and stored in many homes and businesses and are also shipped daily on the nation's highways, railroads, waterways, and pipelines. This subsection on the hazardous material hazard is intended to provide a general overview of the hazard, and the threshold for identifying fixed and mobile sources of hazardous materials is limited to general information on rail, highway, and FEMA-identified fixed HAZMAT sites determined to be of greatest significance as appropriate for the purposes of this plan.

Hazardous material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation-related accidents in the air, by rail, on the nation's highways, and on the water. Approximately 6,774 HAZMAT events occur each year, 5,517 of which are highway incidents, 991 are railroad incidents, and 266 are due to other causes. In essence, HAZMAT incidents consist of solid, liquid, and/or gaseous contaminants that are released from fixed or mobile

containers, whether by accident or by design as with an intentional terrorist attack. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind, and possibly wildlife as well.

HAZMAT incidents can also occur as a result of, or in tandem with, natural hazard events, such as floods, hurricanes, tornadoes, and earthquakes, which in addition to causing incidents can also hinder response efforts. In the case of Hurricane Floyd in September 1999, communities along the Eastern United States were faced with flooded junkyards, disturbed cemeteries, deceased livestock, floating propane tanks, uncontrolled fertilizer spills, and a variety of other environmental pollutants that caused widespread toxological concern.

Hazardous material incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous material, but exclude:

- 1) any release which results in exposure to poisons solely within the workplace with respect to claims which such persons may assert against the employer of such persons;
- 2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine;
- 3) release of source, byproduct, or special nuclear material from a nuclear incident; and
- 4) the normal application of fertilizer.

Risk Assessment and Vulnerability

The majority of Hazardous events in the Mount Rogers Region are due to fuel/oil releases from motor vehicle crashes. Typically range from a few ounces up to over one hundred gallons of diesel and oil from overturned tractor trailers.

The easiest way to mitigate against these events is early notification and have the appropriate agency (typically the fire department) to perform Hazardous Materials Operations level job functions such as, damming, diking, plugging, placing absorbent pads and/or booms down. Of course, this is for the small fuel spills. If the region has a larger event, then a large-scale HAZMAT team response would be necessary.

Karst and Sinkholes

Description

Sinkholes are bowl-shaped, funnel-shaped, or vertical-sided depressions in the land surface that form over underground voids. These depressions, which can range in size from a few feet to several hundred feet in diameter, usually result from the natural collapse of the roofs of caves eroded in soluble bedrock, but they can also result from man-made activity such as mining, groundwater pumping, or the failure of sewer and storm water drains. Subsidence of the ground is usually gradual, but on occasions it can be sudden and dramatic.

In regions of carbonate bedrock such as limestone or dolomite, slightly acidic rainwater percolating through organic soil dissolves the carbonate minerals as it comes into contact with the bedrock. Over time, this persistent process can create extensive systems of underground fissures and caves. The surface of such a region is often pocked with depressions. This type of topography is called karst terrain. In well-developed karst terrain, chains of sinkholes form what are known as solution valleys and streams frequently disappear underground.

Sinkhole collapse, either slow or dramatic, regularly causes considerable damage to buildings, highways, rails, bridges, pipelines, storm drains, and sewers. In addition, sinkholes provide a pathway for surface water to directly enter groundwater aquifers. The increasing potential for pollution is particularly high due to the minimal filtering of surface water.

A poor understanding of Karst terrain has led to land-use practices that pose significant economic and environmental impacts to households and communities. Sinkhole formation is closely related to local hydrological conditions, and human-induced changes to the local hydrology commonly accelerate the process. Diverting surface water, pumping groundwater, and constructing reservoirs all contribute to sinkhole collapse. An extreme example occurred in Florida on February 25, 1998, when, during the flushing of a newly drilled irrigation well, hundreds of sinkholes up to a hundred and fifty feet across formed over a twenty-acre area within a few hours. Runaway urbanization and development dramatically increases water usage, alters drainage pathways, and overloads the ground surface. According to the Federal Emergency Management Agency, the number of human-induced sinkholes has doubled since 1930, while insurance claims for related damages has increased 1,200 % from 1987 to 1991, costing nearly \$100 million. Subsidence is not covered by standard homeowners insurance.

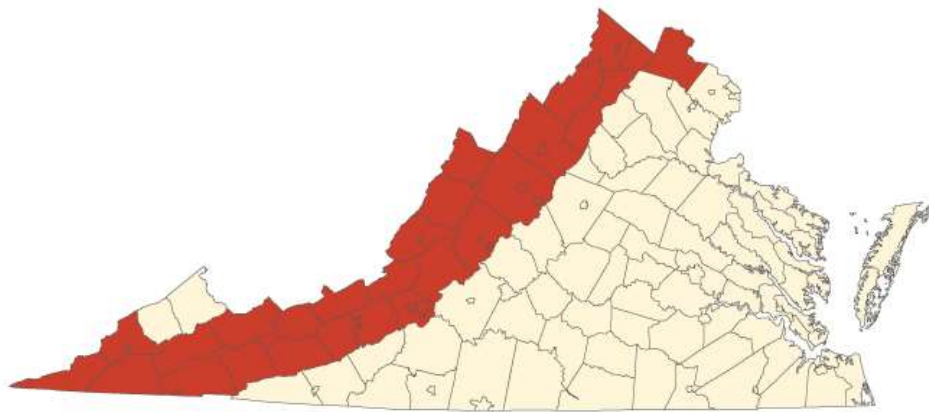
In Virginia, the principal area affected by sinkholes is the Valley and Ridge province, an extensive karst terrain underlain by limestone and dolomite, but the narrow marble belts in the Piedmont and some shelly beds in the Coastal Plain are also pocked with sinkholes. Dramatic collapses that swallow homes or persons have happened in Virginia, but are rare. The most notable incidents occurred in the City of Staunton: on August 11, 1910, parts of several homes and the firehouse were lost in a series of sinkholes on Baldwin Street and Central Avenue, and on October 28, 2001, a 45-foot deep chasm opened up on Lewis Street. In April of 2000, thirty-two sinkholes were reported in the upper Shenandoah Valley after seven inches of rain fell after a long dry spell.

Sinkholes regularly cause problems for transportation infrastructure in the Commonwealth. During the past thirty years, VDOT has recorded approximately 500 sinkholes that have damaged roads throughout the state. In March 2001, a nine-mile stretch of Interstate 81 in Augusta County was closed after the sudden appearance of three sinkholes, the largest measuring 20 feet long, 11 feet wide and 22 feet deep. On October 5, 2004, the right southbound lane of I-81 just north of the Exit 118C ramp in Montgomery County collapsed. Due to the potential for damage to infrastructure and danger to the travelling public, VDOT maintains an emergency contract for sinkhole repair. In general, sinkhole occurrence is unpredictable and the size of a sinkhole cannot be estimated from the surface collapse, so repair costs range from the tens of thousands to the hundreds of thousands of dollars per sinkhole. Research into sinkhole distribution and early prediction is ongoing; however, a true method of early prediction remains elusive.

Groundwater contamination is a common problem in populated areas overlying karst terrain. Karst aquifer contaminants in Virginia have included petroleum products, herbicides, solvents, fertilizers, sheep and cattle dip, sewage, dead livestock, and household garbage. In the late 1800s, a Shenandoah County community was subjected to a cholera outbreak due to the pollution of the local karst aquifer. A significant concern is the vulnerability of karst aquifers to contamination along the I-81 corridor, where hazardous materials are regularly transported and accidents can occur. For some chemicals that do not readily mix with water, contamination can be widespread and remain in the groundwater for many years. Most of Virginia's karst region follows Interstate 81, and twenty-seven of Virginia's counties lie in this zone, where hundreds of thousands of people get their drinking water from wells and springs.

State law prohibits the dumping of waste into sinkholes, and some Virginia counties have implemented ordinances about sinkhole dumping and outfalls. Meanwhile, the Virginia Health Department discourages the use of karst springs as public water supplies and requires periodic testing of those karst springs that are used. The Virginia Department of Conservation and Recreation's Natural Heritage Karst Program is responsible for groundwater and habitat protection in karst areas, supported by EPA Section 319 Clean Water Act Program. The USGS, working with various state agencies, has developed a National Karst Map.

Areas over underground mine workings are also susceptible to subsidence. Mine collapses have resulted in losses of homes, roadways, utilities and other infrastructure. Subsidence is often exacerbated by the extensive pumping of groundwater associated with underground mining. Abandoned coal mines occur in Buchanan, Dickenson, Lee, Scott, Russell, Tazewell, Wise, Montgomery, and Pulaski counties in southwest Virginia; and Henrico, Chesterfield and Goochland counties in the Richmond coal basin. Other abandoned underground mines occur throughout the state. Information of past mining activity can be obtained from the Virginia Division of Mineral Mining and Division of Mined Land Reclamation.



*Virginia counties containing significant karst terrain. Modified from Virginia Natural Heritage Karst Program.
Source: Department of Mines, Minerals, and Energy*

History

In the local region, sinkholes suddenly appear from time to time on Interstate 81, which passes through the karst region of Virginia. One recent incident occurred in October 2003, when a sinkhole appeared on I-81 about one mile past the junction with I-77 in Wythe County. Both the Virginia Department of Transportation and Duke Energy said the sinkhole appeared in connection with drilling under the highway in connection with installation of a 24-inch natural

gas pipeline. The incident blocked a northbound lane of I-81 for a few days before VDOT completed the needed repairs and the reopened the lane to regular use.

Subsidence also has been a problem for Saltville due to mining for salt and gypsum. Salt mining first began in 1782 and continued until 1972 with the shutdown of Olin Industries, once a major employer in Saltville. Commercial production of salt resumed in 2000 with completion of an evaporator plant by Virginia Gas Company, which was removing brine from the underground caverns to make room for natural gas storage.

Gypsum mining began in 1815 and continued under the U.S. Gypsum Company, starting in the early 1900s. U.S. Gypsum, which has since moved to production of artificial gypsum, closed its Saltville area facilities in 2000.

In 1960 a major collapse occurred in a section of the high-pressure brine field located just southwest of Saltville. The collapse involved four wells spaced closely together and considered shallow, ranging from 450 to 800 feet deep, according to expert testimony. Over time the bottom cavities of the wells appeared to have merged together. The underground collapse moved upwards through the relatively thin rock "roof" layers (themselves 200-316 feet thick) to the surface. This resulted in a crater 400 feet wide and 250 feet deep.

More recently, a section of State Rt. 91 collapsed into a 50-foot wide sinkhole in front of the offices of U.S. Gypsum. In the past gypsum mining had occurred under the collapse site and may have been a contributing factor. Blame was also placed on a leaking water line that had apparently dissolved the underlying limestone, thereby weakening the underground support structure and leading to the collapse. It should be noted these incidents have resulted from human-induced activities, while the focus of this study has been on hazards created by nature.

In the Wythe County community of Ivanhoe an underlying sinkhole eventually caused the floor of the local post office to fall through. A new post office has since been established for Ivanhoe. Karst terrain also is a factor in the Town of Chilhowie, which is investigating why the town water system loses 16 million gallons a month; some is thought to leak into the underlying terrain. Construction workers for Duke Energy Gas Transmission also encountered karst terrain during the recent installation of the Patriot Extension natural gas pipeline near New River Trail State Park (near Foster Falls in Wythe County).

Risk Assessment and Vulnerability

There is no known way to predict when sinkholes might open up or when subsidence might occur. There is only limited data available on karst terrain, its extent, and its importance from an ecological standpoint and as a natural hazard.

The ecological importance of this landform is only beginning to be understood through the efforts of various state and federal agencies and by groups such as the Karst Waters Institute, Cave Conservancy of the Virginias, The Nature Conservancy, and others.

As noted in the section on landslides, detailed basic geology maps are still under development in the state and local region. It is not possible to make any risk assessment other than in a generalized fashion. This task may become possible in the future under a new program on karst and subsidence hazards proposed for the National Cooperative Geologic Mapping Program. The NCGMP is a digitized mapping effort by the U.S. Geological Survey in coordination with the Association of American State Geologists. The Geologic Mapping Act of 1992 mandated creation of a national geologic database.

The Karst and Subsidence Hazards program has been planned to develop better understanding of groundwater contamination, sinkhole formation, new techniques for karst analysis through remote sensing and geophysics, regional karst issues in the Appalachians, and understanding of karst issues on a national scale through development of a new National Atlas karst map.

Karst terrain is a special concern for Bland, Wythe, Smyth and Washington counties as a feature of the Valley and Ridge geological province. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to karst and sinkholes have not changed.

Karst as a natural hazard can be a costly matter for the community. There are the long-term costs associated with environmental pollution and contamination of the groundwater supply. There also are costs associated with damage created by subsidence, such as the collapse of State Rt. 91 into a sinkhole near Saltville in 1977. In 2004 VDOT was nearing completion on relocating 0.5 miles of Rt. 91 at an estimated cost of \$2 million.

Due to the lack of mapping of significant karst terrain, incidents involving the sudden appearance of sinkholes and leakage often come as a surprise to local governments. No historical events have occurred since 2005.

Landslides

Description

Landslides can be defined as the downward and outward movement of soils and slope-forming materials reacting under the force of gravity. These movements can be triggered by floods, earthquakes, volcanic eruptions and excessive rain. The three important natural factors include topography, geology and precipitation. Human-caused factors include cut-and-fill highway construction, mining and construction of buildings and railroads.

Types of landslides include slides, flows, falls and topples (which occur rapidly), and lateral spreads (which occur much more slowly).

The Appalachian Highlands, along with other mountainous regions of the United States, are known to be highly susceptible to landslides. These come in the form of earth flows, debris flows and debris avalanches, mainly in areas of weathered bedrock and colluvium. Debris avalanches can occur during period of continual steady rainfall followed by a sudden heavy downpour. Areas prone to landslides include the plateau of the western Appalachian Highlands (especially in Tennessee and Kentucky) and southeast of the Appalachian Plateau, in the flanks of the Appalachian Ridge and the Blue Ridge (which includes the Mount Rogers region). For the most part these movements are comprised of slowly moving debris slides.

On a generalized scale, hazard-prone areas have been mapped by the U.S. Geological Survey. However, this information needs to be evaluated at ground level to more clearly identify the landslide-prone areas of the Mount Rogers region. A map showing landslide incidence and susceptibility in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

History

Information is limited regarding landslides and debris flows for the Mount Rogers region. While generalized statewide geology maps have been published, detailed maps for the local region are still in development. These will become the basic geology maps that in the future can be used in landslide risk assessment. Geologists with the Virginia Department of Mines, Minerals and Energy were in the process in 2003 of creating basic geology maps in Washington County and were planning to move into Smyth County and other parts of the Interstate 81 corridor. In the past most geologic mapping related to resources of economic value, such as coal.

The record is scant concerning landslide incidents in the Mount Rogers region. A staff review of a comprehensive, nationwide database giving locations of debris flows, debris avalanches, and mud flows revealed no information pertaining to the local region.

Small-scale landslides are known to occur on steep slopes and can sometimes block roadways. The Virginia Department of Transportation makes emergency repairs as needed. On occasion, a major landslide can block a roadway. Heavy rains and the annual freeze-thaw cycle can trigger these landslides.

More recently in March of 2011 a rockslide occurred in Carroll County. The event happened on Interstate 77 at mile marker 3.8 in the left northbound lane. A boulder roughly the size of a car fell onto the highway. A man struck the boulder with his car killing him instantly. VDOT officials surveyed the cliff above and determined that no other rocks were in danger of falling.

Risk Assessment and Vulnerability

The Mount Rogers region is mountainous in nature, and its steep slopes make parts of the region susceptible to landslides. The hazard-prone areas have been generally mapped by the U.S. Geological Survey, as shown below.

The USGS divides landslide risk into six categories. These six categories were grouped into three, broader categories to be used for the risk analysis and ranking; geographic extent is based off of these groupings. These categories include:

High Risk

1. High susceptibility to landsliding and moderate incidence.
2. High susceptibility to landsliding and low incidence.
3. High landslide incidence (more than 15% of the area is involved in landsliding).

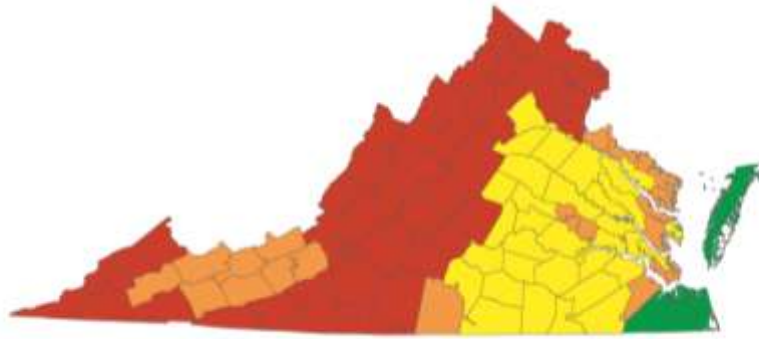
Moderate Risk

4. Moderate susceptibility to landsliding and low incidence.
5. Moderate landslide incidence (1.5 - 15% of the area is involved in landsliding).

Low Risk

6. Low landslide incidence (less than 1.5 % of the area is involved in landsliding).

The six categories were grouped into High (categories 1-3), Medium (categories 4 –5), and Low (category 6) to assess the risk to state facilities, critical facilities and jurisdictions.



Counties in Virginia that are susceptible to landslides.

Red = high potential; orange = moderate potential; yellow = moderate to low potential; green = low potential.

Source: Department of Mines, Minerals, and Energy

Certain types of rocks and geologic conditions, when they occur on slopes, make an area prone to landsliding. These types include fine-grained clastic rocks (those consisting mainly of silt and clay-sized particles), highly sheared rocks and loose slope accumulations of fine-grained surface debris, which give way during times of intense or sustained rainfall. Steep slopes also can add to the likelihood of landslides. Debris flows, for instance, are known to occur mainly on slopes steeper than 25°.

There is no accepted method for determining the likelihood of a landslide in the Mount Rogers region. Given the relative lack of historical data on catastrophic landslides affecting the region, our best guess is a major landslide incident appears to be unlikely.

Landslides are not well understood in the Mount Rogers region. Most geologic studies have been focused on mineral resources (especially coal) of economic importance. Basic geologic mapping is only beginning to get underway in the region. More information will be needed before any detailed risk assessment can be made for localities in the Mount Rogers region.

Please see the image above (Generalized Landslide Image of Southwest Virginia) for a visual depiction of potential landslide risk areas in the local region.

Generally speaking, the areas posing the greatest landslide risk include the pink and red regions. The pink regions include parts of Washington, Smyth and Grayson counties and a corner of Carroll County. The red regions include much of Carroll County and the border area between Washington, Smyth and Grayson counties.

Landslides can damage or destroy roads, railroads, pipelines, utilities and infrastructure, forests, fisheries, parks and farms. Damages can include economic losses to local, state and

federal agencies – because of the impacts to public infrastructure – and to the private sector for impacts to land and buildings. When located near communities, sudden landslides also can cause death. In the five-year time span since the original Hazard Mitigation Plan was written, the region’s vulnerability to Landslides have not changed.

Severe Winter Storms and Ice

Description

Blizzards represent the worst of the winter season, combining heavy snowfall, high winds, extreme cold and ice storms. Severe winter storms can be characterized by heavy snowfall but lacking the severity usually associated with blizzards. They often begin as mid-latitude depressions or cyclonic weather systems and sometimes follow the jet stream.

For the Mount Rogers region storm systems travel in from the Midwest and Tennessee Valley, from the Gulf Coast region and sometimes as a result of a major coastal storm that passes inland. On the northern side, extreme cold weather and Arctic cold fronts move in from Canada and are known to sweep into the Mid-Atlantic region. The severity of these storms may result from high snowfall accumulations that lead to major snowdrifts and blizzard conditions or that later melt and cause flooding. Wetter storms may have only limited amounts of snow but are severe due to accumulations of ice. A light covering of ice can easily create numerous traffic accidents. Both ice and heavy snow can tear down tree limbs, trees, power lines and telephone lines, creating major disruptions that sometimes cannot be cleared up for weeks. A map showing the heaviest average snow accumulations in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

History

The historical record for snowstorms and blizzards in the Mount Rogers regions gives numerous examples of how bad these storms can get. major winter events in the region resulted in seven federal disaster declarations and at least four state emergency declarations. The chart below contains inconsistencies in monetary values and locations of damage due to poor recordkeeping within localities.

Major Winter Storms, Cold and Ice Mount Rogers Region, Virginia 1993-2017

Date	Localities	Description
01-17-13	Bland, Carroll, Grayson, Smyth, Wythe, Galax	The region was hit by a winter storm that brought heavy snow fall ranging from 12 inches in Rocky Gap (Bland County) to 6.0 inches in Ceres (Bland County). This winter storm brought the interstate to a standstill with accidents and heavy snow fall.
4-28-03	Wythe County	Severe winter storm, near record snowfall, heavy rain, flooding, and mudslide. 39 jurisdictions had disaster declarations. Wythe qualified in April for public assistance as result of the March storm.
3-30-03	Bland, Carroll, Grayson, Smyth, Wythe, Galax	Winter storm with heavy snow that began during the predawn hours of the 30 th and continued through the early afternoon. Snow accumulated 6-12", brought down numerous tree limbs and power lines, resulting in more than 50,000 power outages.
2-15-03	Bland, Grayson, Wythe	State emergency declaration due to severe winter storm, impassable roads and flooding. SW Virginia got more than 4" of rain. Evacuations from homes in Bland and Wythe counties.
12-11-02	Carroll, Galax	State emergency declaration due to icy conditions creating massive power outages. Accretions of ¼" of ice. An icy winter storm followed on Dec. 13.
12-04-02	Bland, Carroll, Grayson, Smyth, Washington, Wythe, Galax.	Winter storm affected a wide area of SW Virginia. Snowfall amounted to 5-10" and ice of 1" or more in Carroll and Floyd counties. Numerous traffic accidents.
5-22-02	Bland, Carroll, Wythe, Bristol, Galax	Freeze damage affected Christmas tree growers.
2-28-00	Bland, Carroll, Grayson, Smyth, Washington, Wythe	Severe winter storm. 107 jurisdictions had disaster declarations for winter storm from Jan. 25-30, 2000.
1-25-00	Bland, Carroll, Grayson, Wythe, Galax	State emergency declaration due to winter storm with high winds that dumped up to 18" of snow across much of the state, with drifting and blizzard conditions. Local storm occurred on Jan. 29. Snow mixed with sleet amounting to 4-8" inches, 11" in higher elevations.
3-15-99	Bland, Carroll, Smyth, Wythe, Galax	Winter storm developed with rain and sleet changed to a wet snow early in the morning. Snow amounts of 4-8", with up to 10" in the higher elevations. The snow downed power lines and small trees, resulting in power outages.

Date	Localities	Description
3-03-99	Bland, Carroll, Grayson, Smyth, Wythe, Galax	Winter storm resulted from rain changing to sleet and then snow, with accumulations of 6-12". Numerous motor vehicle accidents. Motorists stranded for 5-6 hours on I-77.
12-23-98	Bland, Carroll, Grayson, Smyth, Wythe, Galax	Ice storm created ice accretions of ½" and sometimes as much as 1". Ice downed tree limbs and power lines and created numerous power outages. Many traffic accidents and some injuries due to ice-covered roads and bridges.
1-28-98	Bland, Carroll, Grayson, Smyth, Wythe, Galax	State emergency declaration for severe winter storm with heavy snowfall in the western part of the state causing riverine flooding. Snowfall of 15-32" closed schools, businesses & church services & stranded people in vehicles & homes. Numerous traffic accidents. A charter bus overturned on I-81 near Marion, injuring 20 people. I-81 was closed for several hours during the height of the storm. Power lines, tree limbs and trees were knocked down.
12-29-97	Bland, Carroll, Grayson, Smyth, Wythe, Galax	Heavy winter snowstorm produced accumulations of 5-10", with 4-7" in Bland County. Bad road conditions resulted in numerous traffic accidents.
3-28-96	Bland, Carroll, Wythe, Galax (Bath County hardest hit)	Ice storm with freezing rain all day created significant ice cover above 1900 feet. Ice downed tree limbs, power lines, telephone lines. Numerous power outages and some traffic accidents.
2-02-96	Bland, Carroll, Grayson, Smyth, Washington, Wythe, Bristol, Galax	State emergency declaration for a winter storm with heavy snow, followed by extreme cold Feb. 3 rd -6 th . Burkes Garden in Bland County recorded 22° below zero. Most locations had morning lows on the 5 th of zero to 12° below zero. Emergency declaration based on an Arctic air mass moving across state Feb. 1-4, with potential to cause widespread power outages.
1-06-96	Bland, Carroll, Grayson, Smyth, Wythe, Galax	Blizzard of 1996. State emergency declaration for a predicted winter storm with blizzard conditions and snowfall of 12-24" expected. Statewide disaster declaration. Occurred Jan. 6-13.
Winter of 1995-96	VDEM "Virginia Winters" account	Unusually heavy snowfall for the winter. Burkes Garden had 97", while Bland had 62". Some schools lost up to 15 days due to snow.
3-28-94	Bristol	Severe ice storms, flooding
3-10-94	Bland, Carroll, Grayson, Smyth, Washington, Wythe	Severe ice storms, flooding. May be related to the state emergency declaration of March 2, 1994.

Date	Localities	Description
3-12-93 to 3-13-93	Bland, Carroll, Grayson, Smyth, Wythe, Galax (affected a region from Florida to New England)	Blizzard of 1993. 43 jurisdictions received disaster declarations statewide. Extreme cold and heavy snowfall, along with high winds, sleet and freezing rain left many motorists stranded. \$5 million property damage. It was the biggest storm in a decade in Virginia. SW VA got 24-42" of snow. Interstate highways were closed and emergency shelters were opened to house up to 4,000 motorists.
12-18 2009	Grayson, Carroll, Smyth, Washington.	Grayson County received federal assistance. A total of \$600,000 of damage was reported

Source: Virginia Department of Emergency Management and National Climatic Data Center.

Note: Items with dates appearing in boldface and shading resulted in presidential disaster declarations.

Major storms such as the Blizzard of 1993 closed down interstate highways, stranded motorists in their vehicles and trapped people in their homes. The event also brought high winds, sleet and freezing rain, adding to the disruptions created by the snowfall. In southwest Virginia, snowfall ranged from 24 to 42 inches in what was the largest snowstorm in a decade for the state. The Blizzard of 1996 (January 6-13) began in the southeastern states and moved into the northeastern states to cover the entire eastern seaboard. Snowfall amounted to one to four feet, with the greatest impacts for Virginia and West Virginia. On a statewide level, Virginia had 48 inches of snow, followed by West Virginia with 43 inches of snow. Much of the same region experienced two more snowstorms that dumped up to 12 inches more within the next 10 days. The National Climatic Data Center listed the storm of December 2009 as the only winter storm since the writing of the original plan that caused major monetary damage.

Below is the Northeast Snowfall Impact Scale (NESIS) that characterizes and ranks high impact winter storms.

Category	NESIS Value	Description
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme

Locality	Avg. Annual Total Snowfall
Abingdon	16.3"
Bland	25.5"
Burkes Garden	46.3"
Byllesby	11.4"
Chilhowie	19.2"
Damascus	22.0"
Galax Radio	19.1"
Hillsville	18.9"
Independence	20.2"
Mendota	15.6"
Saltville	13.4"
Troutdale	20.2"
Wytheville	19.9"

Snowstorms pose a threat not only because of dangerous driving conditions and downed power lines, but also due to the melting that can lead to flooding. During the 2002-2003 winter season, severe winter storms later created flooding problems in Bland, Grayson and Wythe counties, with Wythe declared eligible for federal disaster assistance.

Due to variable topography and other factors, average annual snowfall amounts vary greatly throughout the Mount Rogers region, based on available weather records shown in the accompanying table shown at left. The data covers time periods as long as 81 years.

Risk Assessment and Vulnerability

Winter storms are a regular part of the weather regime for the Mount Rogers region. The severity of the season varies from year-to-year and can be highly variable among the localities for any given storm event. The variability can be due to differences in elevation, differences in temperature and the track of given storm systems.

In recent years there have been at least seven federal disaster declarations and four state emergency declarations due to severe winter storms over a 10-year period, as shown in the table on Major Winter Storms, Cold and Ice. Based on this brief time period, it is likely localities in the Mount Rogers region will experience at least one major snow and/or ice storm per year with the potential to become a federal disaster. The winter season typically runs from November to April of each year.

The average winter season in the Mount Rogers region can create annual snowfall amounts ranging from 8 to 46 inches. The average snow season in Roanoke produces 23 inches per year. The average winter season in the Mount Rogers region can create annual snowfall amounts ranging from 8 to 46 inches. The average snow season in Roanoke produces 23 inches per year (over 49 years) and in the Bristol-Johnson City-Kingsport, Tenn. area produces 15.6 inches per year (over 59 years).

Any major winter storm or blizzard is likely to affect the entire Mount Rogers region, with the most direct impacts affecting highways and power lines. Most snow-related deaths result from traffic accidents, overexertion, and exposure. Sometimes also there is damage to buildings from collapsed roofs and other structural damage. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to winter storms have not changed. There is no way that we know of to calculate the likely costs of a major winter snow or ice storm. The available data, through the National Climatic Data Center, reports damages by storm event, but this is not broken down by locality.

Severe winter storms and ice can cause death and injury on the highways and trap people in their motor vehicles or in their homes due to impassable roads. Snowstorms also regularly result in the closing of schools; in some years, the local schools have been closed as much as 15 days due to winter conditions. Forecasts of impending snowstorms also regularly result in early school closings to reduce risk from bus and traffic accidents. Likewise, winter conditions can result in temporary disruptions of business activity, with workers advised to remain home until driving conditions improve.

The Virginia Department of Transportation deals directly with the effects of snowstorms. On average in the past five years, VDOT has spent \$83 million annually on snow removal. As a general rule, the first priority is to plow interstate highways, major primary roads and secondary roads. Plowing in subdivision and residential areas are the second priority during winter storms. VDOT seeks to get ahead of snow conditions on the roadways through pre-treatments with liquid chloride and close monitoring of storm conditions and incoming storms.

For American Electric Power the main concern is icing, which can tear down overhead power lines. AEP is sometimes hampered in its efforts to restore power during major snowstorms due to the poor condition of the roads. The state's system of highway maintenance, carried out by several private contractors, at times creates uneven results during snow clearing.

Thunderstorms and Lightning

Description

Thunderstorms arise from atmospheric turbulence caused by unstable warm air rising rapidly into the atmosphere, enough moisture to form clouds and rain and an upward lift of air currents caused by colliding warm and cold weather fronts, sea breezes or mountains.

Thunderstorms are always accompanied by lightning, but they may also be associated with heavy rains, hail and violent thunderstorm winds.

Thunderstorms occur most often during the spring and summer months and can occur throughout the entire Mount Rogers Region. Nationwide the average storm is 15 miles wide and generally last less than 30 minutes at any given location. Some storm systems have been known to travel more than 600 miles. A map showing the favored high wind areas in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

History

Storm events reported to the National Climatic Data Center reflect the kind of activity and damages resulting from high winds and thunderstorm winds. Describing the data can be problematic, since storms often travel over wide regions. The reported damages represent those for the entire storm event and are not usually limited to a given locality. The data given in the table below offers a guide to thunderstorm history in the Mount Rogers region.

Storm Event History for Thunderstorm Winds, as of April 2018					
Location	Time Period	No. Of Years	No. Of Events	Avg. Per Year	Reported Damages
Bland County	May 1989-April 2018	28	38	1.4	\$334,000
Carroll County	June 1960-April 2018	57	81	1.4	\$1,430,000
Grayson County	May 1962-April 2018	55	62	1.1	\$672,000
Smyth County	April 1972-April 2018	45	62	1.4	\$828,000
Washington County	June 1995-April 2018	22	119	6	\$1,570,000
Wythe County	July 1962-April 2018	55	55	1	\$705,000
City of Bristol	July 1980-April 2018	37	46	1.3	\$252,000
City of Galax	Jan. 1998-April 2018	19	14	0.7	\$29,000

Another event, on July 4, 1997, captured in the NCDC data involved a supercell thunderstorm and associated severe thunderstorms affecting a region stretching from Tazewell to Pittsylvania counties. Thunderstorm winds estimated at 60-80 mph and hail the size of golf

balls damaged at least 29 homes, 16 mobile homes, five outbuildings, four businesses and a church in a two-mile path near Wytheville. There was also widespread damage to vehicles, roofs, sidings, satellite dishes, trees and a large sign knocked down by the winds. Wytheville Community College sustained 100 broken windows. Hail drifts amounted to six to eight inches deep in several locations. The event caused an estimated \$300,000 in property damage.

A supercell thunderstorm, while rare, is often the most violent known form of thunderstorm and is associated with tornadoes, damaging straight-line winds and large hail. These events are defined as long-lived thunderstorms with a persistent rotating updraft. They often contain a mesocyclone, or storm-scale regions of rotation typically two to six miles in diameter that may produce tornadoes.

Lightning

Thunderstorms are always accompanied by lightning, which can cause fires, injury and death. Florida is known for having the greatest number of thunderstorms and the highest density lightning strikes in the contiguous United States.

Lightning becomes a problem when the discharge of a lightning bolt connects with an object or surface on the ground. Lightning will be considered together with thunderstorms in judging the importance of this hazard for the Mount Rogers region.

Risk Assessment and vulnerability

Southwest Virginia experiences 60-80 thunderstorms on average per year. Most of these occur during the summer months, extending from May through September, with July the peak month for thunderstorms statewide, according to the state climatology office. This is moderate compared to other parts of the country with more than 130 thunderstorms annually. During the peak of the thunderstorm season in the local region, storms may roll through at the rate of three or four per week, which is relatively frequent.

People and property throughout the Mount Rogers region are subject to damages and injuries created by lightning and thunderstorms. But any individual storm is likely to affect only a very limited area. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to thunderstorms and lightning has not changed.

Virginia experiences a moderate number of thunderstorms and lightning strikes compared to other parts of the country, according to research cited by FEMA. Thunderstorms in the Mount

Rogers region typically last 70-80 minutes in any given location, which falls in the mid-range for storm duration nationwide. In some areas thunderstorms last 130 minutes or more, based on findings by the National Weather Service for the years 1949-1977.

These storms can cause serious structural damage to buildings, start forest fires and wildfires, blow down trees and power lines, and cause death. On rare occasions, events such as the supercell thunderstorm from July 1997 can cause widespread damage, as previously discussed on the history section.

Nationally, Virginia falls in the mid-range for lightning fatalities, based on the cited research through the National Oceanic and Atmospheric Administration. States such as Florida, North Carolina, New York and Tennessee rank far ahead of Virginia. The lightning that accompanies thunderstorms in the Mount Rogers region averages 4-6 strikes per square kilometer, which is relatively low.

It is not possible based on available data to quantify the impacts of thunderstorms and lightning for localities in the Mount Rogers region. Available data from the National Climatic Data Center, which tracks incidents of thunderstorms and thunderstorm wind damage, is reported on a regionalized basis often covering numerous localities as a storm system moves through. Data resources will have to improve in the future to be able to make these calculations on the local level.

Tornadoes and Hurricanes

Description

A tornado appears as a rapidly spinning vortex or funnel of air extending to the ground from an overhead storm system (usually a thunderstorm). Tornadoes come in many sizes, ranging from several yards to more than a mile wide. The severest tornadoes can achieve wind speeds of more than 300 mph, though most are 100 mph or less. The weakest tornadoes may last only about a minute, while the stronger ones may continue for 30 minutes at a time and travel miles before dissipating. Virginia is said to have an average of seven reported tornadoes per year (1950 through 2006), though the actual number of tornadoes may be higher.

Statistically the peak month for tornadoes in Virginia is July, though the tornado season goes from spring through fall. Tornadoes spring from an estimated 1% of all thunderstorms; of the group that produces tornadoes, only about 2% are considered violent with winds over 200 mph

(categories F3, F4 and F5 on the Fujita scale). Tornadoes also can be associated with hurricanes, though hurricanes are not a significant factor in southwest Virginia.

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

As seen in table shown above, tornadoes are measured on the Enhanced Fujita Scale, with categories ranging from F0 to F5. The categories are defined according to wind speed and the types and severity of damage caused. Parts of southwest Virginia show some tendency toward tornadoes in an area that extends from Tennessee into Bristol and Washington County due to the lay of the land and its influence on storm systems. Maps showing tropical cyclone tracts and tornado hazard frequency in the Mount Rogers Region are located in the section titled Appendix I at the end of the document.

History

Between 1950 and 2005, Virginia experienced six tornadoes per year or 1.6 tornadoes annually per 10,000 square miles. Two storms per year on average were rated as strong or violent (F2-F5), with 0.5 such storms per 10,000 square miles per year.

Tornado History: Mount Rogers Region 1950 through 2017

Locality	Date	Time	Dead	Hurt	F Scale
Bland Co.	-	-	-	-	-
Carroll Co.	Aug. 1, 1965	0230	0	5	F1
	Aug. 21, 1977	1700	0	0	F2
	July 4, 1979	1620	0	0	F1
	May, 6 2009	2126	0	0	F0
Grayson Co.	July 10, 1959	1500	0	0	F1
	May, 6 2009	2125	0	0	F0
	October 23, 2017	1747	0	0	F1

Locality	Date	Time	Dead	Hurt	F Scale
Smyth Co.	April 4, 1974	0405	0	3	F3
	Jan. 25, 1975	2335	0	2	F2
	June 5, 1975	1815	0	0	F0
	July 13, 1975	1900	0	0	F1
	April 28, 2011	0200	0	1	F2
	April 28, 2011	0015	0	0	F2
Washington Co.	April 30, 1953	1845	0	0	F0
	June 10, 1953	1500	0	0	F1
	June 3, 1962	1600	0	0	F2
	April 4, 1974	0400	1	1	F3
	Jan. 25, 1975	2330	0	0	F2
	April 30, 1990	1725	0	0	F0
	April 28, 2011	0100	4	50	F3
Wythe Co.	-	-	-	-	-
City of Bristol	April 4, 1974	0300	0	0	F0
City of Galax	-	-	-	-	-
Totals:	20 events		5	61	

For the Mount Rogers region there have been 20 reported tornadoes from 1950 through April 2011, with 5 people killed and 61 people injured. The highest intensity ever recorded for these storms was F3. See the table above for more details.

On the Fujita scale, an F3 category tornado is considered severe, with winds up to 206 mph. This fits with the FEMA Wind Zone III designation for the region. By definition, Zone III communities are known to experience winds of 160-200 mph.

The tornadoes of April 4, 1974 were part of what is known as the "Super Outbreak," when severe thunderstorms at the leading edge of a cold front moved into southwest Virginia. Eight tornadoes struck statewide, killing one person and hurting 15. The destruction affected more than 200 homes and barns and more than 40 mobile homes and trailers. The storm event in total spawned 148 tornadoes killed 315 people and injured 5,484. "Super Outbreak" created the most tornadoes ever recorded in a 24-hour period and the worst tornado outbreak since Feb. 19, 1884. This was true until the tornado outbreak of April 25-28 of 2011. This outbreak produced at least 336 tornados in 21 states from Texas to New York and even created isolated tornadoes in Canada. The storms caused \$10 billion worth of damage and tragically resulted in

346 deaths. In the Mount Rogers Planning District, the storms resulted in 4 fatalities and caused \$38.5 million in damages.

One of the tornadoes, rated at F0 to F1, struck near Bristol, demolishing several mobile homes and hurting four people. A stronger F3 tornado hit the Saltville area, traveling up the valley of the North Fork Holston River from Washington County, then following Tumbling Creek into Poor Valley and traveling up the Poor Valley to Cardwell Town. The storms resulted in one dead, one injured and destruction of two houses, two mobile homes, a church and three barns. There was also damage to 42 homes, two mobile homes and the roof of a high school. Wind damage was reported in Bland and Wythe counties.

Hurricanes

Generally speaking, the Mount Rogers region does not have hurricanes and is not considered hurricane-susceptible like communities all along the east coast. Hurricanes become a factor on those rare occasions when the storm systems take an inland route as they pass over the Mid-Atlantic region. Two of the most significant hurricanes in recent decades affecting the Mount Rogers region were *Hurricane Agnes* (June 1972) and *Hurricane Hugo* (September 1989).

Hurricane Agnes, originating off the coast of the Yucatan Peninsula in Mexico, became a tropical storm on June 16, 1972 and then a hurricane in June 19, 1972. It crossed the Florida panhandle on June 19 and passed through Georgia, South Carolina and North Carolina before returning to the Atlantic Ocean to regain strength. The storm made landfall a second time on June 22, 1972 in southeastern New York and moved west across the southern tier of New York and into north-central Pennsylvania, where the \$3.1 billion hurricane made its greatest impact.

Though the local record is scanty for this storm, 106 jurisdictions in Virginia qualified for a presidential disaster declaration due to widespread flooding. Those included Smyth County and the City of Galax. Most notable for damage caused by flooding, Agnes dropped an average of 6-10 inches of rain over the Mid-Atlantic region from June 20-25, 1972. The storm in Virginia created an estimated \$126 million in damages and resulted in 13 deaths.

Hurricane Hugo began as a cluster of thunderstorms moving west off the coast of Africa. As the storm system passed over the Atlantic Ocean, it gained strength to become a tropical depression and then a hurricane, on Sept. 13, 1989. Once classified as a Category 5 storm

(highest intensity hurricane) on the Saffir-Simpson Scale, Hugo did great damage in the Caribbean and Puerto Rico. By Sept. 19 the storm had weakened and moved back over the Atlantic, where Hugo regained strength and became a Category 4 hurricane with winds up to 135 mph when it made landfall near Charleston, S.C. on Sept. 22, 1989. By the time Hugo passed west of Charlotte, N.C., it had weakened to a tropical storm with peak winds of 87 mph. The storm continued tracking north over southwest Virginia and West Virginia; the Appalachian Mountains helped weaken the storm further as it continued into western New York and passed out of the country. In the end, six Virginians died as a result of Hugo. As the storm passed over the Appalachians, orographic effects were thought to cause locally heavy rainfalls of more than six inches over western North Carolina and southwest Virginia, causing small stream flooding. Orographic effects are defined as those caused by the presence of mountains; most commonly, this occurs when air rises over the mountains and then cools, creating condensation and rainfall. In total Hugo was estimated as a \$9 billion storm in damages and economic losses, with \$7 billion of that total occurring on the mainland, particularly in the Carolinas.

Risk Assessment and Vulnerability

The Mount Rogers region appears to face a low risk of tornadoes and hurricanes. FEMA classifies the region under Wind Zone III, meaning winds can reach speeds ranging from 160 mph to 200 mph. The region also, based on historical information, experiences less than one tornado per 1,000 square miles. Tornadoes are rare for the Mount Rogers region.

FEMA High Wind Matrix
Tornado and Hurricane Risk

		Wind Zone			
		I	II	III	IV
No. of Tornadoes per 1,000 sq. miles	< 1	Low Risk	Low Risk 🌩	Low Risk 🌩	Moderate Risk
	1-5	Low Risk	Moderate Risk 🌩	High Risk	High Risk
	6-10	Low Risk	Moderate Risk 🌩	High Risk	High Risk
	11-15	High Risk	High Risk	High Risk	High Risk
	> 15	High Risk	High Risk	High Risk	High Risk

Saffir-Simpson Scale

Category	Winds	Effects
One	74-95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage
Two	96-110 mph	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	111-130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet ASL may be flooded inland 8 miles or more.
Four	131-155 mph	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	greater than 155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

A tool to judge damage potential from tornadoes and hurricanes can be found in a FEMA publication called *Taking Shelter from the Storm: Building a Safe Room Inside Your House*. The tool appears in the table above.

The matrix and the wind zone assignments are based on 40 years of tornado history and more than 100 years of hurricane history in the United States, as well as research by the Wind Engineering Research Center at Texas Tech University. This serves as the basis for a low risk rating for the Mount Rogers region.

Tornadoes, though rare for the Mount Rogers region, have been known to achieve an F3 intensity rating, based on the Fujita scale. These most severe known tornado incidents have occurred in Smyth and Washington counties. An F3 intensity tornado contains sufficient power to tear roofs and walls from well-built homes, uproot most trees, and lift objects such as

automobiles off the ground and send them flying through the air. These storms can generate wind speeds of 158-206 mph.

As for hurricanes, the Mount Rogers region stands far inland and is not part of the coastal zone region where hurricanes cause most of their damage. Generally speaking, the local region experiences the outer effects of hurricanes; this can include high winds and heavy rainfall. Since heavy rainfall mainly results in flooding, hurricane impacts in this plan are covered in the section on flooding. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to tornadoes and hurricanes has **not changed**.

Wildfires

Description

Wildfires occur as a regular part of the natural environment and are fueled by trees, brush and grasses. The three primary factors that influence these fires are topography, fuel and weather. Nationwide, the most frequent and worst of the wildfires occur in the western states, due to the dry climate and the prevalence of conifer and brush fuel types.

Wildfires also occur as a result of human actions, with increasing numbers of people choosing to live in wooded and wildland settings (described as the wildland urban interface), a factor that is also an issue for the eastern states, including the Mount Rogers region.

It is possible to group wildfires into four categories, as follows:

- Wildland fires occur in national forests and parks and are fueled by natural vegetation. Federal agencies typically hold the lead role for fire management and suppression for this group of fires.
- Interface or intermix fires happen at or near the junction between natural vegetation and the built environment.
- Firestorms are high-intensity fire events that are impossible to control or suppress until conditions change or the available fuel is gone. Firestorms have been a particular problem in the western states.

Prescribed fires and prescribed natural fires include those that are intentionally set and those that are allowed to burn as part of a fire management program to help clear out excessive accumulations of vegetative fuels.

A map showing wildfire risk in the Mount Rogers Region is located in the section titled Appendix I at the end of the document.

History

Wildfires in the Mount Rogers region are not as prevalent or as damaging as the massive fire events that occur every year in the western states. But the risks still exist due to the amount of forested land in the region, presence of contributing factors (steep slopes, pine woods, wildfire history), and residential development in remote, wooded areas throughout the region.

From 1995 through 2011 the Mount Rogers region had roughly 505 fires causing an estimated \$730,000 in damages as shown in the table below. Total property saved from destruction was estimated at more than \$23 million, according to data by the Virginia Department of Forestry (VDOF). The greatest number of fires occurred in Carroll County. Though it had fewer fires during the seven-year period, Washington County sustained fire damage to the largest total land mass.

VDOF data also points to debris burning and incendiary (arson) sources as the most common cause of fires in the Mount Rogers region. Those two sources accounted for 370, or 73%, of the 505 fires occurring between 1995 and 2011. Less frequent fire causes included equipment use, miscellaneous, smoking and children.

On the federal level, catastrophic fire losses in the western states have led to the development of the National Fire Plan and the Healthy Forests Initiative.

The National Fire Plan has resulted in more spending by state and federal agencies for improved prevention of wildfires. In the George Washington and Jefferson National Forests, which include the Mount Rogers region, the added funding supported efforts to reduce levels of fire-prone fuels and to establish a Type I firefighting crew. The National Fire Plan aims to provide sufficient resources for firefighting, rehabilitate fire-damaged ecosystems, reduce levels of fire-prone fuels found in the forests, and reduce fire risk faced by woodland property owners.

The Healthy Forests Initiative is a long-term plan promoted by federal agencies to improve management of federal lands and expedite forest and rangeland restoration projects. This effort is focused on communities near the wildland urban interface, in high-risk municipal watersheds, in watersheds containing habitat for threatened and endangered species, and where ecosystems are being destroyed by insect and disease epidemics and face increased threat of catastrophic wildfire. The wildland urban interface, particularly where rural housing development intermingles with the forest, is a concern for the Mount Rogers region.

Risk Assessment and Vulnerability

The Mount Rogers region covers an estimated 1.77 million acres of land. Of that total, an estimated 1 million acres of land (roughly 58%) is classified as forestland, with nearly all used as timberland. Areas subject to fire risk include the forestlands and places where people are building homes and residential subdivisions in wooded settings.

Virginia Department of Forestry (VDOF) criteria for determining areas of highest risk take into account factors such as density of historical wildfires, nature of the land cover (pines are more flammable than hardwoods), steepness and orientation of slope, population density, distance to roads, road density and developed areas, and presence of railroads. VDOF is incorporating its data into a GIS-based mapping system called ForestRIM to help make wildfire risk assessments and to identify woodlands home communities.

VDOF statistics for the state show most fires occur during the spring fire season (February-May) and on a lesser level during the fall fire season (October-December). More fires occur during these periods due to drier weather conditions, higher winds and the presence of cured fuels that can easily ignite. Causes of fires statewide include: open burning (30%), arson (20%), smokers (14%), miscellaneous (11%), children (9%), equipment use (7%), railroads (5%), lightning (3%), and campfires (1%).

In any given year on average, the Mount Rogers region may experience 70 wildfires, based on the state forestry data over the past 15 years.

Information on wildfire risk was being developed through VDOF and its GIS-based ForestRIM program, which mapped areas of risk into categories of low, moderate and high, based on criteria described above. The VDOF data did not include information on wildfires occurring on

federal lands (which would include the national forests and the Mount Rogers National Recreation Area).

The VDOF wildfire risk data as available in early 2004 showed:

- Carroll and Washington counties contained the largest amount of land subject to high risk of wildfire (more than 100,000 acres for each county).
- Washington County appeared to have the highest number of woodland homes subject to high risk of wildfire, followed by Carroll County.
- Substantial regions of high wildfire risk were also apparent for Smyth County (in its midsection and far northwestern corner, roughly 70,000 acres) and Grayson County (all along its eastern border and generally along the U.S. Rt. 58 corridor, roughly 60,000 acres).
- Areas with lesser acreages subject to high risk of wildfire included Bland (approximately 27,000 acres) and Wythe counties (roughly 20,000 acres).

Loss estimates have been based on the preliminary data available through the ForestRIM program (for housing counts) and estimates (for housing values) as applied by the MRPDC.

The values shown in the table below reflect the estimated value of all woodland homes in the region. In any given wildfire, only a portion of this housing stock would be at risk of destruction. However, any given woodland home that catches on fire faces a high risk of substantial or total destruction in some of the more remote parts of the local region. We have no way of estimating the potential loss for any given wildfire event.

LOSS ESTIMATES FOR WOODLAND HOMES, as of 2018

Locality	Est. Number Homes at Risk	Total Value of Homes at Risk	Est. Total Land Mass at Risk
Bland County	265	\$34,430,390	27,000 acres
Carroll County	712	\$92,507,312	> 100,000 acres
Grayson County (incl. Galax)	258	\$33,520,908	60,000 acres
Smyth County	475	\$56,895,500	70,000 acres
Washington County	804	\$96,303,120	> 100,000 acres
Wythe County	No data avail.		20,000 acres
City of Bristol	No data avail.		
City of Galax	67	\$8,705,042	

People with homes in woodland communities can face a substantial risk of wildfire and catastrophic loss. These homes generally cannot be insured against loss, which places the

entire financial burden on the homeowners. In some cases, private housing developments in wooded settings contain narrow, poorly designed roads that cannot accommodate fire-fighting equipment. Other potentially serious issues include lack of access to a water supply, remote location, unidentified roads, and presence of vegetation (pines, broom sage) that is more prone to catch on fire. Wildfire can result in loss of property, injury and loss of life. In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to wildfires has not changed. This is due to a lack of development in this short time span, and or lack of historical events.

The table on the following page shows a detailed breakdown the land cover in the Counties of the Mount Rogers Region.

Land Cover Information: Mount Rogers Region

County	All Land	Forest Land				Non-forest Land
		Total	Timberland	Woodland	Reserved	
Bland	229,545	172,214	166,519	na	5,695	57,331
Carroll	308,115	162,291	160,499	na	1,792	144,141
Grayson	285,304	173,873	161,883	na	11,991	111,431
Smyth	289,337	183,428	178,103	na	5,325	105,909
Washington	368,481	192,734	191,190	na	1,544	174,119
Wythe	296,480	153,942	153,610	na	332	142,538
Total	1,777,262	1,038,482	1,011,804	na	26,679	735,469

Windstorms

Description

Wind can be defined as the motion of air relative to the earth's surface. **Extreme wind events** may come in the form of cyclones, severe thunderstorms, tornadoes, downbursts and microbursts.

Wind speeds may vary from 0 at ground level to 200 mph in the upper atmosphere. Nationwide the mean annual wind speed falls in the 8-12 mph range. Frequently, wind speeds reach 50 mph and sometimes exceed 70 mph. Coastal areas from Texas to Maine may experience tropical cyclone winds with speeds of greater than 100 mph. The Mount Rogers region is located in Wind Zone III, with winds reaching up to 200 mph. A *special wind region* is known to occur in an area reaching from northeast Tennessee into southwest Virginia.

History

High winds in the Mount Rogers region blow down trees and power lines and cause varying amounts of property damage. A wind tunnel effect observed in a *special wind region* reaching from northeast Tennessee into southwest Virginia sometimes blows tractor trailers off I-77 in Carroll County. Some winds have lifted trucks off the highway and deposited them some distance away, like the effects of tornadoes. The image below is of such a storm that occurred in January 2003.



Since the writing of the original Hazard Mitigation Plan in 2005, Virginia Department of Transportation has installed a highway warning system, (overhead signs) designed to alert truck drivers to wind and fog incidents in the Fancy Gap area as well as other areas along the interstate system. The system is intended to help drivers avoid these hazards to the extent possible. In the Mount Rogers region, high winds have been known to tear down trees and power lines, blow in parts of buildings, and cause other kinds of property damage. An accounting of several recent high-wind incidents in the region is shown in the table below.

High Wind Incidents as of 2018

Date	Location	Description	Damages
10-5-95	Entire Mount Rogers region, plus much of SW VA	No description available.	\$20,000 property
11-11-95	Bland, Carroll, Galax	Two windstorms occurred on same day.	\$8,000 property
1-19-96	Carroll, Galax	No description available.	None reported
9-6-96	Carroll, Galax, Floyd, Franklin, Patrick	No description available.	\$175,000 property, \$200,000 crops
4-1-97	Carroll, Galax	Tractor-trailer blown over on I-77.	\$7,000 property

Date	Location	Description	Damages
2-4-98	Carroll, Galax, Patrick	Winds downed trees and damaged some mobile homes.	\$15,000 property
3-3-99	Bland, along with Floyd, Giles, Montgomery, Pulaski	Winds downed trees and power lines.	\$11,000 property
4-12-99	Carroll, Galax, Franklin, Patrick	High winds blew over a tractor-trailer on Rte. 58 and a mobile home (Patrick County). Winds blew over two tractor-trailers 5 miles south of Fancy Gap on I-77.	\$14,000 property
1-13-00	Entire Mount Rogers region, plus much of SW VA	Winds downed large trees and power lines, caused minor property damage in all counties. Winds at 68 knots in Bland County.	\$180,000 property
3-20-00	Smyth, Wythe	Winds downed trees and power lines.	\$6,000 property
1-10-01	Carroll, Galax, Bedford	Winds of 65 knots blew over 3 tractor-trailers on I-77. Much damage in Bedford County with shingles and siding stripped off more than 90 homes. Winds also downed power lines, power poles and numerous trees.	\$410,000 property
3-6-01	Carroll, Galax, Grayson, Patrick	Winds associated with a snowstorm downed trees and power lines. Winds blew in a wall and partly collapsed a roof on an auto repair shop in Carroll County.	\$80,000 property
3-10-02	Carroll, Galax, Grayson	High winds downed trees across Grayson and Carroll counties.	None reported
12-25-02	All of Mount Rogers region, plus wide area of SW VA	Winds downed numerous trees and power lines. A tree fell on a house in Roanoke, damaging the roof and crushing the front porch.	\$20,000 property
1-8-03	Carroll, Galax, Grayson, other parts of SW VA	Winds of 50 knots downed trees and power lines. Many downed trees in Grayson County damaged several homes.	\$80,000 property
1-9-03	Carroll, Galax, Wythe, plus 6 other SW VA counties	Winds of 60 knots downed trees and power lines.	None reported
1-23-03	Carroll, Galax, Wythe, other parts of SW VA	Winds of 100 knots blew over 6 tractor-trailers on I-77, near Fancy Gap. Trees and power lines downed throughout region.	\$50,000 property
2-22-03	All of Mount Rogers region, plus wide reaches of SW VA	Winds of 80 knots downed numerous trees and power lines. Many people lost power across the region. Roof blown off an outbuilding in Tazewell County.	\$3,000 property

Date	Location	Description	Damages
5-11-03	Bland County	Winds of 70 knots downed several trees and power lines.	None reported
7-15-05	Grayson County	A small microburst causing winds of 70 knots blew the roof off a vacant hotel, and damaged 10 trees.	None reported
3-06-11	Carroll County	High winds overturned 2 tractor trailers on Interstate 77 at the 2.8 mile marker.	\$200,000 property
4-17-14	Carroll County	High winds overturned 2 tractor trailers on Interstate 77 at the between the 2.7 and 2.8 mile marker.	\$300,000 property

The details for these high wind events were drawn from the National Climatic Data Center's database, as well as from news reports and emergency management personnel. For some incidents, even when damages are reported, an accompanying description of the event is not always available.

Risk Assessment and Vulnerability

Of the high wind events reported to the National Climatic Data Center, some part of the Mount Rogers region experienced damaging winds at least 15 times in eight years. That amounts to an average of roughly twice a year when winds are known to cause at least some damage.

Though the entire region is subject to high winds, Carroll County and the City of Galax appear to be hit the most often. Given the regionalized nature of the available data, it is not possible to quantify what a typical wind incident might consist of and how much cost it may create for the community or to private individuals.

Damage estimates through the National Climatic Data Center are reported by incident rather than by locality, unless the damages are confined to a small geographic area. Based on the reported incidents, damages may range from zero to up to more than \$400,000

The reported damages include downed trees, tree limbs and power lines; shingles, siding and roofs torn away from homes; damage and uprooting of mobile homes; tractor-trailers blown over and sometimes lifted off the highway, particularly near the Fancy Gap area of Interstate 77; and loss of electrical power. High wind events, while they occur frequently, appear to cause only scattered property damage. This hazard does not appear to pose a disaster-level hazard to the Mount Rogers region as a whole, although some localities regularly sustain high winds.

In the five-year time span since the original Hazard Mitigation Plan was written, the region's vulnerability to windstorms has not changed.

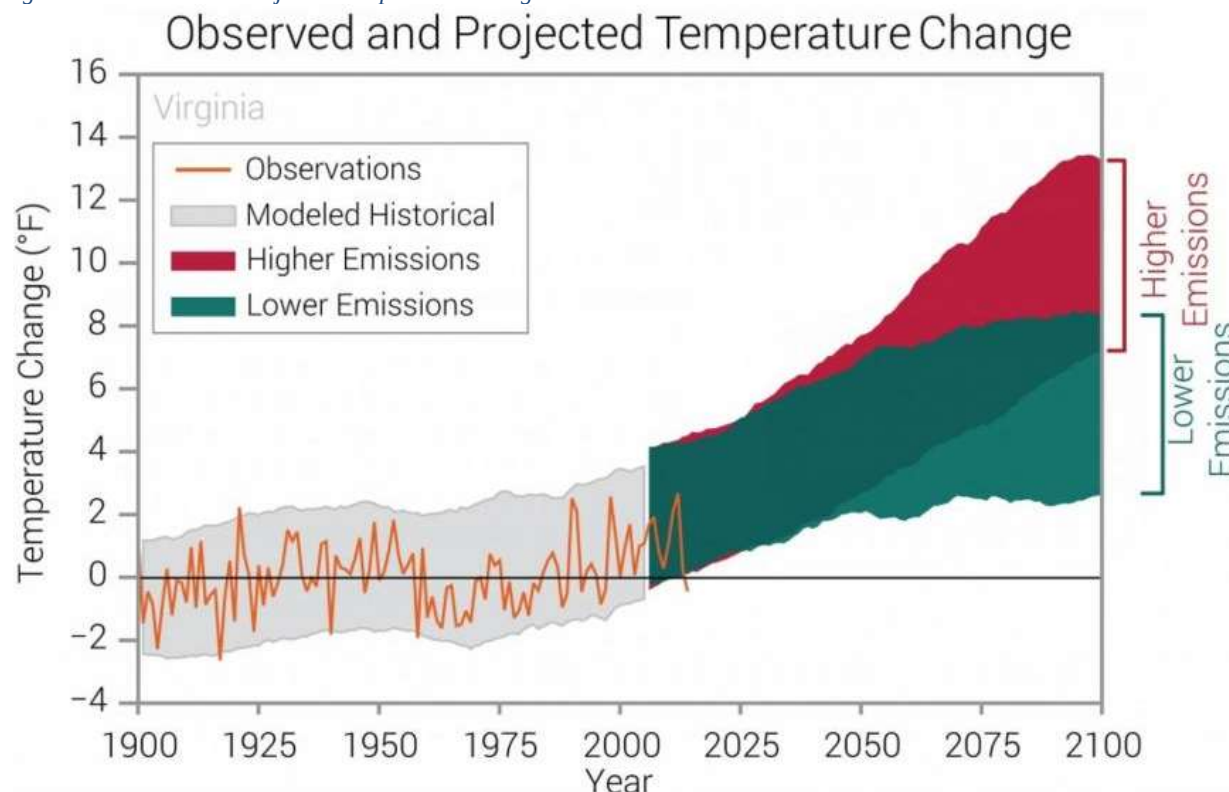
Climate Change

2017 NOAA Technical Report NESDIS³

Virginia has a humid climate with very warm summers and moderately cold winters. The climate exhibits substantial regional variation due to the state's diverse geographic elements, which include the Appalachian Mountains and Blue Ridge Mountains in the west and the Atlantic coastal region in the east. Temperature and precipitation patterns are highly influenced by these geographic features with the west and north being cooler and drier than the eastern coastal region. Statewide average temperatures range from 35° F in January to 75° F in July. The amount of rainfall generally decreases toward the west. For example, total annual precipitation is less than 40 inches in parts of the central mountain region of the state compared to around 50 inches along the tidewater coastal region.

³ Runkle, J., K. Kunkel, L. Stevens, S. Champion, B. Stewart, R. Frankson, and W. Sweet, 2017: Virginia State Summary. *NOAA Technical Report NESDIS*

Figure 1: Observed and Projected Temperature Change



Observed and projected changes (compared to the 1901–1960 average) in near-surface air temperature for Virginia. Observed data are for 1900–2014. Projected changes for 2006–2100 are from global climate models for two possible futures; one in which greenhouse gas emissions continue to increase (higher emissions) and another in which greenhouse gas emissions increase at a slower rate (lower emissions). Temperatures in Virginia (orange line) have risen about 1.5°F since the beginning of the 20th century. Shading indicates the range of annual temperatures from the set of models. Observed temperatures are generally within the envelope of model simulations of the historical period (gray shading). Historically unprecedented warming is projected during the 21st century. Less warming is expected under a lower emissions future (the coldest years being about as warm as the hottest year in the historical record; green shading) and more warming under a high emissions future (the hottest years being about 11°F warmer than the hottest year in the historical record; red shading). Source: CICS-NC and NOAA NCEI.

Since the beginning of the 20th century, temperatures have risen approximately 1.5°F. The 1930s and 1950s were very warm, followed by a period of generally below average temperatures during the 1960s through early 1980s (Figure 1). Although the 5-year average highest number of very hot days (maximum temperature above 95°F) and corresponding number of very warm nights (minimum temperature above 75°F) occurred in the early 1930s (Figures 2a and 2b), gradual warming has occurred since the early 1990s.

Figure 2: Observed Number of Very Hot Days and Very Warm Nights

Figure 2



Figure 2: The observed (a) number of very hot days (maximum temperature above 95°F), (b) number of very warm nights (minimum temperature above 75°F), (c) annual precipitation, and (d) summer precipitation, averaged over 5-year periods. The values in Figures 2a and 2b are from nine long-term reporting stations. The values in Figures 2c and 2d are from NCEI's version 2 climate division dataset. The dark horizontal lines represent the long-term average. The number of very hot days and very warm nights peaked in the 1930s and has subsequently remained near to below the long-term average. There is no overall trend in average annual precipitation; summer precipitation has been below or near average during the most recent decade (2005–2014). Source: CICS-NC and NOAA NCEI.

There is no overall trend in average annual precipitation in Virginia (Figure 2c), although over the past two decades (1995–2014), annual precipitation has been generally above the long-term average. The driest multi-year periods were in the early 1930s and late 1960s; the wettest period was in the 1970s. The driest 5-year period was 1963–1967 and the wettest was 1971–1975 (Figure 2c). The year 2003 was the wettest on record (statewide average of 62 inches) while 1930 was the driest (25 inches). There is an upward trend in the annual number

of extreme precipitation events (precipitation greater than 2 inches) over the past two decades (1995–2014), with the number of such events in 1995–1999 surpassing record levels of the early 1940s. Average annual summer precipitation (Figure 2d) has been below or near the long-term average during the most recent decade (2005–2014).

Figure 3: Observed Number of Very Cold Nights

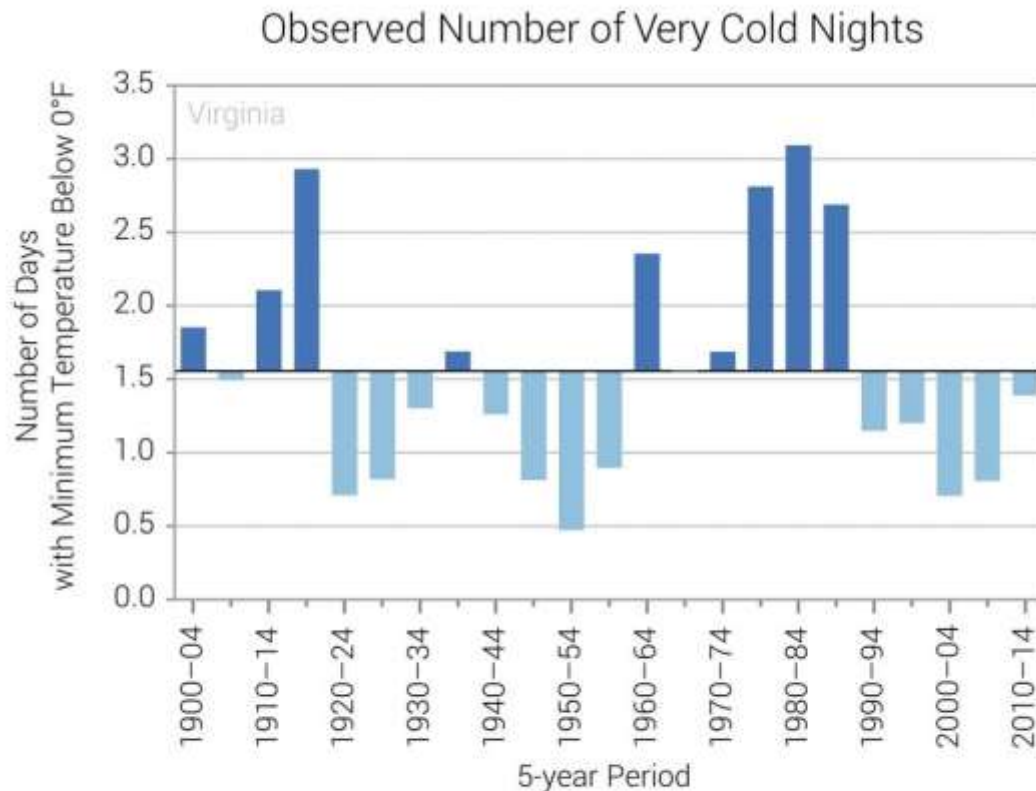


Figure 3: The observed number of very cold nights (minimum temperature below 0°F) for 1900–2014, averaged over 5-year periods; these values are averages from nine long-term reporting stations. The number of very cold nights dropped below the long-term average between the 1920s and 1960s, followed by an above average number of such events until the early 1990s. The number of very cold nights has remained below average for the past two decades (1990–2014). The dark horizontal line is the long-term average (1900–2014) of 1.6 days per year. Source: OCS-NC and NOAA NCEI.

Average annual temperatures during the 21st century (2000–2014) have exceeded the previous highs of the 1930s. A winter warming trend is reflected in the below average number of very cold nights (minimum temperature below 0°F) since 1990 (Figure 3). Average summer temperatures in the most recent decade (2005–2014) exceeded those in the early 1930s (Figure 4).

Figure 4: Observed Summer Temperature

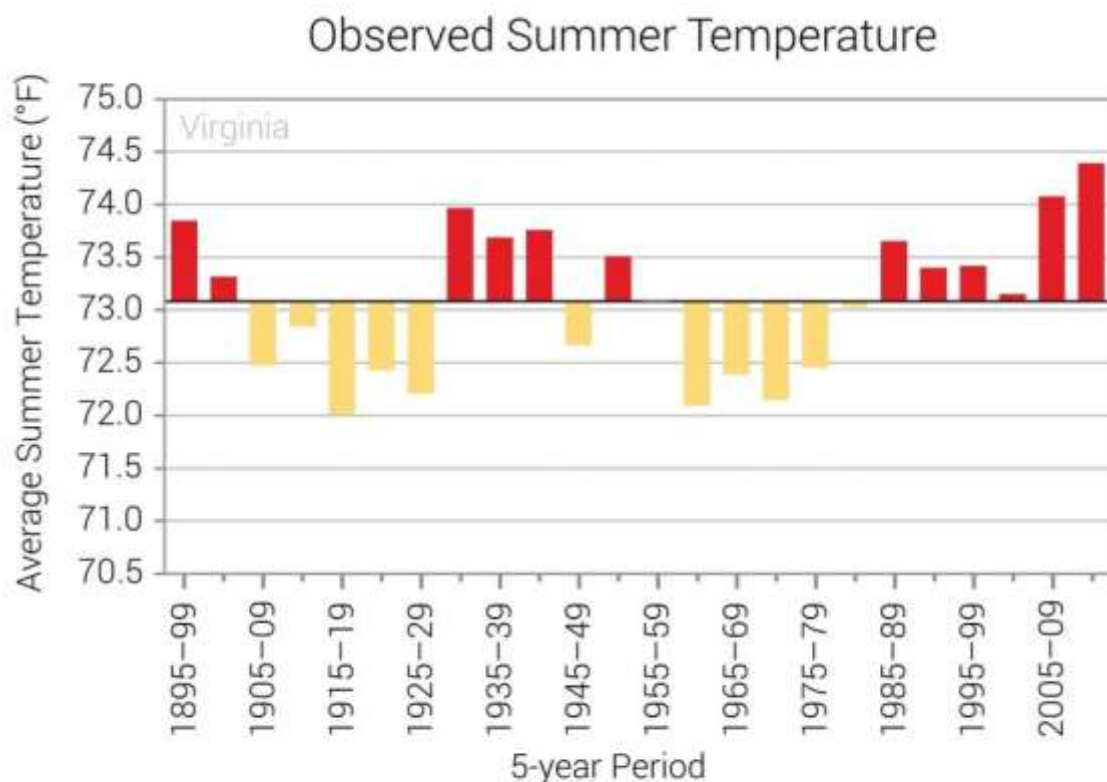


Figure 4: The observed annual summer temperature for 1900–2014, averaged over 5-year periods; these values are averages from NCEP's version 2 climate division dataset. Average annual summer temperature has been the warmest on record over the last decade (2005–2014). The dark horizontal line is the long term average (1900–2014) of 73.1°F. Source: CICS-NC and NOAA NCEP.

Weather hazards in the state include severe thunderstorms, tornadoes, winter storms, tropical storms, hurricanes, droughts, and heat waves. Virginia was affected by 35 of the 144 U.S. billion-dollar disaster events that occurred between 1980 and 2012. The costliest event to ever affect the state was Superstorm Sandy (a post-tropical storm) in 2012, which caused severe coastal flooding from storm surges. The 2012 North American Derecho, an intense, long-lasting series of thunderstorms characterized by hurricane-force winds, was also very costly to the state, causing \$3 billion in total damages. This historic summer derecho event interrupted power for more than 1 million residents in Virginia, Washington D.C., and Maryland. Winds of up to 70 mph were recorded at Reagan National Airport, causing portions of Northern Virginia to be without emergency 911 services. Tropical Storm Lee in 2011 also resulted in total damages of \$3 billion, with Washington Dulles International Airport receiving a total of 8.74 inches of rainfall from the storm.

Under a higher emissions pathway, historically unprecedented warming is projected by the end of the 21st century (Figure 1). Even under a pathway of lower greenhouse gas emissions,

average annual temperatures are projected to most likely exceed historical record levels by the middle of the 21st century. However, there is a large range of temperature increases under both pathways, and under the lower pathway, a few projections are only slightly warmer than historical records. If the warming trend continues, future heat waves are likely to be more intense. This will pose human health risks, particularly in the large metropolitan areas. While heat waves are projected to become more intense, cold waves are projected to become less intense.

Figure 5: Projected Change in Annual Precipitation

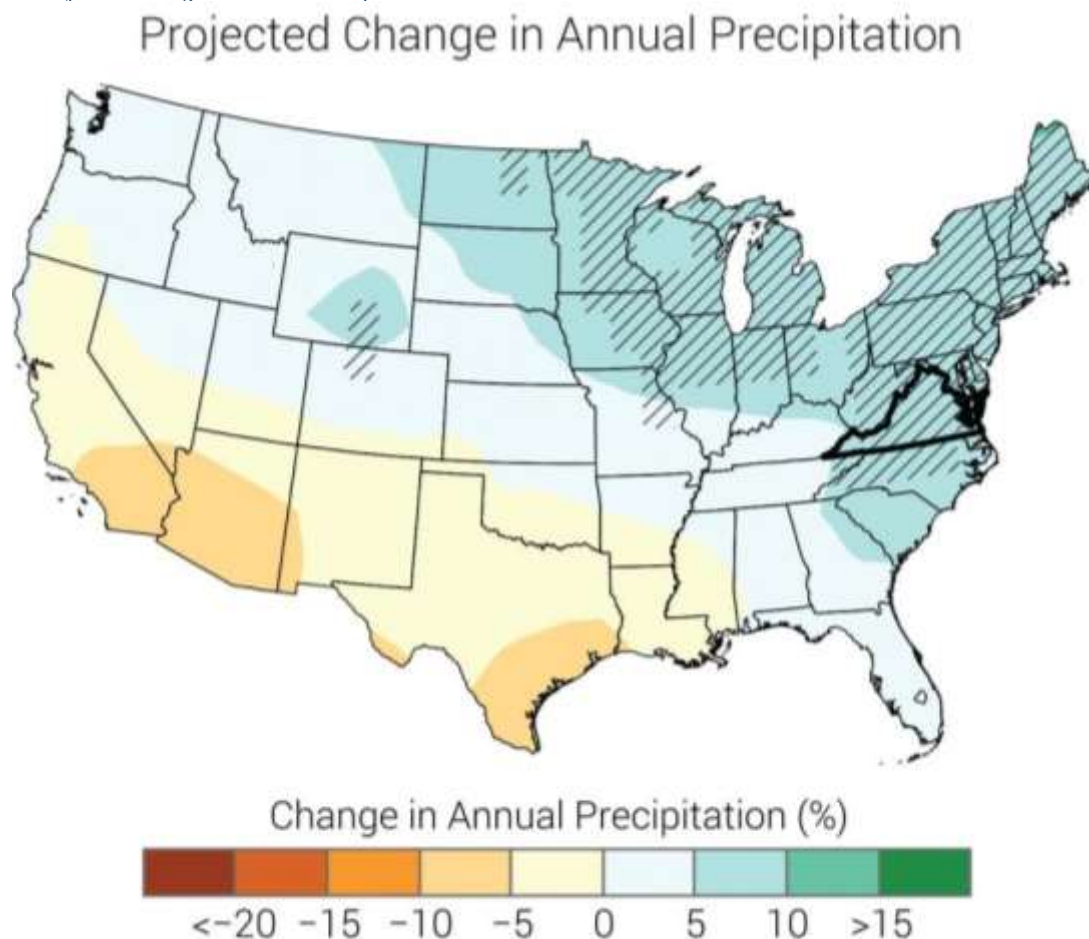


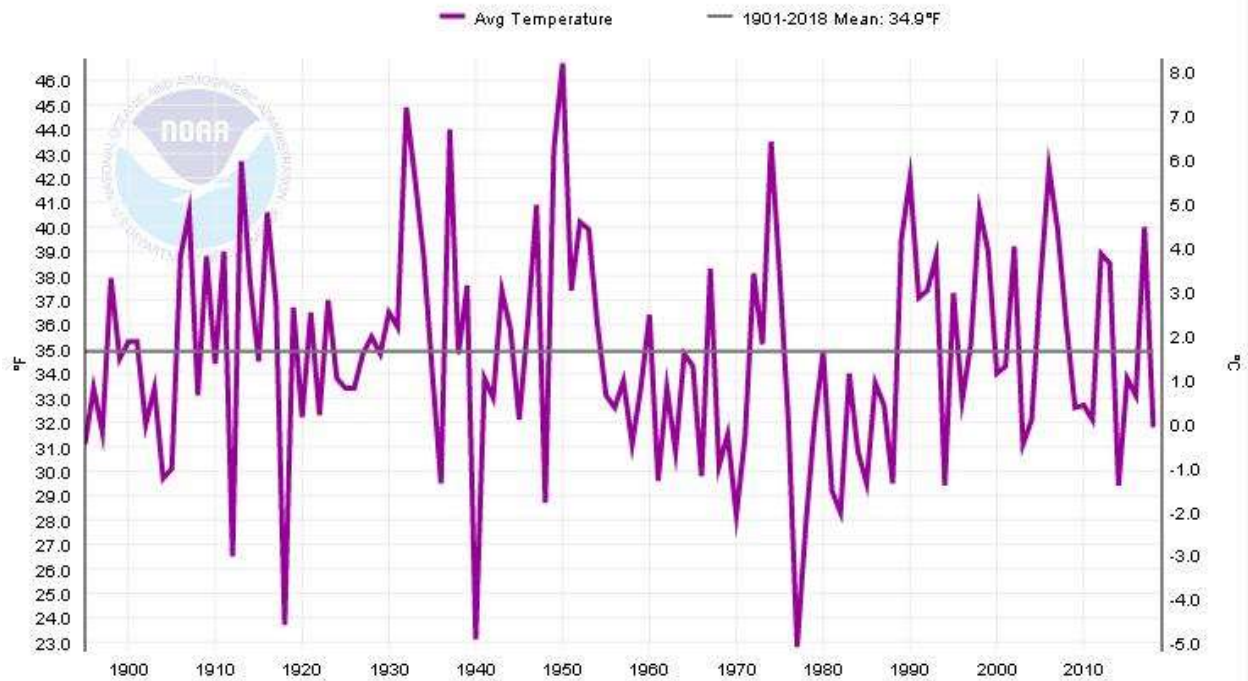
Figure 6: Projected change in annual precipitation (%) for the middle of the 21st century compared to the late 20th century under a higher emissions pathway. Hatching represents areas where the majority of climate models indicate a statistically significant change. Virginia is part of a large area of projected increases that includes all of the northeastern United States. Source: GISS-NC, NOAA NCES, and NEMAC.

Annual precipitation is projected to increase in Virginia (Figure 5). The state is part of a large area of projected increases in precipitation across the northern and central United States by the middle of the 21st century. The number and intensity of heavy precipitation events is also projected to increase, continuing recent trends. Drought is a periodically-occurring natural

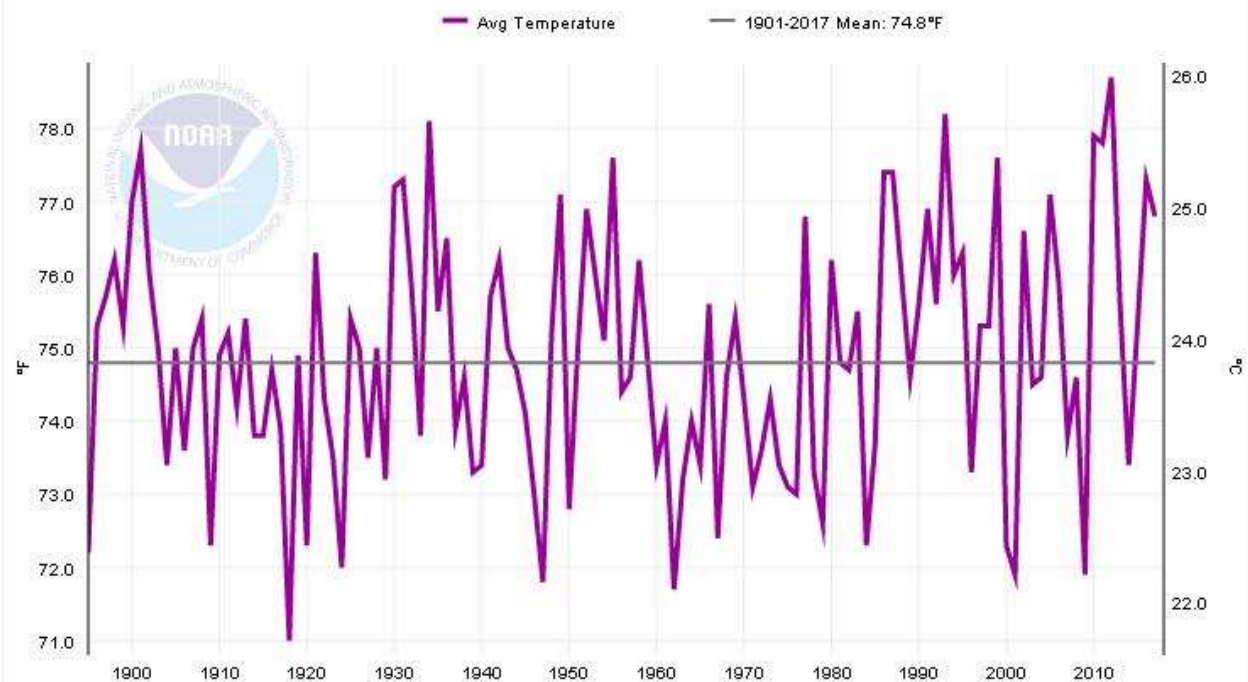
phenomenon within the state. Even if overall precipitation increases, naturally occurring droughts are projected to be more intense because higher temperatures will increase the rate of loss of soil moisture during dry spells. During such periods, decreased water availability will likely have important implications for the state's agricultural economy.

Increasing temperatures raise concerns for sea level rise in coastal areas. Since 1880, global sea level has risen by about 8 inches. It has risen even more along the Virginia coast with a rise of 14.5 inches between 1930 and 2010 at Sewell Point. Global sea level is projected to rise another 1 to 4 feet by 2100 as a result of both past and future emissions due to human activities with greater rises possible along the Virginia coast following historical trends. Sea level rise has caused an increase in tidal floods associated with nuisance-level impacts. Nuisance floods are events in which water levels exceed the local threshold (set by NOAA's National Weather Service) for minor impacts. These events can damage infrastructure, cause road closures, and overwhelm storm drains. As sea level has risen along the Virginia coastline, the number of tidal flood days (all days exceeding the nuisance level threshold) has also increased, with the greatest number occurring in 2007.

Virginia, Average Temperature, January



Virginia, Average Temperature, July





Other Hazards

Animal-related Damage

Appalachian Power have had a problem in the past 5 years with bears scratching power poles rendering them structurally weakened to the point they need to be replaced. Bears have also been known to climb the poles and electrocute themselves to death causing a localized power outage. This problem has been reported in Washington and Grayson counties in the Mount Rogers District.

Hazard Identification and Risk Assessment: Conclusions

Hazard Risk Matrix

The risk assessment analysis has been used to create the Hazard Risk Matrix shown below to provide a guideline on the relative importance of natural hazards across the entire Mount Rogers region. The rankings for individual localities will differ from the regional matrix due to differences in terrain, impacts from flooding, potential for wildfire, and so on. This plan rates natural disasters as an average over time. It was the view of the steering committee that our risk to various natural hazards in the Mount Rogers Region had changed little since the plan update five years ago. The risk ratings went down slightly for dams and earthquakes. Our rankings do not necessarily reflect the rankings shown the Hazard Rankings Maps in the Appendix, however, we feel confident that these rankings are consistent with the priorities of our region.

Hazard Risk Matrix

Hazard	Frequency	Geographic Extent	Impact	Hazard Risk Index Rating
Dam Safety	2	1	3	6
Drought	2	4	1	7
Earthquakes	1	2	1	4
Flooding	4	2	3	9

Hazard	Frequency	Geographic Extent	Impact	Hazard Risk Index Rating
Karst and Sinkholes	2	1	1	4
Landslides	1	1	2	4
Snow/Ice	4	4	1	9
Thunderstorms/Lightning	4	1	1	6
Tornadoes/Hurricanes	4	1	1	6
Wildfires	4	1	2	7
Winds	4	2	1	7

Note: Highest numbers mean highest risk or impact.

The frequency column is based on likelihood of occurrence:

4=More than once in 10 years
3=More than once in 10-100 years
2=More than once in 100-1,000 years
1=Less than once in 1,000 years

The geographic extent column relates to the extent any given hazard affects the jurisdiction:

4=More than 50% of jurisdiction affected
3=Estimated 25-50% of jurisdiction affected
2=Estimated 10-25% of jurisdiction affected
1=Less than 10% of jurisdiction affected

The impact column relates to the amount of death, injury, destruction and inconvenience created for the affected area, as shown below:

4=Many deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.
3=Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities more than one week.
2=Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities more than one day.
1=Very few injuries, if any. Only minor property damage and minimal disruption of quality of life. Temporary shutdown of critical facilities.

Natural hazards on a regional basis can then be ranked as shown in the table below. As already noted, there will be some variances for some localities.

Hazard Risk Categories

High Risk Hazards (score 8 or higher) ➡	Flooding Severe Winter Storms/Ice
Moderate Risk Hazards (score of 7) ➡	Drought Wildfires Winds
Low Risk Hazards (score of 6 or less) ➡	Dam Safety Earthquakes Karst and Sinkholes Landslides Thunderstorms/Lightning Tornadoes/Hurricanes

Hazard Risk Assessment By Jurisdiction

The main natural hazards faced by the 20 local jurisdictions in the Mount Rogers region are displayed in the matrix shown below. This data has been drawn from the descriptions given in the preceding pages of this section. The table below was reviewed and updated by the steering committee in the Hazard Mitigation Plan Update.

Identified Natural Hazards, By Locality
Mount Rogers Region, Virginia (6 counties, 2 cities, and 12 towns)

Hazard Type	Hazards Identified	Individual Localities																			
		Bland County	Carroll County	Grayson County	Smyth County	Wash. County	Wythe County	City Bristol	City Galax	Abingdon	Chilhowie	Damascus	Fries	Glade Spring	Hillsville	Independence	Marion	Rural Retreat	Saltville	Troutdale	Wytheville
Avalanche																					
Coastal Erosion																					
Coastal Storm																					
Dam Safety	X	X	X	X	X	X	X	na	na	na	na	na	na	na	na	na	na	na	na	na	
Drought	X	M	M	M	M	M	M	L	L	L	L	L	L	L	L	L	L	L	L	L	
Earthquake	X	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
Expansive Soils																					
Extreme Heat																					
Flood	X	H	L	H	H	H	H	H	H	H	H	H	H	H	L	L	H	L	H	L	M
Hailstorm																					
Hazardous Material Spills	X	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
Hurricane (see Tornadoes)																					
Karst and Sinkholes	X	X	na	na	X	X	X	na	na	na	na	na	na	na	na	na	na	na	na	na	
Landslide	X	L	H	H	H	H	L	na	na	na	na	na	na	na	na	na	na	na	na	na	
Severe Winter Storm/Ice	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
Tornadoes/Hurricanes	X	L	L	L	M	M	L	L	L	M	M	L	L	M	L	L	L	L	L	L	
Tsunami																					
Volcano																					
Wildfire	X	M	H	M	H	H	H	na	M	na	na	na	na	na	na	na	na	na	na	na	
Windstorm	X	M	H	M	M	M	M	M	H	M	M	M	M	M	H	M	M	M	M	M	
Thunderstorms/Lightning	X	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	

Notes:

The term "na" means the hazard data is not available.

The H, M, and L symbols refer to the relative likelihood and/or relative severity of given hazards, comparing one locality to another. H = highest likelihood, M = moderate likelihood, and L = low likelihood. X indicates the hazard was identified, but further hazard assessment data was lacking.

MITIGATION STRATEGY

Defining Hazard Mitigation

FEMA defines hazard mitigation as “sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.”

These sustained actions can come in the form of physical projects (enlargement of drainage culverts, streambank stabilization and restoration, vegetation removal, installation of advance warning systems, etc.) or educational programs designed to help local officials and property owners understand and reduce hazard risk (media campaigns, special mailings, special events, self-help guides, etc.).

For some hazards, these actions could involve simply getting out of the way – such as not building in the floodplain or removing structures from the floodplain, when feasible. For other hazards, such as major weather events that cover large areas of landscape, the mitigations could involve more indirect methods, such as improved building codes to strengthen structures and reduce damages from violent windstorms or major blizzards. Some hazards – such as an F4 or F5 tornado – carry such force that a direct hit means destruction is assured, although properly built “safe rooms” can reduce loss of life.

In the previous section of this study, we have identified and ranked the main natural hazards that can afflict communities in the Mount Rogers region of southwest Virginia. We are now moving on in this next section to describe the following:

- Planning process used to develop the hazard mitigation strategy.
- Goals and objectives for the overall hazard mitigation strategy for the region.
- Recommended hazard mitigations on a locality-by-locality basis.

Process Used to Develop Mitigation Strategy

MRPDC staff, the Hazard Mitigation Advisory Team, and representatives from the local jurisdictions worked together to develop the Hazard Mitigation Strategy for the Mount Rogers region.

Following the guidance found in the FEMA Local Multi-Hazard Mitigation Planning Guidance, MRPDC staff identified the at-risk hazards that affect the region and its 20 local jurisdictions.

This was done based on available data. With the basic data assembled, the MRPDC organized a Hazard Mitigation Steering Committee to review and make comments on the hazard vulnerability assessments. Some of the recommended mitigations emerged from those discussions, such as a suggestion by a representative from Appalachian Power to work to improve coordination among emergency response organizations to improve snow-removal and accelerate restoration of electric power following major snow and ice storms. In addition, the MRPDC mailed out draft copies of the hazard vulnerability assessments to the 20 local jurisdictions and invited comments from local planners, emergency services personnel, and the public.

MRPDC staff moved on to develop the specifics for both the Hazard Mitigation Strategy and proposed mitigations. In some cases, we have followed the advice of experts, such as the applications of Firewise methods to reduce wildfire risks. In other cases, we have proposed mitigation strategies based on limitations of the available data and on long-understood shortcomings, such as the lack of accurate floodplain mapping (as determined by hydrological engineering studies) and the lack of floodplain mapping in some areas known to be flood-prone but passed over by previous mapping efforts.

For flood hazards, which affect much of the population of the Mount Rogers region, MRPDC staff applied the principles of FRED (i.e., Fix and Repair, Elevate, Relocate or Demolish). Staff developed generalized cost estimates based on the experience of the staff and others in the region that had past experience in such matters.

All participants in the process have always recognized that any major undertakings will only be possible with outside funding support (i.e., state and federal grants), since most localities in the Mount Rogers region are sparsely populated, sparsely staffed, and lack the financial means to provide little other than basic government programs and services.

Regional Hazard Mitigation Strategy

The following outline consists of goals and objections for the natural hazard mitigation strategy to be applied in the Mount Rogers region of Virginia. These goals were reviewed by the members of the steering committee as well as other stakeholders during the update process. They were reviewed in our meetings throughout the summer months of 2011, as well as reviewed by participants on an individual basis.

Goal: Addition of a Nexedge System or the RIOS-Comlinc system (radio communications system) for each locality in the Mount Rogers District

Objective: Make communications better across different localities.

Strategy:

- Link counties together for a better coverage of communications and reduce response time in times of natural disasters.

Cost Benefit: Better communications will help reduce the loss of live and property

Responsible Office: Police; Fire; and Rescue.

Goal: Protect Lives and Property from Flooding

Objective: Increase Public Awareness

Strategy:

- Promote and make the public aware of the need for mitigation
- Promote planning as well as membership in the National Flood Insurance Program

Objective: Improve data resources to improve the regional Hazard Mitigation opportunities.

Strategy:

- Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.
- Update FEMA flood plain maps throughout the Mount Rogers region. (FEMA/DCR responsible for updating floodplain maps).
- Develop new FEMA floodplain maps for areas not previously mapped.

Objective: Provide opportunities for property owners of flood prone and/or repetitive loss properties to acquire and relocate from the flood plain, elevate structures, acquire and demolish, flood proof their property, or apply for funds to construct minor localized flood control projects.

Strategy:

- Pursue funding for such projects from federal and state agencies such as FEMA, VDEM, as well community development block grants.

Cost Benefit: The benefits of flood protection are ongoing. Money should be invested wisely to protect existing structures, as well as to prevent future losses to new structures. This will be a savings to the localities, as well as to the property owners in the form of repair and insurance cost. \$100,000 spent today, could save millions of dollars in damage over long periods of time, as well as save lives.

Responsible Office: MRPDC; local Board of Supervisors; Local Emergency Management

Goal: Encourage Public Safety in the Event of Snowstorms, Ice and High Winds, Earthquakes, Landslides, Tornadoes, Hurricanes, and/or Drought

Objective: Increase public awareness of actions before, during, and after such events.

Strategy:

- Educate public on the methods recommended by the American Red Cross to prepare for these events.
- Inform motorist of high wind potential along selected highways.

Cost Benefit: Public awareness is crucial to prevent losses due to natural hazards. Not only prevention, but a large savings of time and money could be seen during and after such adverse weather. \$100,000-\$500,000 spent on increased road advisories will save money on working traffic accidents, as well as work hours lost in Traffic.

Responsible Office: VDOT; Local Board of Supervisors; Red Cross; VDEM

Goal: Increase Dam Safety for the Mount Rogers Region

Strategy:

- Improve the availability of data resources for dam safety to save lives and property coordinated through agencies such as FEMA and the Department of Conservation and Recreation.

Cost Benefit: Knowledge and being aware of potential hazards plays a key role in their prevention. Due to many recent events, information on dams in the region is hard to come by. Property owners in a high-risk area could benefit from greater knowledge of possible dangers. For a minimal cost, this could save property as well as lives.

Responsible Office: Department of Conservation and Recreation; Corps of Engineers

Goal: Minimize the Impact of Wildfires on Woodland Communities.

Objective: Increase public awareness.

Strategy:

- Educate homeowners on Firewise and Department of Forestry programs on methods to cope with drought.
- Support and encourage the existing education efforts of the American Red Cross in ways homeowners can reduce the risk of wildfires by property maintenance and cleanup.
- Projects creating perimeters around homes, structures, and critical facilities through the removal of reduction of flammable vegetation.
- Projects that apply ignition resistant techniques and/or non-combustible materials on new and existing homes, structures, and critical facilities.
- Projects that remove vegetative fuels proximate to the at-risk structure that, if ignited, pose significant threat to human life and property, especially critical facilities.

Cost Benefit: Education is invaluable to prevent Wildfires. For a minimal cost, educational programs for homeowners in woodland communities will help minimize fire damage to property, and natural resources.

Responsible Office: USDA; VA Dept. of Forestry; American Red Cross; FireWise; Local Fire and Rescue

Goal: Encourage Citizens to Prepare for Possible Damage from Sinkholes and Karst

Objective: Increase public awareness

Strategy:

- Make sure local building codes and zoning ordinances address placement of structures in such areas.
- Educate the public on karst safety through educational efforts such as agencies like the Virginia Cave Board.
- Map areas that are in danger of karst and sinkholes with the state division of mineral resources, and the Virginia Cave Board.

Cost Benefit: Having and making available good data where land is susceptible to karst and sinkholes can pay dividends in the future. Accurate mapping of such areas made available to local officials can greatly reduce the risk of structures and roads being damaged by these hazards.

Responsible Office: Local Building inspector; VDOT, Department of Conservation and Recreation

Goal: Minimize Damage due to Thunderstorms as well as Tornadoes/Hurricanes

Strategy:

- Support and encourage existing efforts by the American Red Cross to educate homeowners on retrofitting and mitigation.
- Educate citizens on tornado and severe storm safety.

Cost Benefit: Public awareness is crucial to prevent losses due to natural hazards. Not only prevention, but a large savings of time and money could be seen during and after such adverse weather.

Responsible Office: Local emergency management departments

Goal: Reduce the risk of hazards on new buildings and infrastructure

Objective: Encourage continued practice of proper building site construction.

Strategy:

- Incorporate the hazard mitigation plan into comprehensive planning.
- Use the hazard mitigation plan in the permit process for new construction in floodplain or high hazard areas.

Cost Benefit: Proper planning in new construction will result in a large savings after natural disasters.

Responsible Office: Local building inspectors.

Regional Strategic Priorities

This section outlines the top regional priorities for Pre-Disaster Hazard Mitigation in the Mount Rogers region. These have been determined through discussions among MRPDC staff and the members of the Hazard Mitigation Steering Committee. The priorities presented in this section correspond to the objectives listed under the six goal statements given for the regional strategic plan described above. MRPDC staff initially developed the goals-and-objectives outline, and then presented it to the Hazard Mitigation Advisory Team for comment.

The Steering Committee ranked individual objectives as follows, high priority, mid-level priority, and lowest priorities. More than one objective could be assigned to any given priority level. Each marker carried a value of one point, with the highest point scores indicating the objectives of highest importance. The Steering Committee reviewed the table below from the original 2005 Hazard Mitigation Plan and determined that it was still applicable.

Prioritized Listing of Hazard Mitigation Objectives

Objective	Points
Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	12
Promote need for pre-disaster mitigation to prevent future losses.	12
Update FEMA floodplain maps as applicable throughout the Mount Rogers Region.	12
Promote prevention methods homeowners can undertake.	12
Implement in-the-ground projects to reduce natural hazard risks.	9
Provide copies of the Pre-Disaster Hazard Mitigation Plan to the 20 local jurisdictions in the Mount Rogers region.	8
Support projects offering the best benefit/cost ratio.	6
Publicize successful mitigation projects.	5
Support guidelines for flood mitigation:	5
A property is a candidate for relocation if the first-floor floods twice (or more) in 50 years.	5
A property is a candidate for elevation or flood-proofing if flooding occurs below the first floor twice (or more) in 50 years.	5
Meet requirements of the Uniform Relocation Act.	5
The top priorities for federal relocation assistance should be based on need, frequency of flooding, and a favorable benefit/cost ratio.	5
Create project serving multiple objectives (social, community, economic, mitigation).	4
Support educational efforts of existing organizations, such as the American Red Cross.	4
Develop new FEMA floodplain maps for flood-prone areas not previously mapped.	3
Promote useful programs, such as the National Flood Insurance Program.	1

Support state/federal efforts to improve data resources for dam safety, drought, karst and sinkholes, landslides, thunderstorms, and windstorms.	1
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Capabilities Assessment

Most localities in the Mount Rogers region are for the most part limited by financial issues and staff size. The capabilities of the localities are largely defined through staff and organizational capacity, technical capacity, and fiscal capacity. Most of our localities, especially the towns, require assistance due to the size of budgets, and number of personal. Many of the strategies from the 2012 plan have not been completed due to the lack of existing resources.

Existing Locality Staffing, as of 2018	
Locality	Number of Staff
Bland Bland	1
Carroll County	1
Grayson County	1
Smyth County	2
Washington County	2
Wythe County	1
City of Galax	1
City of Bristol	1
Hillsville	1
Independence	0
Fries	0
Troutdale	0
Marion	1
Chilhowie	1
Saltville	0
Abingdon	6
Damascus	0
Glade Spring	0
Wytheville	1
Rural Retreat	1

All localities in the Mount Rogers Planning District have little to no staff dedicated to work on natural hazards and mitigation planning. For the counties, cities and larger towns, other departments are available to assist on special projects and in times of emergency. For the six smallest towns, there is no staff dedicated to all hazards planning; in fact, for five of the six smallest towns, MRPDC staff provides town management, due to small populations and lack of funding for full-time staff. The Mount Rogers PDC is the agency that fills this role in almost

100% capacity. The PDC also assists all 20 localities in hazard mitigation planning. Contact information for these departments is listed in the multi-jurisdiction summary sheet in the appendix.

Community Summaries & Recommended Mitigations

The following section provides descriptions, by jurisdiction, of high- and moderate-risk natural hazards, past or ongoing mitigations (if any), and recommended mitigations resulting from this study. For the hazards of floods, wildfire, dam safety, snowstorms/ice, high winds, landslides, sinkholes/karst, drought, hurricanes/tornados, and earthquake mitigation strategies for each locality are included in the recommended mitigations section. The hazard of thunderstorm/lightening did not warrant a local mitigation action due to its low risk. The section is organized in alphabetical order by county and the towns contained within that county, followed by the cities. This includes:

- Bland County
- Carroll County and the Town of Hillsville
- Grayson County and the towns of Fries, Independence, and Troutdale
- Smyth County and the towns of Chilhowie, Marion, and Saltville
- Washington County and the towns of Abingdon, Damascus, and Glade Spring
- Wythe County and the towns of Rural Retreat and Wytheville
- The City of Bristol
- The City of Galax

Regionwide Weather Events in the Past Five Years, As Reported by Localities

Below is a listing of major weather events within the region, for a more detailed list of all weather events see the community hazard profile for each locality. Within the community hazards profiles, there may or may not be more weather events officially recorded, some were omitted due to redundancy in geographic distance or the weather event being too insignificant to list.

7-27-12 Regionwide

The Mount Rogers Region was affected by a Derecho that knocked down road signs, disrupted power, and brought down several trees and limbs. As a result, several power outages were reported.

1-17-13 Bland County

Bland County was hit by a winter storm that brought heavy snow fall ranging from 12 inches in Rocky Gap to 6.0 inches in Ceres. This winter storm brought the interstate to a standstill with accidents and heavy snow fall. A local emergency was declared and a shelter was opened at the Bland County Rescue Squad. The shelter received approximately 40 individuals.

3-31-13 Carroll County

"Excessive fog" in the Fancy Gap Mountain area, near the North Carolina border, caused at least 75 vehicles to crash in the southbound lanes of the I-77. Three people were killed and at least 25 were taken to the hospital after the pile-up.

5-19-13 Saltville, Smyth County

A torrential downpour caused a flood through the streets of Saltville. Drains and ditches overflowed sending rushing water into several businesses and rocks the size of baseballs hurtling down Palmer Avenue. Saltville fire, police, and rescue responded in minutes to the danger. Town employees and VDOT helped clear the town roads. The National Weather Service said that over five inches of rain fell in about an hour.

7-12-13 Galax

July of 2013 saw 600% of the average expected rainfall for the month. On the 12th the streets of downtown Galax were flooded causing damage to cars and businesses. The flooding was due to storm drains not being able to handle the amount of water from the massive downpour.

4-17-14 Carroll County

Estimated Wind gust of 100 miles per hour caused 2 tractor trailers to overturn on I-77 north. Both tractor trailers overturned between the 2.7 and 2.8-mile marker. As the trailers were being overturned the wind blew one 30 feet and fell against the side of a state trooper car and a VDOT truck.

3-5-15 Chilhowie, Smyth County

Heavy rain and melting snow caused the Holston River to overflow its banks. Rt. 604 (Dry Fork Rd) was closed in Chilhowie. A small mud slide on B.F. Buchanan Hwy caused an interruption in one lane of traffic which was cleared by VDOT.

4-19-15 Bland County

Wolf Creek flooded into the road at Shady Branch Circle. The rain left several roads flooded with debris due to clogged culverts. Also, Several Houses had flooded basements. This caused the county roads of West Bluegrass Trail, Suiter Road, Waddletown Road, and White Pine Drive to be closed and schools were also closed for one day.

4-19-15 Wythe County

Between 2.5 and 3.5 inches of Rain fell in one day. The Schools as well as 20 roads were closed in the county due to washouts, flooding, and downed Trees. The hardest hit areas were Max Meadows, the Stony Fork area off of Highway 52, and Ivanhoe along the New River. The trash convenience center in Max Meadows was flooded. A man had to be rescued from a truck in Ivanhoe. According to the U.S. Geological Survey, Reed Creek at Graham's Forge crested at 9.14 feet. That's the highest reading since a level of 10 feet on April 5, 1977.

4-26-17 Marion, Smyth County

The Bridge to the Holston Hills Community Golf Course was critically damaged by flood waters.

4-26-17 Smyth County

A 14-inch sewer line was damaged in Seven Mile Ford. Houses were flooded in the McCready and North Holston communities outside of Saltville.

4-26-17 Chilhowie, Smyth County

Berry Metals along the Holston River received flood damage. A Section of 107 was closed near McDonalds due to high water. Springs serving the town were out of commission for about a week and water had to be purchased from Washington County.

5-22-17 Hillsville, Carroll County

Members of the Carroll County Fire/EMS are reporting several roads are flooded to excessive rain that fell over the county Thursday evening.

Flooding was also reported along Pilgrims Trail, depositing debris along 221. Several mudslides have been reported along Buck Horn Road. Additional reports of flooding in the vicinity of Hillsville and Dugspur.

Water is flowing onto many roadways along creeks and poor drainage areas. A flash flood warning was issued for Carroll County until 8:30 p.m.

10-23-17 Fries, Grayson County

An F-1 Tornado Touched down at 5:47 in the evening of October 23. The tornado traveled about a third of a mile and caused damage about 150 yards wide. The storm caused trees to be uprooted and barns to be damaged. There was also localized flooding in the area.

Recommended Mitigations

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Addition of a Nexedge System or the RIOS-Comlinc system for each locality in the Mount Rogers District.	All hazards	All Localities, MRPDC, VITA	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	All localities, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Provide public outreach and start an educational campaign to inform citizens of actions to take before, during, and after an earthquake strikes.	Earthquake	All Localities, MRPDC	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Make sure local building codes and zoning ordinances address placement of structures in areas susceptible to karst and sinkholes, and map areas that are in danger of such hazards.	Karst/Sink holes	All Localities, MRPDC	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Make sure local building codes and zoning ordinances address placement of structures in areas susceptible to landslides, and map areas that are in danger of such hazards.	Landslides	All Localities, MRPDC	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Provide public outreach and start an educational campaign to inform citizens of actions to take before, during, and after a tornado or hurricane event strikes.	Tornados/ Hurricanes	All Localities, MRPDC	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Provide public outreach and start an educational campaign to inform citizens of actions to take during a severe drought if water supplies are depleted.	Drought	All Localities, MRPDC	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

Bland County

Community Hazard Profile

Bland County is a rural, lightly populated community of nearly 6,511 (which is a decrease of 4.6% since the last plan update) with Interstate 77 bisecting the county as the highway travels in a north-south direction. There are no incorporated towns, though county administrative functions are centered in the community of Bland, located at the junction of I-77 and State Rt. 42. The Appalachian Trail crosses through parts of the county.

The main natural hazards faced in Bland County are flooding, severe snow and ice storms, wildfire, and potential dam failure. Due to its mountainous terrain, communities are subject to flash flooding caused by heavy rainfalls and snowmelt; this is especially true for Rocky Gap, a small, unincorporated community located almost entirely in the floodplain. Bland County also experiences its share of high-wind conditions, though these have not been known to create natural disasters.

In January 1957, the community of Bland sustained substantial damage from a failure in the Crab Orchard Creek Dam, which had been under development as a privately-owned recreation attraction. The dam break occurred following three days and nights of continuous rain, and the resulting flood caused \$500,000 worth of damage to the small community. There is now some thought that, with construction of I-77 (which passes between the dam and the community), a similar event would not happen again, since I-77 and its drainage systems would redirect the flood flows.⁴

Past or Ongoing Mitigations

Bland County centralizes its emergency response system through its E-911 and emergency services coordinator (one individual). Emergency responders include a system of local volunteer fire departments and rescue squads, as well as the sheriff's department and state police. The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009.

Bland County has not engaged in pre-disaster mitigation efforts in the past.

For flood hazards, Bland County contains six repetitive loss properties, including four in the community of Rocky Gap.

⁴ This information was given to us by an engineer at a hazard mitigation meeting in the early 2000s.

Severe Weather Events

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	4/4/13	Winter Weather	0	0	\$-	0	County Official
Stowersville	5/19/13	Flood	0	0	\$-	0	State Official
Point Pleasant	5/22/13	Hail	0	0	\$-	0	Public
Ceres	8/12/13	Flash Flood	0	0	\$5,000	0	Trained Spotter
	12/8/13	Ice Storm	0	0	\$-	0	Trained Spotter
	1/7/14	Cold/Wind Chill	0	0	\$-	0	AWOS
	2/12/14	Heavy Snow	0	0	\$-	0	Trained Spotter
Bland	6/10/14	Hail	0	0	\$-	0	911 Call Center
	11/1/14	Winter Weather	0	0	\$-	0	Law Enforcement
	11/26/14	Winter Weather	0	0	\$-	0	Public
	1/23/15	Winter Weather	0	0	\$-	0	Public
	2/16/15	Winter Storm	0	0	\$-	0	Trained Spotter
	2/19/15	Extreme Cold/Wind Chill	0	0	\$-	0	Mesonet
	2/21/15	Winter Storm	0	0	\$-	0	Public
	2/25/15	Winter Weather	0	0	\$-	0	Trained Spotter
Long Spur	4/19/15	Flood	0	0	\$-	0	Trained Spotter
Holly Brook	4/20/15	Flood	0	0	\$-	0	State Official
	1/22/16	Winter Storm	0	0	\$-	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$-	0	Broadcast Media
	4/3/16	Avalanche	0	0	\$1,000	0	Law Enforcement
Bastian	6/27/16	Flash Flood	0	0	\$75,000	0	Broadcast Media
Rocky Gap	4/23/17	Flood	0	0	\$-	0	Public
			0	0	\$81,000	0	

Flood Loss Statics, as of 3/31/2017

Total Losses-56

Closed losses-42

Open losses-0

CWOP (Closed without Payment losses-14

Total Payments \$726,016.36

Recommended Mitigations

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Bland County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct hydrological/engineering studies to properly determine Base Flood Elevations in those watersheds with estimated floodplains.	Floods	Bland County, MRPDC, DCR, VDEM	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct detailed studies to determine the most cost-effective mitigations for communities with flooding issues, which include Bland, Bastian, and Rocky Gap.	Floods	Bland County, MRPDC, DCR, VDEM	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Use the flood analysis as a basis for consideration of future relocation/demolition and flood-proofing projects.	Floods	Bland County, MRPDC, DCR, VDEM	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Mitigate against future flood losses, with highest priority given to repetitive loss properties.	Floods	Bland County, MRPDC, DCR, VDEM	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Bland County, MRPDC, DCR, VDEM	1-3 Years/ Ongoing	Done through compliance with NFIP
Medium	Promote the Firewise program for people who live in woodland	Wildfire	Bland County, MRPDC,	3-5 Years/	Funding needed from

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
	communities. An estimated 265 homes fall into this category in various parts of Bland County.		RC&D, DOF	Not Started	VDEM/FEMA
Medium	Work with the New River-Highlands RC&D Council a wildfire strategic plan for Bland County.	Wildfire	Bland County, MRPDC, RC&D, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Bland County, MRPDC, DCR, VDEM, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Continue inspection and enforcement as necessary on the Crab Orchard Creek Dam, rated Class I for hazard potential.	Dam Safety	Bland County, MRPDC, DCR	1-3 Years/ Ongoing/	Done through Federal State and local codes
Low	Verify the geographic location of all NFIP repetitive losses and make inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	Bland County, MRPDC, DCR, VDEM	1-3 Years/ Not Started	Will start next year

Carroll County and Hillsville

Community Hazard Profile

Carroll County abuts the northern border of North Carolina and includes a section of the Blue Ridge Parkway and the New River Trail State Park. A community of 29,212 (decrease of 2.8% since 2012), the county includes the incorporated Town of Hillsville, which serves as the county seat, and abuts the City of Galax to the west. Elevations vary from 3,570 feet above sea level at Fisher Peak to 1,110 feet above sea level at Cana. The county also is notable for the Blue Ridge Escarpment (steep slope) that separates the piedmont of North Carolina from the Blue Ridge Plateau. More than half of the land area has slopes greater than 20%, which precludes most development.

Carroll County is bisected by Interstate 77 in a north-south direction and by U.S. Rt. 58 in an east-west direction. The county is known for high wind conditions at Fancy Gap, where tractor trailers sometimes get blown over or even lifted away from the highway altogether and dumped into a field some distance away. Carroll County is part of a Special Wind Region, with potential wind speeds up to 200 mph.

Other natural hazards experienced in Carroll County include severe winter storms and ice, wildfires, drought, and undefined risk potential for landslides and impacts from karst terrain. Flood hazards are limited (one repetitive loss property in or near Hillsville). There are two federally regulated hydroelectric dams and one state-regulated dam in Carroll County.

Past or Ongoing Mitigations

A special project by the New River-Highlands RC&D Council has produced a draft strategic plan for wildfire hazard reduction in Carroll County. For emergency response, the area is served by the Twin County E-911 system, volunteer fire departments and rescue squads, a paid EMS, and the sheriff's department and state police.

VDOT has installed a warning system to help truckers get off I-77 and find alternate routes during high-wind conditions and other potentially dangerous conditions, such as fog, another ongoing problem in the Fancy Gap area. Members of the Hazard Mitigation Advisory Team have said the warning system has limited usefulness since there are few exits from the highway.

The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009.

Severe Weather Events

Multicar Pileup Due to Dense Fog

On March 31, 2013, at least three people were killed and at least 25 were taken to the hospital after a pile-up involving dozens of cars today on a Virginia interstate.

Virginia State Police said "excessive fog" in the Fancy Gap Mountain area, near the North Carolina border, caused at least 75 vehicles to crash in the southbound lanes of the I-77.

The first emergency calls began coming in at 1:15 p.m. ET, authorities said. The northbound lanes were closed to allow emergency vehicles to quickly reach people needing assistance at the scene, according to a statement from the Virginia State Police.

While the cause of the initial crash remains under investigation, Virginia State Police spokeswoman Corinne Geller said it was a classic pile up.

"[There were] 17 separate traffic crashes, but they all occurred as a chain reaction in that one-mile stretch of Interstate 77," Geller said. "The initial crash, the very first one, we're still investigating obviously what caused that one exactly, that's still under investigation."

After the first crash, she said, other vehicles on the highway were traveling too fast to stop by the time they saw the accidents ahead of them in the thick fog.

"People were traveling too fast for the road conditions and you had the initial crash and then you had a chain reaction, a series of crashes because the fog was so thick, people could not see what was up ahead," she said.

Traffic was re-directed in both directions as authorities worked to clear the scene and investigate the crashes, the Virginia State Police said.

The highway was expected to reopen at around 9 p.m. ET.

Authorities advised travelers, many of whom may be traveling for the Easter holiday, to make alternate travel plans or to expect significant delays.

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	3/31/13	Dense Fog	3	25	\$500,000 ⁵	0	Newspaper
	4/4/13	Winter Weather	0	0	\$-	0	Trained Spotter
Eona	6/7/13	Flash Flood	0	0	\$-	0	911 Call Center
Pipers Gap	6/7/13	Flash Flood	0	0	\$-	0	911 Call Center
Cliffview	6/7/13	Flash Flood	0	0	\$-	0	911 Call Center
Gladeville	6/25/13	Hail	0	0	\$-	0	Public
Dugspur	6/25/13	Hail	0	0	\$-	0	Public
Hillsville	7/5/13	Flash Flood	0	0	\$-	0	Trained Spotter
Fries Jct	8/12/13	Flash Flood	0	0	\$-	0	County Official
	12/8/13	Ice Storm	0	0	\$-	0	COOP Observer
	1/7/14	Cold/Wind Chill	0	0	\$-	0	AWOS
	2/12/14	Heavy Snow	0	0	\$-	0	Trained Spotter
	3/6/14	Winter Storm	0	0	\$-	0	Public
Hillsville	5/15/14	Flash Flood	0	0	\$-	0	911 Call Center
Fries Jct	6/16/14	Hail	0	0	\$-	0	Trained Spotter
Hilltown	6/16/14	Hail	0	0	\$-	0	Public
	11/1/14	Winter Weather	0	0	\$-	0	CoCoRaHS
	11/26/14	Winter Weather	0	0	\$-	0	Trained Spotter
	1/23/15	Winter Weather	0	0	\$-	0	Trained Spotter
	2/16/15	Winter Storm	0	0	\$-	0	Public
	2/19/15	Extreme Cold/ Wind Chill	0	0	\$-	0	AWOS
	2/25/15	Winter Storm	0	0	\$-	0	Amateur Radio
Cana	4/19/15	Flash Flood	0	0	\$-	0	State Official
Hillsville	6/18/15	Hail	0	0	\$-	0	Trained Spotter
	1/22/16	Winter Storm	0	0	\$-	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$-	0	Trained Spotter
	4/5/16	Frost/Freeze	0	0	\$-	0	County Official
	1/6/17	Winter Storm	0	0	\$-	0	Trained Spotter
Dugspur	5/18/17	Hail	0	0	\$-	0	Public
Dugspur	5/18/17	Heavy Rain	0	0	\$-	0	Public
Dugspur	5/18/17	Flash Flood	0	0	\$5,000	0	911 Call Center
Cana	5/19/17	Hail	0	0	\$-	0	Public
Hilltown	5/24/17	Flood	0	0	\$75,000	0	Broadcast Media
Gladeville	7/18/17	Hail	0	0	\$-	0	Trained Spotter

⁵ The total amount of damage included the 75 damaged vehicles

	TOTAL	3	25	\$580,000		
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Recommended Mitigations: Carroll County and Hillsville

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Promote the Firewise program for people who live in woodland communities. An estimated 712 homes fall into this category in various parts of Carroll County. This represents one of the worst natural hazard threats in the region.	Wildfire	Carroll County RC&D, Firewise, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Carroll County, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Carroll County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Carroll County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with NFIP
Low	Consider flood-proofing or relocation/demolition for the repetitive loss property near Hillsville.	Floods	Town of Hillsville, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams.	Dam Safety	Carroll County, MRPDC, DCR	1-3 Years/ Ongoing	Done through Federal, State, and Local codes
Low	Verify the geographic location of all NFIP repetitive losses and make inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	Carroll County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Will be looked at next year

Grayson County and Fries, Independence and Troutdale

Community Hazard Profile

Grayson County is a remote, rural area with a population of 15,669 (increase of 0.9% since 2012). The county is traversed east-west by U.S. Rt. 58, north-south by State Rt. 16 (passing through the Town of Troutdale), and north-south by U.S. Rt. 21 (passing through the Town of Independence). The three incorporated towns include Fries, Independence, and Troutdale. Parts of the county border the independent City of Galax at the county's eastern border. Grayson's mountainous terrain includes Grayson Highlands State Park in the western end and parts of the Mount Rogers National Recreation Area running roughly along the county's northern border.

Chief natural hazards occurring in Grayson County include flooding, severe snow and ice storms, high winds, and risk of wildfire. Flooding affects relatively few properties, and there is no FEMA record of repetitive loss properties. Substantial parts of Grayson, encompassing roughly 60,000 acres, are subject to wildfire risk. Grayson also contains four dams rated for significant hazard potential and has a risk of potential for landslides, especially in the northern part of the county.

Past or Ongoing Mitigations

A special project by the New River-Highlands RC&D Council has produced a draft strategic plan for wildfire hazard reduction in Grayson County. The emergency services system includes the Twin County E-911 center, several volunteer fire departments and rescue squads, the sheriff's department and the state police.

The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009.

Grayson County has not participated in the pre-disaster hazard mitigation projects in the past, other than what has already been noted. Like the other localities in the Mount Rogers region, most hazard mitigation efforts are not possible without substantial outside support from state and federal grants.

Severe Weather Events

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	4/4/13	Winter Weather	0	0	\$-	0	Trained Spotter
Reavistown	7/12/13	Flash Flood	0	0	\$5,000 ⁶	0	Trained Spotter
Reavistown	7/19/13	Hail	0	0	\$-	0	Public
	12/8/13	Winter Weather	0	0	\$-	0	Trained Spotter
	1/7/14	Cold/Wind Chill	0	0	\$-	0	AWOS
	2/12/14	Heavy Snow	0	0	\$-	0	Public
Independence	5/10/14	Hail	0	0	\$-	0	Trained Spotter
	11/1/14	Winter Weather	0	0	\$-	0	Trained Spotter
	11/26/14	Winter Storm	0	0	\$-	0	Park/Forest Service
	1/23/15	Winter Weather	0	0	\$-	0	Trained Spotter
	2/15/15	Extreme Cold/Wind Chill	0	0	\$-	0	Mesonet
	2/16/15	Winter Storm	0	0	\$-	0	Trained Spotter
	2/19/15	Extreme Cold/Wind Chill	0	0	\$-	0	Mesonet
	2/25/15	Winter Storm	0	0	\$-	0	Trained Spotter
Reavistown	4/19/15	Flash Flood	0	0	\$-	0	State Official
Benington Mills	5/11/15	Flash Flood	0	0	\$-	0	Public
Carsonville	5/11/15	Debris Flow	0	0	\$-	0	Law Enforcement
	1/22/16	Winter Storm	0	0	\$ -	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$ -	0	Trained

⁶ Property Damage Totals resulted from septic system damage

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
							Spotter
	1/6/17	Winter Storm	0	0	\$ -	0	Trained Spotter
Stevens Creek	4/24/17	Flood	0	0	\$ -	0	911 Call Center
Rugby	5/9/17	Hail	0	0	\$ -	0	Park/Forest Service
Rugby	5/20/17	Flash Flood	0	0	\$ -	0	Public
Oak Hill	5/24/17	Flood	0	0	\$150,000 ⁷	0	Broadcast Media
Carsonville	6/15/17	Heavy Rain	0	0	\$ -	0	Trained Spotter
Carsonville	6/15/17	Heavy Rain	0	0	\$-	0	Trained Spotter
Independence	6/15/17	Flash Flood	0	0	\$2,000	0	911 Call Center
Riverside	7/12/17	Hail	0	0	\$-	0	Public
TOTAL			0	0	\$157,000	\$ -	

Recommended Mitigations: Grayson County and Fries, Independence, and Troutdale

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Pursue federal certification of the Base Flood Elevation of the Grayson Highlands Combined School floodwall, as well as funds for possible repairs or additions, as needed, to the floodwall	Floods	Grayson County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Support implementation of the strategic plan for wildfire hazard reduction in Grayson County.	Wildfire	Grayson County RC&D MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

⁷ Property Damage Totals resulted from campers and camper covers that sustained flood damage along the New River

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Support educational programs to promote Firewise methods to affected residents of woodland communities. An estimated 258 homes are part of woodland communities in Grayson County.	Wildfire	Grayson County RC&D Firewise, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Grayson County, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Grayson County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Conduct hydrological/engineering studies to properly determine Base Flood Elevations in those watersheds with estimated floodplains.	Floods	Grayson County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Conduct hydrological /engineering studies to determine Base Flood Elevations within the Town of Troutdale, which presently lacks a recognized floodplain.	Floods	Grayson County, MRPDC, VDEM, DCR	Project Complete	Flood mapping has been provided
Medium	Identify flood prone properties for potential acquisition/demolition, elevation, flood proofing, and minor localized flood control projects.	Floods	Grayson County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Conduct hydrological/ engineering studies to determine Base Flood Elevations within the Towns of Fries and Independence.	Floods	Town of Independence, Town of Fries, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
Medium	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Grayson County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with the NFIP
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams.	Dam Safety	Grayson County, MRPDC, DCR	1-3 Years/ Ongoing	Done though local and state codes

Smyth County and Chilhowie, Marion, and Saltville

Community Hazard Profile

Smyth County, with a population of 30,686 (decrease of 4.7% since 2012), stands along the east-west path of I-81 and also is part of the Mount Rogers National Recreation Area. Population growth is stagnant, due in part to loss of the traditional industrial base and limited housing development. Despite those drawbacks, the county is traversed by the Appalachian Trail, offers appealing country vistas, and stands within easy reach of many natural resource attractions.

The main natural hazards affecting Smyth County include flooding along the North, Middle, and South Forks of the Holston River, as well as several tributaries; severe winter storms and ice; some potential for dam failure; drought; and undetermined risk from landslides and karst terrain, which appears in an estimated 30% of the county's territory. The county is also part of a Special Wind Region (with wind speed potential of 200 mph), but this problem rarely causes enough damage to be considered a major hazard. Smyth County contains seven repetitive loss properties. The county has the most flood-prone properties in the Mount Rogers Region (see At-risk Structures in the 100-year Flood Plain table in the Flood Risk Assessment and Vulnerability Section). While not a frequent event as defined by our hazard matrix, Smyth and Washington Counties suffered a severe tornado in April of 2011 that resulted in 4 deaths (all in Washington County), and over 50 injuries throughout the two counties.

Past or Ongoing Mitigations

Due to its long history with disaster-level flooding, Smyth County and its communities have participated in special flood mitigation projects. Record-level disasters resulting from the floods of 1977 led to a flood mitigation engineering study for the towns of Chilhowie and Marion, as well as the nearby communities of Atkins and Seven Mile Ford. In Chilhowie, the work resulted in the eventual relocation of 67 families and the creation of the Chilhowie Recreation Park. Other recommended flood mitigations have not been pursued due to lack of funding.

Also, as a result of flooding in 2001 and 2002, Smyth County obtained federal disaster relief funds and relocated five homes out of the floodplain in River Bottom Circle, located near the Broadford community along the North Fork of the Holston River.

More recently the Town of Chilhowie participated in a preliminary flood reduction study by the U.S. Army Corps of Engineers. About 12-15 properties continue to sustain flood damage within town borders. The town has opted against pursuing a more detailed study due to the high cost and instead is advocating for mitigating the most flood-prone structures in the town.

Emergency response is coordinated through Smyth County's centralized E-911 system. The county also creating a modernized countywide communications system for emergency response and direct radio communications among police, fire departments, and rescue squad organizations.

The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009.

Severe Weather Events

In April of 2017, the Holston Hills Country Club bridge was critically damaged in a massive flood event, rendering the bridge impassable. Since that time the bridge has been rebuilt and reopened to through traffic.

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	4/4/13	Winter Weather	0	0	\$ -	0	Public
Marion	5/10/13	Heavy Rain	0	0	\$ -	0	Public
Saltville	5/19/13	Hail	0	0	\$ -	0	Public
Saltville	5/19/13	Flash Flood	0	0	\$ -	0	State Official
Groseclose	6/13/13	Lightning	0	0	\$5,000	0	State Official
Adwolf	7/10/13	Flood	0	0	\$ -	0	Emergency Manager
	1/7/14	Cold/Wind Chill	0	0	\$ -	0	AWOS
	1/25/14	Winter Weather	0	1	\$50,000	0	911 Call Center
	2/12/14	Heavy Snow	0	0	\$ -	0	Trained Spotter

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
Chilhowie	6/29/14	Flash Flood	0	0	\$250,000 ⁸	0	911 Call Center
	11/1/14	Winter Weather	0	0	\$ -	0	Trained Spotter
	11/26/14	Winter Weather	0	0	\$ -	0	Public
	2/15/15	Extreme Cold/Wind Chill	0	0	\$ -	0	AWOS
	2/16/15	Winter Storm	0	0	\$ -	0	Trained Spotter
	2/19/15	Extreme Cold/Wind Chill	0	0	\$ -	0	AWOS
	2/21/15	Winter Storm	0	0	\$ -	0	Trained Spotter
	2/25/15	Winter Weather	0	0	\$ -	0	Trained Spotter
Sugar Grove	4/19/15	Flood	0	0	\$ -	0	Department of Highways
Thomas Bridge	4/20/15	Flood	0	0	\$ -	0	State Official
	1/22/16	Winter Storm	0	0	\$ -	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$ -	0	Trained Spotter
Saltville	8/16/16	Hail	0	0	\$ -	0	Trained Spotter
Mt Carmel	4/23/17	Flood	0	0	\$75,000 ⁹	0	Newspaper
Mc Mullin	4/23/17	Flash Flood	0	0	\$ -	0	County Official
Marion	4/29/17	Hail	0	0	\$ -	0	Trained Spotter
Furnace Hill	4/29/17	Hail	0	0	\$ -	0	Broadcast Media
Chilhowie	4/29/17	Hail	0	0	\$ -	0	Trained

⁸ Total Property Damage includes homes damaged in northern parts of the county and in the Town of Saltville.

⁹ Property Damage Totals includes flooding in downtown Town of Chilhowie, which caused damage to buildings and vehicles.

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
							Spotter
Saltville	5/27/17	Hail	0	0	\$ -	0	Broadcast Media
Saltville	5/27/17	Hail	0	0	\$ -	0	Broadcast Media
McCrady	5/27/17	Hail	0	0	\$ -	0	Public
Broadford	5/27/17	Hail	0	0	\$ -	0	Broadcast Media
Adwolf	5/27/17	Hail	0	0	\$ -	0	Public
Sevenmile Ford	5/27/17	Hail	0	0	\$ -	0	Broadcast Media
Mc Mullin	5/27/17	Hail	0	0	\$ -	0	Amateur Radio
Thomas Bridge	5/27/17	Hail	0	0	\$ -	0	Public
Sugar Grove	10/23/17	Flash Flood	0	0	\$ -	0	Emergency Manager
TOTAL			0	1	\$380,000	0	

Recommended Mitigations: Smyth County and Chilhowie, Marion, and Saltville

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Smyth County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Mitigate against future flood losses, with highest priority given to the repetitive loss properties.	Floods	Smyth County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct hydrological/engineering studies to determine Base Flood Elevations in watersheds containing estimated floodplains.	Floods	Smyth County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

High	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Smyth County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with NFIP
High	Use the flood analysis as a basis for consideration of future relocation/demolition and flood-proofing projects.	Floods	Smyth County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	When this issue arises, flood analysis is used
High	Identify flood prone properties for potential acquisition/demolition, elevation, flood proofing, and minor localized flood control projects.	Floods	Smyth County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Support the continued development of the improved countywide radio communications system to improve emergency response and coordination during major disasters and other emergencies.	All	Smyth County, MRPDC, VDEM	1-3 Years/ Ongoing	Worked on when possible
Medium	Support educational programs to promote Firewise methods to affected residents of woodland communities. An estimated 475 homes are located in wooded settings and subject to risk of wildfire.	Wildfire	Smyth County RC&D Firewise MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Smyth County, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams. Presently Hungry Mother Dam is regulated as a high-risk potential dam in the county.	Dam Safety	Smyth County, MRPDC, DCR	1-3 Years/ Ongoing	Done though federal, state, and local codes

Low	Verify the geographic location of all NFIP repetitive losses and make inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	Smyth County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Will be looked at next year
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Washington County and Abingdon, Damascus, and Glade Spring Community Hazard Profile

Washington County is a rapidly developing area located on the west end of the Mount Rogers region and is bisected by Interstate 81 in an east-west direction. Within the past decade the most change and growth has been occurring along the I-81 corridor between the Town of Abingdon and the City of Bristol, with much housing development, as well as burgeoning commercial development at the Exit 7 area. Former communities consisting largely of open space and farming are being converted into residential subdivisions to accommodate the population of 53,789 (decrease of 2.0% since 2012).

The chief natural hazards of concern to Washington County and its localities include flooding, wildfires, severe winter storms and ice, drought, undetermined risk for impacts from landslides and karst terrain (which occurs in 50% of the county's territory), and high winds. While not a frequent event as defined by our hazard matrix, Smyth and Washington Counties suffered a severe tornado in April of 2011 that resulted in 4 deaths (all in Washington County), and over 50 injuries throughout the two counties.

The flooding results from sustained heavy rainfalls, violent thunderstorms, or as the aftermath of a major snowstorm. FEMA records show three repetitive loss properties with an average claim of \$10,063.89. Wildfire risks derive from being located in a rural, forested region and development of woodland home communities (encompassing more than 100,000 acres in the county). Severe winter storms and/or ice have been known to lead to disaster declarations, while drought is only an occasional hazard with impacts mainly for the farming community.

Washington County also contains four dams rated for high- or significant-hazard in the event of failure. Two are flood control structures owned by the Tennessee Valley Authority and one is a hydroelectric dam that has been breached and is no longer active. A fourth dam, owned by the state Department of Game and Inland Fisheries, is a recreational area regulated by the state.

Past or Ongoing Mitigations

Washington County operates its own E-911 system for emergency response from among an array of volunteer fire departments and rescue squads, the sheriff's department and the state police.

A long history of disaster-level flooding led to a comprehensive flood mitigation study for the Town of Damascus completed in 1979. In time, with support from outside grant funding, the town relocated 34 families (88 people) and three local businesses out of the floodplain. The town also was able to install storm drainage systems along flood-prone areas in Mock, Surber, and Haney Hollows. Damascus continues to face a serious flood threat due to its location at the confluence of Beaverdam and Laurel creeks and the lack of developable land outside of the floodplain.

As with the flood mitigation studies done for Smyth County, Damascus could not afford the high cost of the comprehensive approach. In addition, some mitigations considered in the 1970s and 1980s – including stream channelization and installation of levees – would not be allowed under modern state and federal regulations.

The Town of Glade Spring obtained funding to install a culvert underneath Grace Street and the Town Square intersection as part of a downtown revitalization effort.

The Town of Abingdon has recently updated some of its floodplain maps but has not been involved in mitigation efforts such as elevations or relocations and demolitions. Currently Abingdon is pursuing funding from FEMA to mitigate against losses associated with flooding in the Country Club Estates and surrounding areas. This area is in the southern portion of the town. Over the past 25 years there have been several rainfall events that have caused localized flooding to several homes in the drainage swale that conveys stormwater from east to west, crossing Fairway Drive, Bogey Drive, and Birdie Drive. After a flooding event in 1992, the Town Council commissioned the “Preliminary Engineering Report, Country Club Estates, Storm Drainage Improvements, Abingdon, Virginia.” This study resulted in solution alternatives with associated cost estimates. Very few, if any, of the recommendations in that report were implemented. There have been other flood events in this area, most recently in July of 2009. During that storm, stormwater encroached nearby and even into several of the residences along the drainage path. Another Preliminary Engineering Report has since been commissioned by the Town Council to update the previous study discussed above.

The Town of Abingdon identifies as an ongoing need for the immediate future the review of all streams and creeks within the Town’s corporate limits, which includes the Town Creek and Wolf Creek drainage basins and their tributaries and a drainage swale paralleling Hillman Highway that contributes floodwaters to Fifteen Mile Creek.

Flooding issues affecting private and public property specifically identified within the Town Creek Basin are:

- 1) Tributary #1 to Town Creek – This tributary is in FEMA Special Flood Hazard Zone A from Hillside Drive downstream to Railroad Street
- 2) Tributary #2 to Town Creek- This tributary is in FEMA Special Flood Hazard Zone A from Thompson Drive downstream to Tanner Street
- 3) Tributary #3 to Town Creek – This tributary is in FEMA Special Flood Hazard Zone A from Washington County along Whites Mill Road downstream to Town Creek and
- 4) Town Creek – In FEMA Special Flood Hazard Zones AE and X and experiences localized flooding from Branch Street to Interstate 81.

Flooding issues specifically identified within the Wolf Creek Basin occur within Tributary #2 to Wolf Creek. Portions of this tributary are in FEMA Special Flood Hazard Zone A and flooding affects private and public property along the drainage path from Hill Street to Wolf Creek.

Although not specifically identified on the Town of Abingdon Flood Insurance Rate Map, private properties located within the drainage swale paralleling Hillman Highway experience damage from floodwaters of the drainage basin. The headwaters of this swale begin near East Main Street and discharge into Fifteen Mile Creek. Continued development within the watershed areas, which includes portions of Washington County, has created additional impervious surfaces, such as roofs and pavements that increase storm water runoff. Portions of all of the aforementioned sections within the Town are prone to flooding, property damage, loss and possible harm to residents.

In order to mitigate the conditions as described briefly above, the Town must perform hydrologic and hydraulic analyses of the watershed areas that specifically identify the problem areas and develop solutions and plans that address the problems. The aforementioned practices including analysis, planning, establishing priorities and application for available funds will help enable project work to progress so that all concerned can be protected from flooding.

The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009.

Severe Weather Events

The Town recently had to intercede and perform emergency repairs on a property at 341 East Main Street, Abingdon, VA (Tax # 013-1-79) to allow Town Creek to flow properly and eliminate a blockage that was ponding water in East Main Street and became a potential flood hazard for neighboring properties. The Town would like to purchase the property to perform improvements to help alleviate the potential for high water at the intersection of East Main Street and Town Creek and the potential flooding of adjacent properties. The building on the property dates from the 1930s and it would not be cost effective to attempt to renovate or flood proof. Our intent will be to demolish the existing building and pavement, reestablish the stream bank on both sides of Town Creek, and to create a floodplain on the rest of the property for future storm events. This will be a precursor to a larger project to improve the existing drainage under East Main Street and improve pedestrian movement.

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	3/5/13	Heavy Snow	0	0	\$ -	0	Law Enforcement
Damascus	5/22/13	Flash Flood	0	0	\$5,000	0	911 Call Center
	2/13/14	Heavy Snow	0	0	\$ -	0	Trained Spotter
	2/13/14	Heavy Snow	0	0	\$ -	0	Amateur Radio
	2/13/14	Heavy Snow	0	0	\$ -	0	Public
	2/13/14	Heavy Snow	0	0	\$ -	0	Public
	2/13/14	Heavy Snow	0	0	\$ -	0	Public
Shakesville	9/4/14	Flash Flood	0	0	\$ -	0	Broadcast Media
	11/1/14	Heavy Snow	0	0	\$ -	0	911 Call Center
	11/1/14	Heavy Snow	0	0	\$ -	0	911 Call Center
	2/16/15	Heavy Snow	0	0	\$ -	0	Trained Spotter
	2/16/15	Heavy Snow	0	0	\$ -	0	Public
	2/17/15	Heavy Snow	0	0	\$ -	0	Emergency Manager
	2/21/15	Heavy Snow	0	0	\$ -	0	Public
	2/26/15	Heavy Snow	0	0	\$ -	0	COOP Observer
Saltville	3/5/15	Flood	0	0	\$1,000	0	Emergency Manager
Saltville	4/25/15	Hail	0	0	\$ -	0	Public
Saltville	4/25/15	Hail	0	0	\$ -	0	Public
Damascus	8/14/15	Flash Flood	0	0	\$ -	0	911 Call Center
	1/22/16	Heavy Snow	0	0	\$ -	0	Public
	1/22/16	Heavy Snow	0	0	\$ -	0	Broadcast Media
	2/8/16	Heavy Snow	0	0	\$ -	0	911 Call Center

	2/14/16	Heavy Snow	0	0	\$ -	0	Public
Watauga	3/14/16	Hail	0	0	\$ -	0	Public
Abingdon	6/22/16	Hail	0	0	\$ -	0	Post Office
	1/6/17	Heavy Snow	0	0	\$ -	0	Public
	1/6/17	Heavy Snow	0	0	\$ -	0	Public
			0	0	\$6,000	0	

Recommended Mitigations: Washington County and Abingdon, Damascus, and Glade Spring

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Make flood improvements at the intersection of E. Main St. and Town Creek; reestablish the stream bank and create a floodplain.	Floods	Town of Abingdon, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Washington County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct hydrological/engineering studies to determine Base Flood Elevations in watersheds containing estimated floodplains.	Floods	Washington County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Encourage more property owners to insure their homes through the National Flood Insurance Program.	Floods	Washington County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Residents are encouraged to do so
High	Consider appropriate mitigation projects for the three repetitive loss properties identified by FEMA data.	Floods	Washington County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct hydrological/ engineering studies to determine Base Flood Elevations and create new floodplain map for Cedar Creek in the Meadowview community.	Floods	Washington County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Use the flood analysis as a basis for consideration of future relocation/demolition and flood-proofing projects.	Floods	Washington County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	When this issue arises flood analysis is used
High	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Washington County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with the NFIP

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Support educational programs to promote Firewise methods to affected residents of woodland communities. An estimated 804 homes are located in wooded settings and subject to risk of wildfire.	Wildfire	Washington County, RC&D, Firewise, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Washington County, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams. There are four such dams in Washington County, one of which has been breached.	Dam Safety	Washington County, MRPDC, DCR	1-3 Years/ Ongoing	Done though federal, state, and local codes
Low	Verify the geographic location of all NFIP repetitive losses, and making inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	Washington County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Will be looked at next year

Wythe County and Rural Retreat and Wytheville

Community Hazard Profile

Wythe County is a community of 28,723 that is traversed north-south by Interstate 77 and east-west by Interstate 81, as well as routes 21, 52, and 94. The county includes the incorporated towns of Rural Retreat and Wytheville, which serves as the county seat. The county caters to the trucking industry and also facilitated the construction of a major new Pepsi bottling plant along the I-81 corridor. More than 50% of the county contains slopes of more than 20%, which hinders development in those steep areas.

Chief natural hazards experienced in Wythe County and its localities include flooding, severe winter storms and ice, high winds, drought, and undetermined hazards from karst terrain (which appears in roughly 30% of the county's landscape). There is one high-hazard potential dam (Rural Retreat Dam) owned as a recreational attraction by the Virginia Department of Game and Inland Fisheries.

The flooding results from sustained heavy rainfalls, violent thunderstorms, and melting as the aftermath of a major snowstorm. Flood hazards have been identified for the Town of Wytheville and the community of Max Meadows east of Wytheville. There are two repetitive loss properties in Wythe County.

Past or Ongoing Mitigations

Emergency response is based around the county's E-911 system, the sheriff's department, the state police, and several fire departments and rescue squads, including both paid and volunteer units.

The county's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009. These modern codes help protect against hazard damages, such as those from high winds.

Severe Weather Events

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	4/4/13	Heavy Snow	0	0	\$-	0	Public
Catron	7/10/13	Flash Flood	0	0	\$5,000	0	911 Call Center
Lots Gap	7/11/13	Flash Flood	0	0	\$16,000	0	Emergency Manager
Blacklick	7/17/13	Lightning	0	0	\$1,500	0	911 Call Center
Fort Chiswell	8/12/13	Flash Flood	0	0	\$-	0	Law Enforcement
	12/8/13	Winter Weather	0	0	\$-	0	Trained Spotter
	1/7/14	Cold/Wind Chill	0	0	\$-	0	AWOS
	1/10/14	Winter Weather	0	0	\$50,000	0	911 Call Center
	2/12/14	Heavy Snow	0	0	\$-	0	Public
	11/1/14	Winter Weather	0	0	\$-	0	Public
	11/26/14	Winter Weather	0	0	\$-	0	Public
	1/23/15	Winter Weather	0	0	\$-	0	COOP Observer
	2/16/15	Winter Storm	0	0	\$-	0	Trained Spotter
	2/19/15	Extreme Cold/Wind Chill	0	0	\$-	0	Mesonet
	2/25/15	Winter Weather	0	0	\$-	0	Trained Spotter
Cedar Springs	4/19/15	Flood	0	0	\$50,000	0	Newspaper
Simmerman	4/19/15	Flood	1	0	\$-	0	Broadcast Media
Max Meadows	4/20/15	Flood	0	0	\$-	0	Trained Spotter
Wytheville	4/20/15	Hail	0	0	\$-	0	Public
Max	4/20/15	Flash Flood	0	0	\$-	0	State Official

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
Meadows							
Fort Chiswell	4/20/15	Flash Flood	0	0	\$-	0	State Official
	1/22/16	Winter Storm	0	0	\$-	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$-	0	Trained Spotter
	1/6/17	Winter Storm	0	0	\$-	0	Trained Spotter
Porters Crossroads	4/24/17	Flood	0	0	\$-	0	Department of Highways
Favonia	4/24/17	Flood	0	0	\$-	0	Newspaper
Max Meadows	4/24/17	Flood	0	0	\$-	0	Department of Highways
Rural Retreat	4/29/17	Hail	0	0	\$-	0	Broadcast Media
Haven	4/29/17	Hail	0	0	\$-	0	Trained Spotter
Rural Retreat	4/29/17	Flash Flood	0	0	\$1,000	0	Public
Gunton Park	5/24/17	Flood	0	0	\$-	0	Emergency Manager
TOTAL			1	0	\$123,500	0	

Recommended Mitigations: Wythe County and Rural Retreat and Wytheville

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Apply for funding to purchase and install generators at Wythe County's main pumping station.	All hazards	Wythe County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Funding needed from VDEM/FEMA
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	Wythe County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Conduct hydrological/ engineering studies to determine Base Flood Elevations in watersheds containing estimated floodplains.	Floods	Wythe County, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	Wythe County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with the NFIP
High	Use the flood analysis as a basis for consideration of future relocation/demolition and flood-proofing projects.	Floods	Wythe County, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Used when these projects are looked at
Medium	Support development of strategic wildfire risk reduction plans such as being promoted by the New River-Highlands RC&D Council.	Wildfire	Wythe County, RC&D, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Support educational programs to promote Firewise methods to affected residents of woodland communities. An estimated 20,000 acres of land (unknown number of woodland homes) are subject to wildfire risk in Wythe County.	Wildfire	Wythe County, RC&D, Firewise, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
Low	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	Wythe County, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams. Rural Retreat Dam falls into the high-hazard potential category in Wythe County.	Dam Safety	Wythe County, MRPDC, DCR	1-3 Years/ Ongoing	Done through Federal, State, and local codes
Low	Verify the geographic location of all NFIP repetitive losses and make inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	Wythe County, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Will start next year

City of Bristol

Community Hazard Profile

The City of Bristol, Virginia is a community of 17,160 (decrease of 3.8% since 2012) located along Interstate 81 and abutting the far southwestern reach of Washington County. The city has experienced some transition in some traditional residential areas being converted to commercial uses and some shift toward high-tech industry. Bristol stands in the lowlands of the Valley and Ridge physiographic province, and this area is characterized by karst terrain.

Chief natural hazards experienced in the City of Bristol include flooding, which in the past has caused damages in the millions of dollars according to a study by the U.S. Army Corps of Engineers. Other natural hazards faced in Bristol include severe winter storms and ice, high winds, and undetermined hazard risks from karst terrain and landslides. Two high-hazard potential dams affecting Bristol include Clear Creek Dam and Beaver Creek Dam, both located upstream in Washington County. The City of Bristol contains two repetitive loss properties.

Past or Ongoing Mitigations

Emergency response is based around the city's E-911 system, the Washington County Sheriff's Department, the City of Bristol Police Department, the state police, and fire department and rescue squads.

In the spring of 2015, the City of Bristol installed a new water management device at Sugar Hollow Dam. The 1.1 million Dollar phase was part of a larger \$6.9 million project by the U.S. Army Corps of Engineers. The project addresses flood events along Beaver Creek by replacing a water control structure on the upstream side of the dam.

The City of Bristol, Virginia teamed up with the City of Bristol, Tennessee to work with the U.S. Army Corps of Engineers to conduct the "Flood Damage Reduction Feasibility Study" of 2003 to identify ways to reduce continuing flood damage, especially along the main stem of Beaver Creek, which passes through the center of the adjacent cities. The Corps of Engineers recommended the following flood mitigations in July 2003:

- Widening the Beaver Creek channel near 6th Street (in Bristol, Tennessee)
- Replacing a pedestrian bridge and removing the 8th Street Bridge (in Bristol, Tennessee)
- Removing the old Sears commercial building near State Street (in Bristol, Tennessee)

- Replacing the existing outlet structure (a 48-inch diameter pipe) on Beaver Creek Dam with a larger reinforced concrete structure to more effectively hold back flood flows.

The Corps of Engineers estimated the proposed mitigations will reduce total average annual flood damages by 20% and reduce flood levels by nearly one foot in the central business districts of both Bristol, Virginia and Bristol, Tennessee.

The city's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009. These modern building codes help offset damages caused by natural hazards, such as high winds, for new construction.

Severe Weather Events

The City of Bristol, VA experienced flooding conditions due to a heavy rainfall event on August 18, 2018. A small un-named stream that flows from the north side of Interstate 81 through the Briarwood Subdivision (located just south of the interstate) overflowed and flooded basements of several homes specifically along Brookdale Circle, in addition to the parking lot of a neighboring business located on Lee Highway (Rt. 11). The FIRM panel map (510022-0008 D) shows no Special Flood Hazard Area for this area. The City would like to do a flood risk analysis of this area and a mitigation plan for measures that could be done to address future flood events. In addition, Mumpower Creek which is a small tributary to Beaver Creek overflowed its banks with the same event on the 18th, affecting several homes located in the floodplain. If resources are available, the City would like to also do a flood study of this area between Valley Drive and Beaver Creek to address mitigation.

The anticipated cost of the study would be \$60,000. The City would provide the required 25% match with in-kind staff time (valued at \$15,000 – salary and fringes) from our Engineering staff.

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	3/5/13	Heavy Snow	0	\$-	0	0	Law Enforcement
	2/13/14	Heavy Snow	0	\$-	0	0	Trained Spotter
	2/13/14	Heavy Snow	0	\$-	0	0	Public
Bristol	7/27/14	Hail	0	\$-	0	0	Trained Spotter
	11/1/14	Heavy Snow	0	\$-	0	0	911 Call Center
	2/16/15	Heavy Snow	0	\$-	0	0	Trained Spotter
	2/17/15	Heavy Snow	0	\$-	0	0	Emergency Manager
	2/21/15	Heavy Snow	0	\$-	0	0	Public
	2/26/15	Heavy Snow	0	\$-	0	0	COOP Observer
	1/22/16	Heavy Snow	0	\$-	0	0	Broadcast Media
	2/8/16	Heavy Snow	0	\$-	0	0	911 Call Center
	2/14/16	Heavy Snow	0	\$-	0	0	Public
	1/6/17	Heavy Snow	0	\$-	0	0	Public
TOTAL			0	\$0	0	0	

Recommended Mitigations: City of Bristol

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Perform flood studies at Briarwood Subdivision along Brookdale Circle and along Lee Hwy; also at Mumpower Creek between Valley Drive and Beaver Creek.	Floods	City of Bristol, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Funded by Bristol, TN/VA
High	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	City of Bristol, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
High	Support implementation of the remedies outlined by the U.S. Army Corps of Engineers for the cities of Bristol in Virginia and Tennessee.	Floods	City of Bristol, MRPDC, VDEM, DCR	3-5 Years/ Ongoing	Funded by Bristol, TN/VA
High	Identify flood prone properties for potential acquisition/demolition, elevation, flood proofing, and minor localized flood control projects.	Floods	City of Bristol, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Comply with NFIP for floodplain identification and mapping, responsible floodplain management, and the promotion of flood insurance.	Floods	City of Bristol, MRPDC, VDEM, DCR	1-3 Years/ Ongoing	Done through compliance with the NFIP
Medium	Support educational programs to promote Firewise methods, as appropriate to residents of woodland communities. More specific data for the city was not available at the time this report was written.	Wildfire	City of Bristol, Firewise, MRPDC, VDEM, DCR, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Low	Educate residents on methods recommended by the American Red Cross to prepare for various types of natural disaster.	Floods Snowstorms/Ice High Winds	City of Bristol, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
Low	Properly inspect and enforce applicable state and federal dam regulations for high- and significant-hazard dams. These include Clear Creek Dam and Beaver Creek Dam.	Dam Safety	City of Bristol, MRPDC, DCR	1-3 Years/ Ongoing	Done through Federal, State, and Local codes
Low	Verify the geographic location of all NFIP repetitive losses and make inquiries as to whether the properties have been mitigated, and if so, by what means.	Floods	City of Bristol, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Will start next year

City of Galax

Community Hazard Profile

The City of Galax, a community of 6,748 (decrease of 4.2% since 2012), is located in a hilly area with above-sea elevations ranging from 2,340 feet to 2,980 feet at Ward Knob.

While the City of Galax contains a defined floodplain along Chestnut Creek, which flows north-south through the city core, Galax does not participate in the National Flood Insurance Program and has resisted suggestions it rejoin the program, despite disaster-level flooding in November 2003 and repeat flooding problems in 2004. For communities that refuse to participate in NFIP, disaster help from FEMA is not available in the defined floodplains. Flooding problems also have been evident recently along the tributary of Mill Creek, which is not part of a recognized FEMA floodplain. Flooding on the tributaries occurs because the city's storm drainage system is aging (50 years old), with parts of the piping collapsing; these problems block storm water drainage and worsen flooding problems in some residential neighborhoods.

Other natural hazards faced by the City of Galax include wildfires and high winds. The city, along with much of the Mount Rogers region, is part of a Special Wind Zone (winds up to 200 mph), although the problems created do not appear to be of disaster level and the city does enforce current building codes.

Past or Ongoing Mitigations

The City of Galax grew up around its industrial district along Chestnut Creek in the core of the city. Due to disastrous flooding problems along Chestnut Creek (especially in 1940), the U.S. Army Corps of Engineers in 1950 channelized the creek through the downtown area and flood-proofed the industrial buildings located there. Following the flood disaster from November 2003, Galax city officials said they had developed a P.E.R. to improve the drainage system to help alleviate flooding problems, but this was not in the city budget at this time. Galax recently submitted a request to the US Army Corps of Engineers to look at possible projects upstream of Chestnut Creek through the Flood Damage Reduction Program (Section 205 of the 1948 Flood Control Act). The end result would be a project that would reduce the 100-year flood plain to the Chestnut Creek channel.

The city's building codes are in line with the most recent statewide revisions known as the Uniform Statewide Building Code, which took effect in 2009. These modern codes help to

offset the impacts of natural hazards such as winds for new construction. For emergency response, the City of Galax participates in the Twin County E-911 system, which covers the entire city, along with the adjoining counties of Carroll and Grayson. Responders include fire departments and rescue squads, local police and sheriff's departments, and the state police.

Severe Weather Events

Begin Location	Begin Date	Event Type	Deaths Direct	Injuries Direct	Damage Property Number	Damage Crops Number	Source
	4/4/13	Winter Weather	0	0	\$-	0	Trained Spotter
Galax	6/18/13	Heavy Rain	0	0	\$-	0	Law Enforcement
Galax	7/3/13	Flood	0	0	\$-	0	Trained Spotter
Galax	7/11/13	Heavy Rain	0	0	\$-	0	Trained Spotter
Galax	7/12/13	Flash Flood	0	0	\$-	0	Trained Spotter
Galax	7/27/13	Flash Flood	0	0	\$20,000	0	Trained Spotter
Galax	8/12/13	Flash Flood	0	0	\$-	0	Public
	12/8/13	Ice Storm	0	0	\$-	0	COOP Observer
	1/7/14	Cold/Wind Chill	0	0	\$-	0	AWOS
	2/12/14	Heavy Snow	0	0	\$-	0	Trained Spotter
	3/6/14	Winter Storm	0	0	\$-	0	Public
Galax	7/3/14	Flood	0	0	\$-	0	911 Call Center
	11/1/14	Winter Weather	0	0	\$-	0	CoCoRaHS
	11/26/14	Winter Weather	0	0	\$-	0	Trained Spotter
	1/23/15	Winter Weather	0	0	\$-	0	Trained Spotter
	2/16/15	Winter Storm	0	0	\$-	0	Public
	2/19/15	Extreme Cold/Wind Chill	0	0	\$-	0	AWOS
	2/25/15	Winter Storm	0	0	\$-	0	Amateur Radio
	1/22/16	Winter Storm	0	0	\$-	0	Trained Spotter
	2/14/16	Winter Storm	0	0	\$-	0	Trained Spotter
	4/5/16	Frost/Freeze	0	0	\$-	0	County Official
	1/6/17	Winter Storm	0	0	\$-	0	Trained Spotter
			0	0	\$20,000	0	

Recommended Mitigations: City of Galax

Rank	Activity	Hazard Addressed	Responsible Party	Timeline/ Status	Comments
High	Addition of a Nexedge System or the RIOS-Comlinc system for Twin County Region (counties of Carroll and Grayson and the City of Galax).	All hazards	City of Galax, MRPDC, VDEM, DCR	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
High	Educate residents on methods recommended by the American Red Cross to prepare for all types of natural disaster.	All hazards	City of Galax, MRPDC, VDEM, DCR, American Red Cross	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Further develop local capacity to document the number, size, age and value of the approximately 1,400 (PDC total) structures located in the floodplain.	Floods	City of Galax, MRPDC, VDEM, DCR	1-3 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Support development of strategic wildfire risk reduction plans such as being promoted by the New River-Highlands RC&D Council.	Wildfire	City of Galax, RC&D, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA
Medium	Support educational programs to promote Firewise methods to affected residents of woodland communities. An estimated 67 homes in Galax are in wooded settings and at risk of wildfire.	Wildfire	City of Galax Firewise, RC&D, MRPDC, DOF	3-5 Years/ Not Started	Funding needed from VDEM/FEMA

PLAN MAINTENANCE

Plan Adoption

It is anticipated that the 2018 revision of the Mount Rogers Hazard Mitigation Plan will be adopted in the summer of 2018. All resolutions for adoption of the plan by participating localities will be included in the final document. The plan was available for public comment throughout the update process. The Public will also have an opportunity to view the plan during the final adoption phase by the localities. The MRPDC will assist any locality in guiding the plan through the adoption process with all necessary public hearings and provide the adoption resolutions.

Plan Implementation

The Mount Rogers Hazard Mitigation Plan will be implemented as follows:

- 1) policy changes that avoid development in hazard areas or that protect buildings from future impacts, and
- 2) implementation projects that physically change the environment to reduce impacts or educate landowners and residents on how to protect themselves and their property in the case of an event.

The goal of implementing the identified strategies is to reduce the loss of life and/or property due to natural hazard events. Policy changes are an ongoing way to implement the hazard mitigation plan. As local plans are updated, such as comprehensive plans, zoning and subdivision ordinances, or capital improvement plans, strategies for mitigating hazard impacts can be included. Changes to these plans do require some foresight and public involvement but can be a way for localities to make significant progress with little capital investment. The MRPDC works regularly with its member localities as they update these plans and is willing to provide technical assistance for including hazard mitigation specific strategies and language when requested.

Implementing projects require more work and investment from the locality or lead agency. Many of the identified projects are contingent on finding grant funding and partnering with other agencies and organizations to complete the project. Grant funding is especially critical in the current economic situation.

Plan Maintenance

The Mount Rogers Hazard Mitigation Plan will be reviewed annually by the staff of the Mount Rogers Planning District Commission with local government staffs to ensure that the project list stays up-to-date (and completed projects are noted). If necessary, the plan will be reviewed and revised after significant hazard events impacting the region. Cost-effective projects may be added to the locality project list each year, with that local government's approval. This review and potential update may be conducted electronically or through an annual meeting of the Hazard Mitigation Steering Committee. The PDC will ensure that each locality section of the mitigation plan is integrated into the comprehensive plans as updates occur. The method of review will depend on the events of the previous year and the extent of potential revisions to be made. An annual report of the status of mitigation actions will be reviewed and sent to VDEM to reduce the burden of evaluating strategies for the required five-year revision.

In five years, the Mount Rogers PDC will work to find funding from VDEM and/or FEMA to update the Mount Rogers Hazard Mitigation Plan. Any update of the plan will include a public input session or strategy to engage the community in this planning effort. At the time of the next update, the effectiveness of the mitigation strategies will be evaluated by determining any reduction in vulnerability to a particular hazard. New vulnerabilities will be identified by looking at event history in the past five years, as well as development that may have occurred in hazard areas. During the interceding five years, the Mount Rogers PDC will maintain the hazard mitigation website and will update it periodically with grant funding availability and project updates from localities, if available. This will also allow for continued public input throughout the plan implementation phase.

Strengthen public participation by providing more avenues for the public to comment on and ask questions about the Hazard Mitigation Plan and its development. The PDC recommends holding at least two regional public input sessions, one to be held in Wytheville for the Bland, Wythe, Carroll, Galax, areas, and one to be held in Marion for the Grayson, Smyth, Washington, Bristol areas. The PDC will also stress to the localities the importance of educating the public on the Mitigation Plan and the need for community support. This outreach can be done via websites and social media.

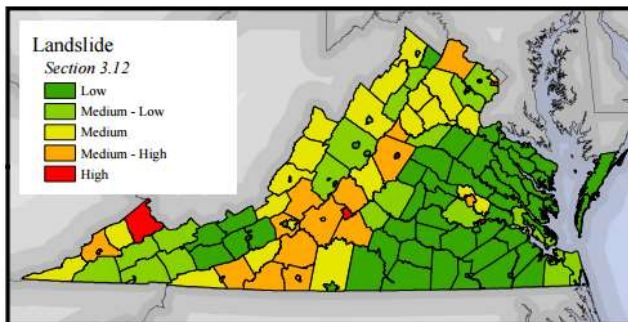
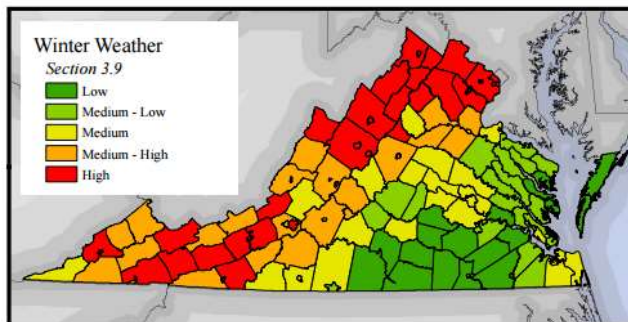
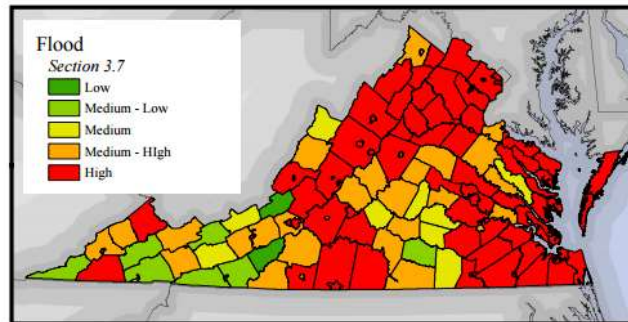
APPENDIX I

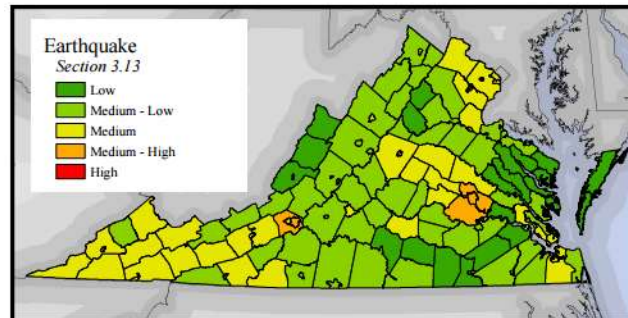
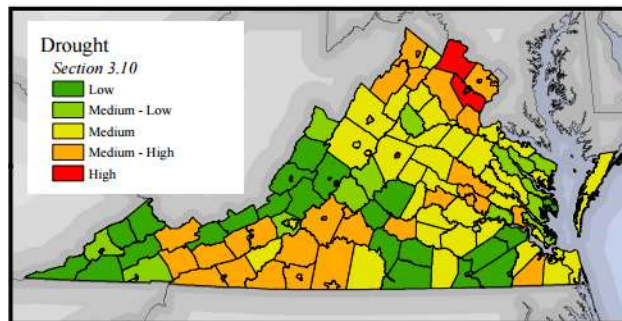
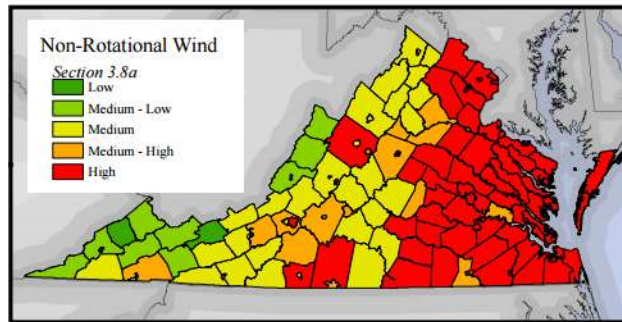
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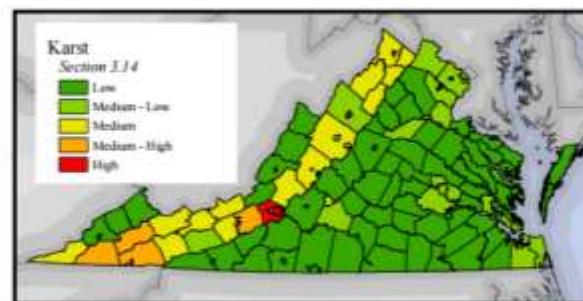
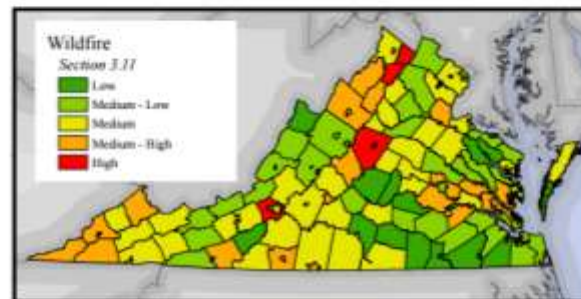
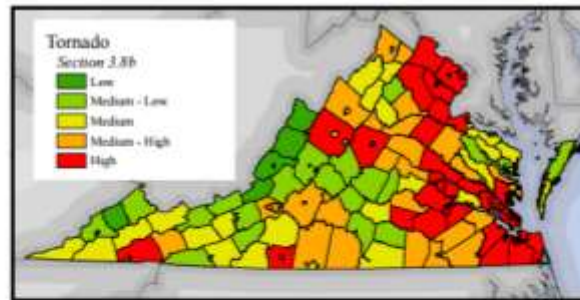
Emergency Management Personnel Contact Information

Jurisdiction Name	Plan POC	Mailing Address	Email	Phone
Bland County	Jenna Dunn	612 Main St. Bland VA24315	jdunn@bland.org	276-688-4641
Carroll County	Everett Lineberry	605-2 Pine St, Hillsville, VA 24343	elineberry@carrollcountyVAorg	276-730-3012
Grayson County	Jimmy Moss	129 Davis St. Independence VA 24348	jmosse@graysoncountyVAgov	276-773-3673
Smyth County	Charles Harrington	121 Bagley Circle Suite 100. Marion VA 24354	cph@marionrha.com	276-783-3381
Washington County	Theresa Kingsley	20281 Rustic Ln, Abingdon VA 24210	tkingsley@washcoVAcom	276-525-1330
Wythe County	Curtis Crawford	340 6 th Street, Wytheville VA 24382	ccrawford@wytheco.org	276-724-6000
City of Galax	Mike Ayers	300 West Grayson St., Galax VA, 24333	mayers@galaxVAcom	276-235-9580
City of Bristol	Mike Armstrong	211 Lee St. Bristol VA 24201	Mike.armstrong@bristolVAorg	276-645-7303
Town of Hillsville	Retta Jackson	410 N. Main St., P.O. Box 545, Hillsville, VA 24343	hillsville@townofhillsville.com	276-728-2128
Town of Independence	Jimmy Moss	129 Davis St. Independence VA 24348	jmosse@graysoncountyVAgov	276-773-3673
Town of Fries	Scott McCoy	1021 Terrace Drive, Marion, VA 24354	smccoy@mrpd.org	276-783-5103
Town of Troutdale	Scott McCoy	1021 Terrace Drive, Marion, VA 24354	smccoy@mrpd.org	276-783-5103
Town of Marion	Bill Rush	138 W. Main Street, Marion VA 24354	brush@marionVAorg	276-783-4113
Town of Chilhowie	John Clark	325 East Lee Highway, PO Box 5012, Chilhowie, VA 24319	chilhowie.townmgr@chilhowie.org	276-646-3232
Town of Saltville	Brian Martin	217 Palmer Ave. Saltville VA 24370	townmanager@saltville.org	276-496-5342
Town of Abingdon	Tyler Vencill	P.O. Box 789, Abingdon VA 24212	tvencill@abingdon-va.gov	276-628-3167
Town of Damascus	Gavin Blevins	1021 Terrace Drive, Marion, VA 24354	gblevins@mrpd.org	276-783-5103
Town of Glade Spring	Aaron Sizemore	1021 Terrace Drive, Marion, VA 24354	asizemore@mrpd.org	276-783-5103
Town of Wytheville	Ian Bishop	150 E. Monroe St, Wytheville, VA 24382	iab@wytheville.org	276-223-3302
Town of Rural Retreat	Jason Childers	PO Box 130, Rural Retreat, VA 24368	jasonc@townofruralretreat.com	276-686-4221

Hazard Ranking Risk Maps







HAZARD RANKING:

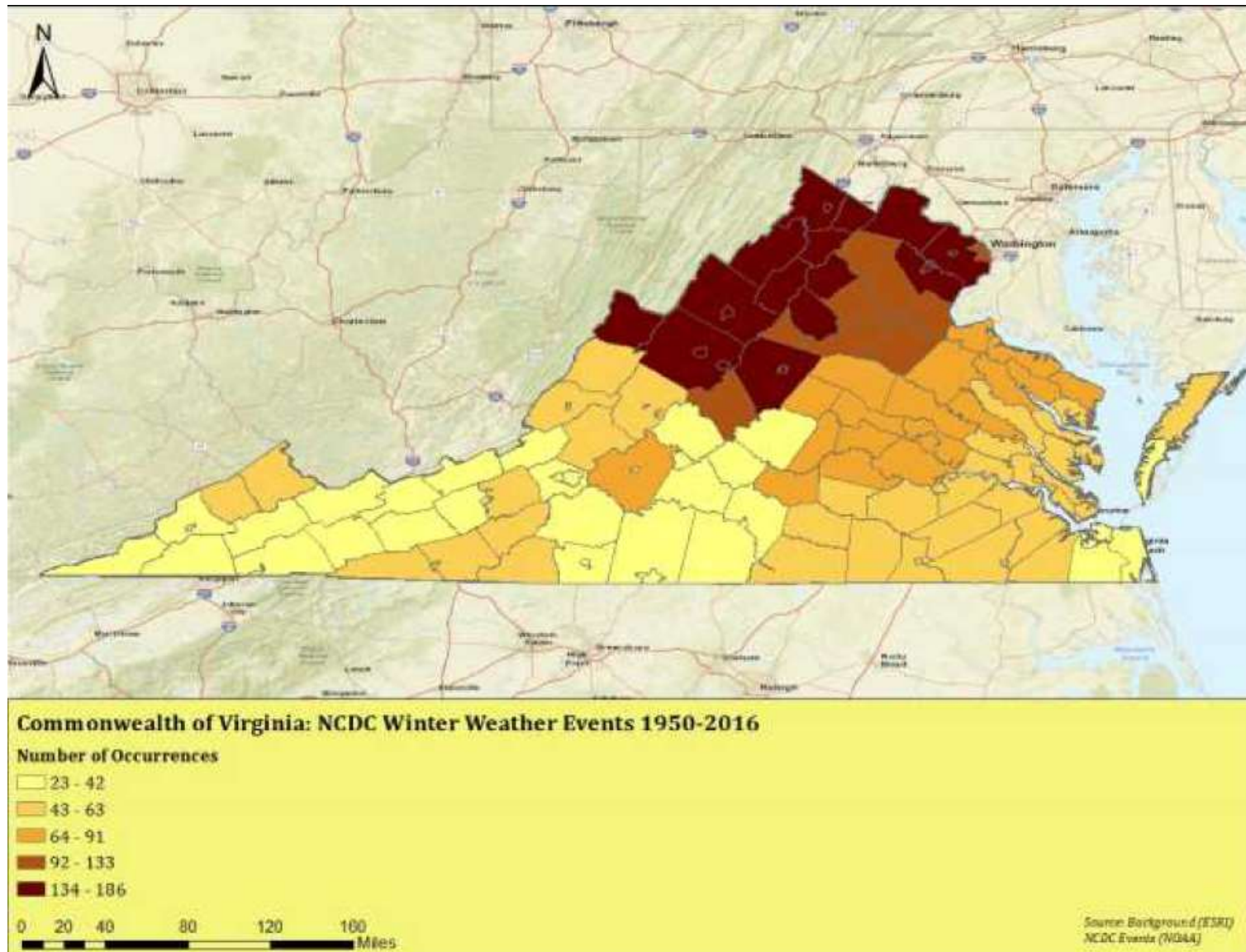
This is a summary of the individual hazard risk maps found in Section 3.7 through Section 3.14. The parameters used to create the Hazard Ranking Parameters and Risk Maps are explained in Section 3.5.

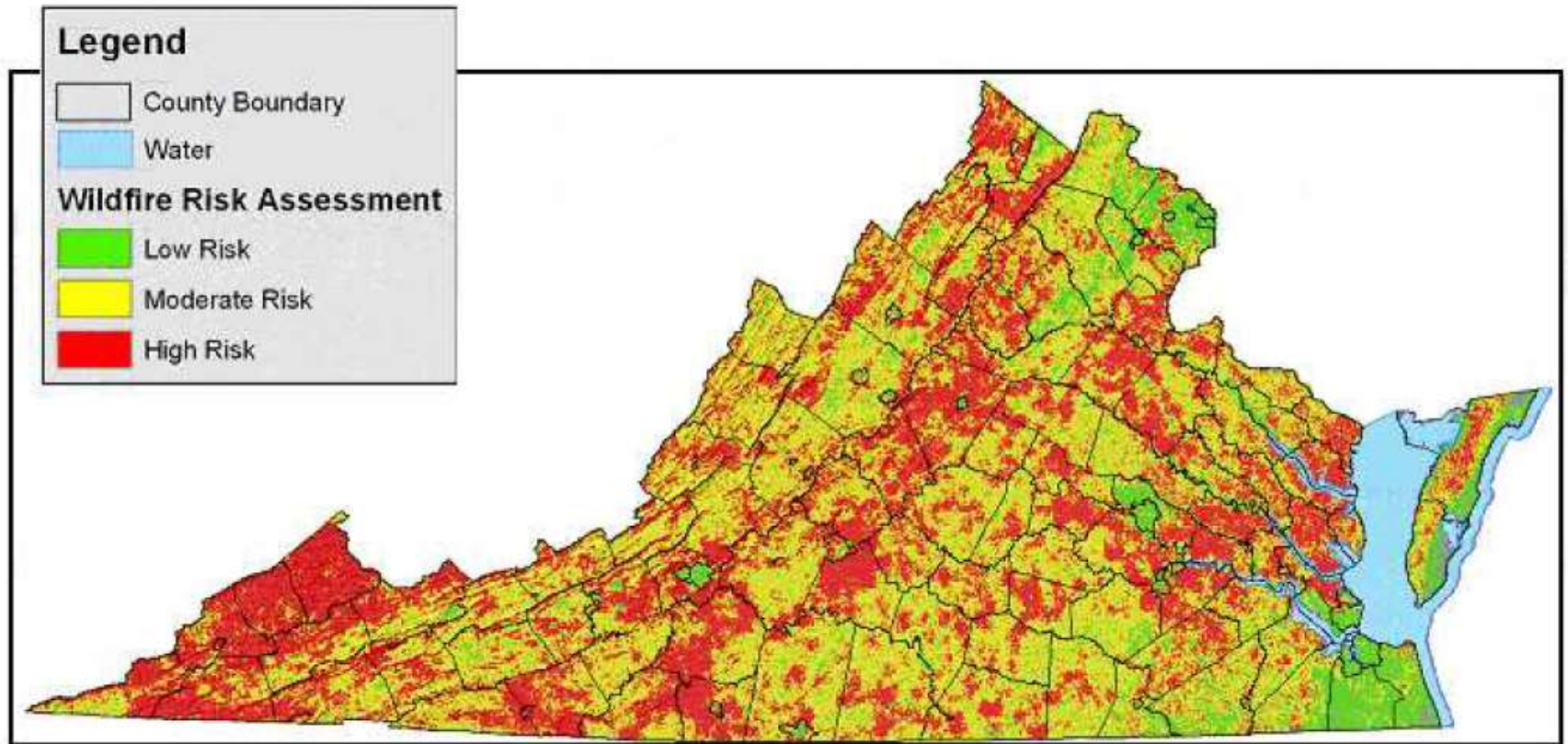
DATA SOURCES:

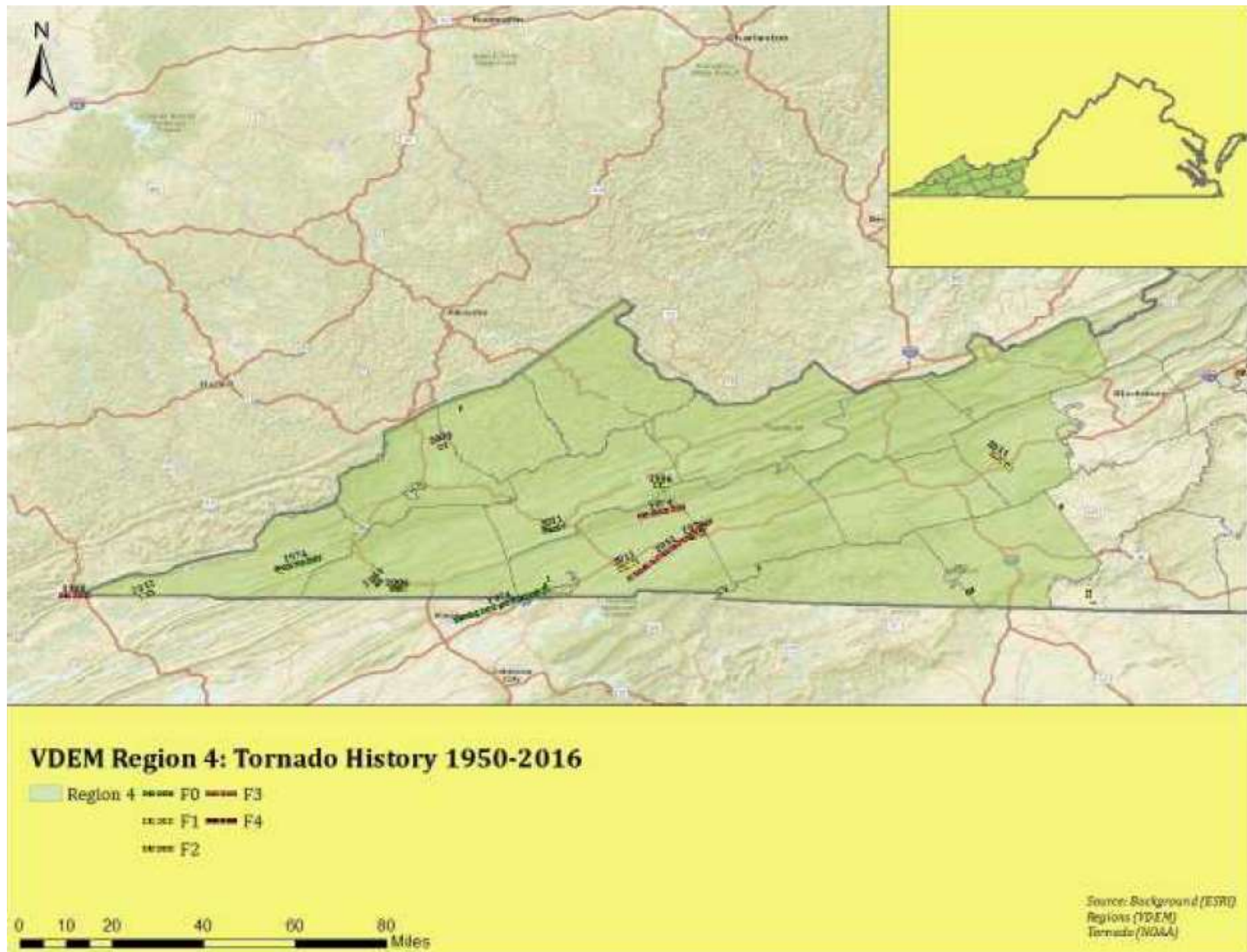
CGIT Ranking Methodology
VGIN Jurisdictional Boundaries
ESRI State Boundaries

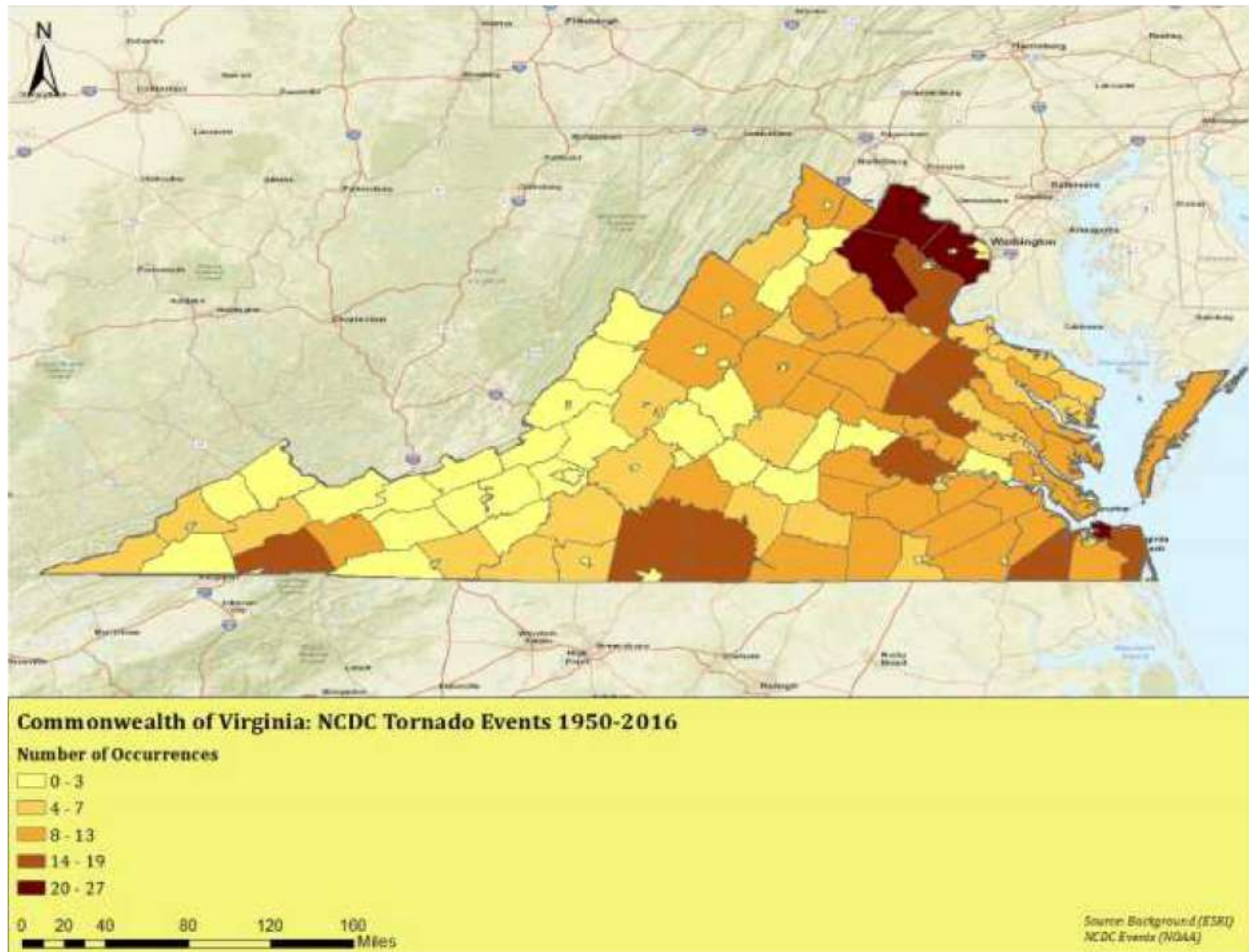
Hazard Identification Maps

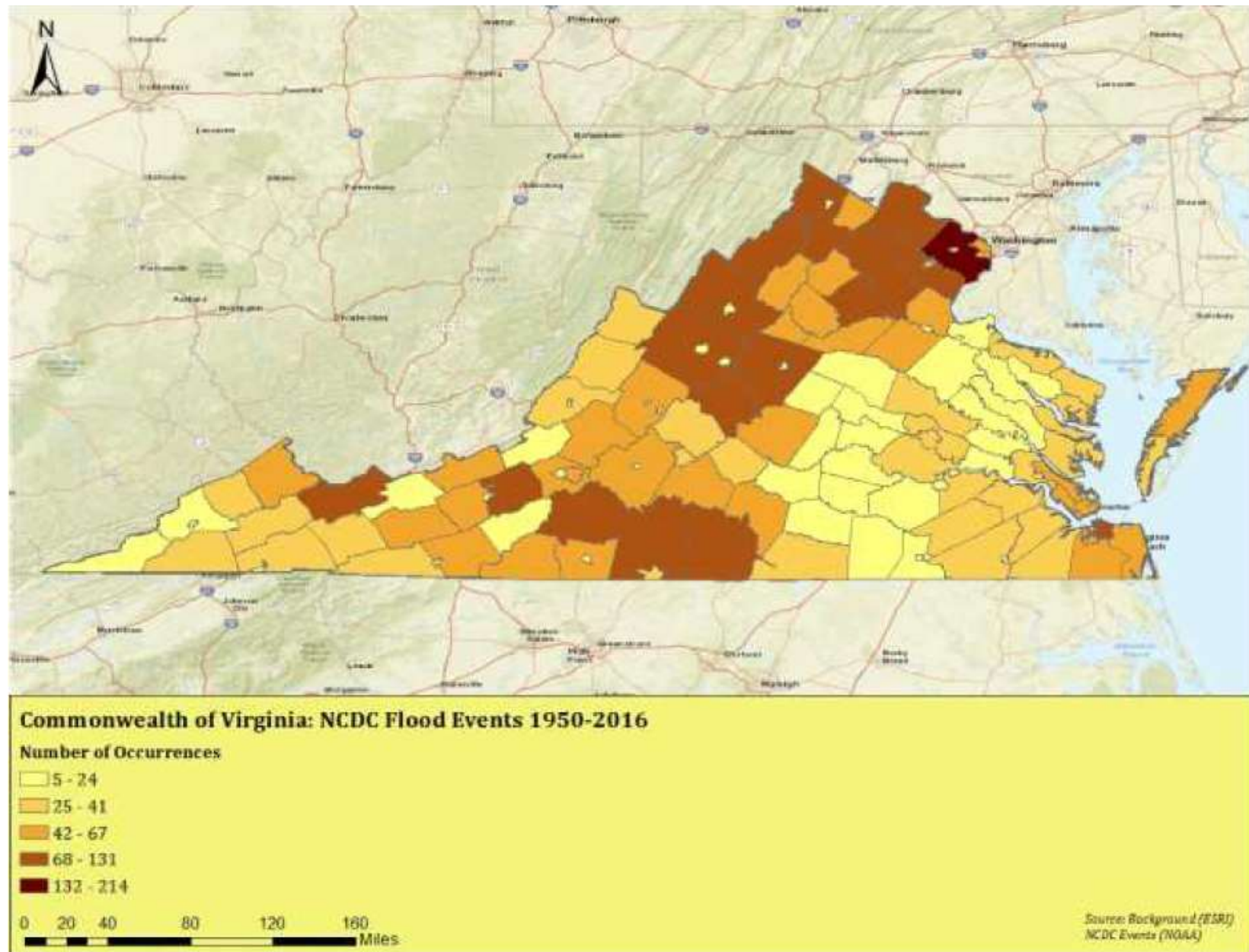
The following maps are sourced from the Virginia Hazard Mitigation Plan.

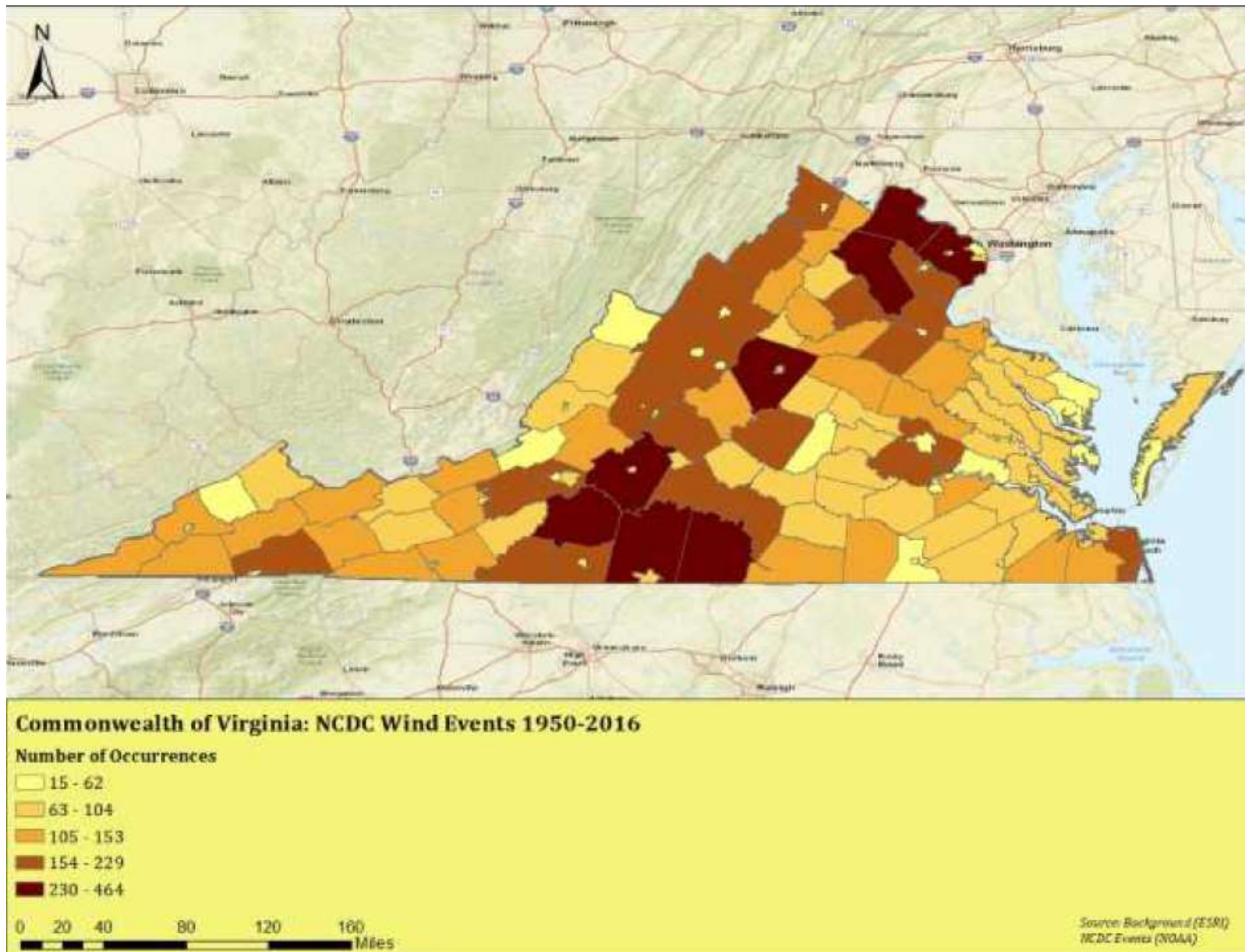






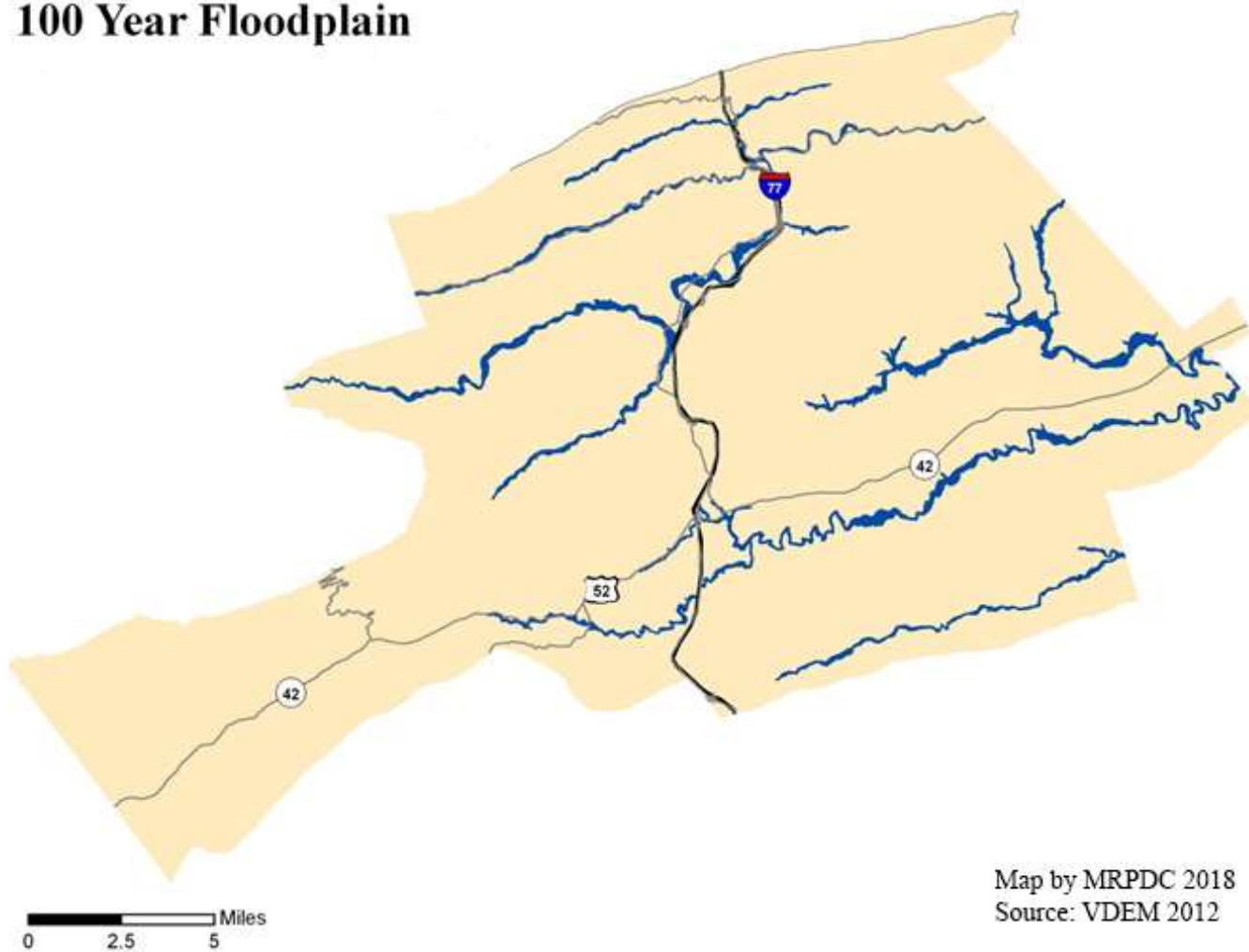






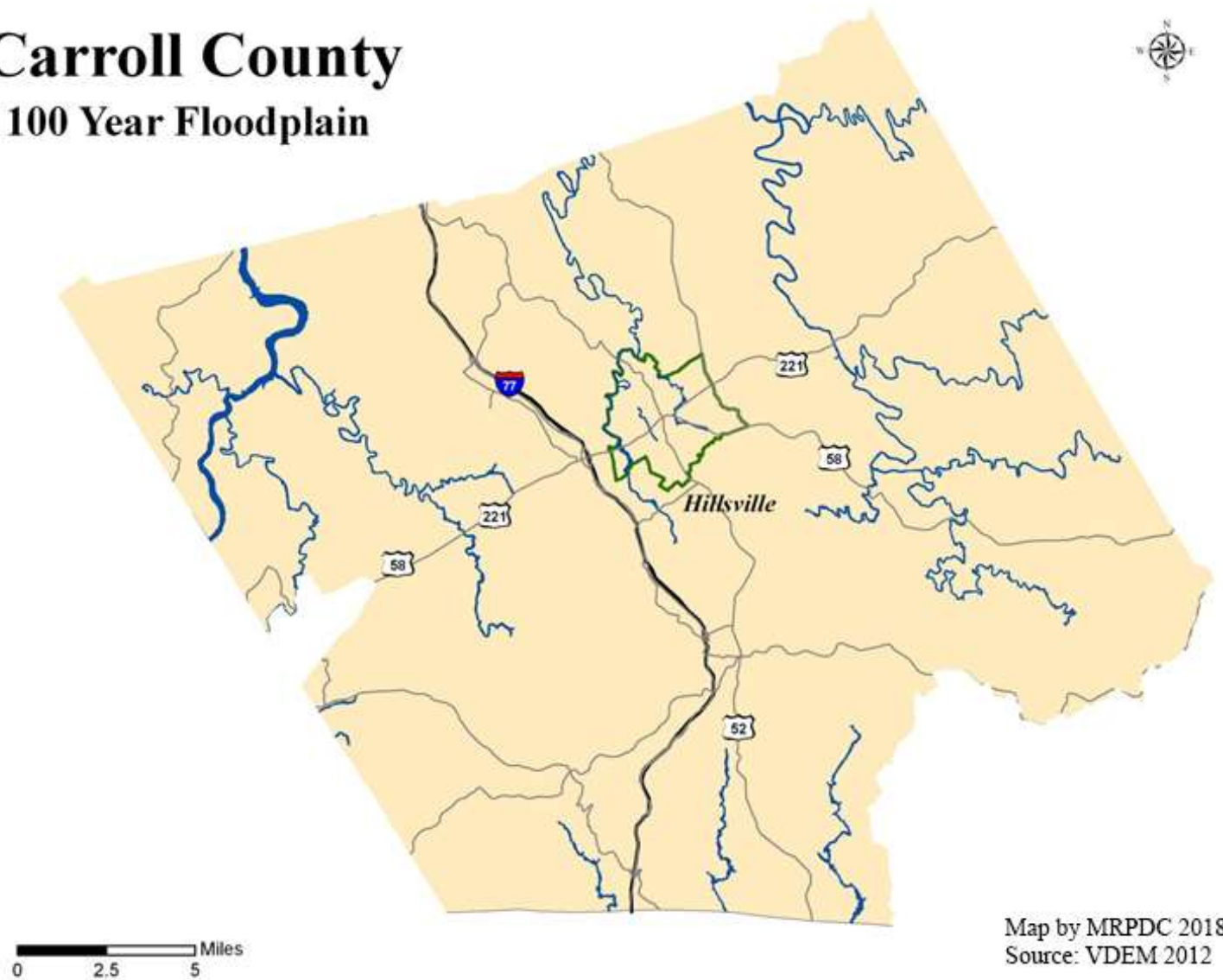
Bland County

100 Year Floodplain



Carroll County

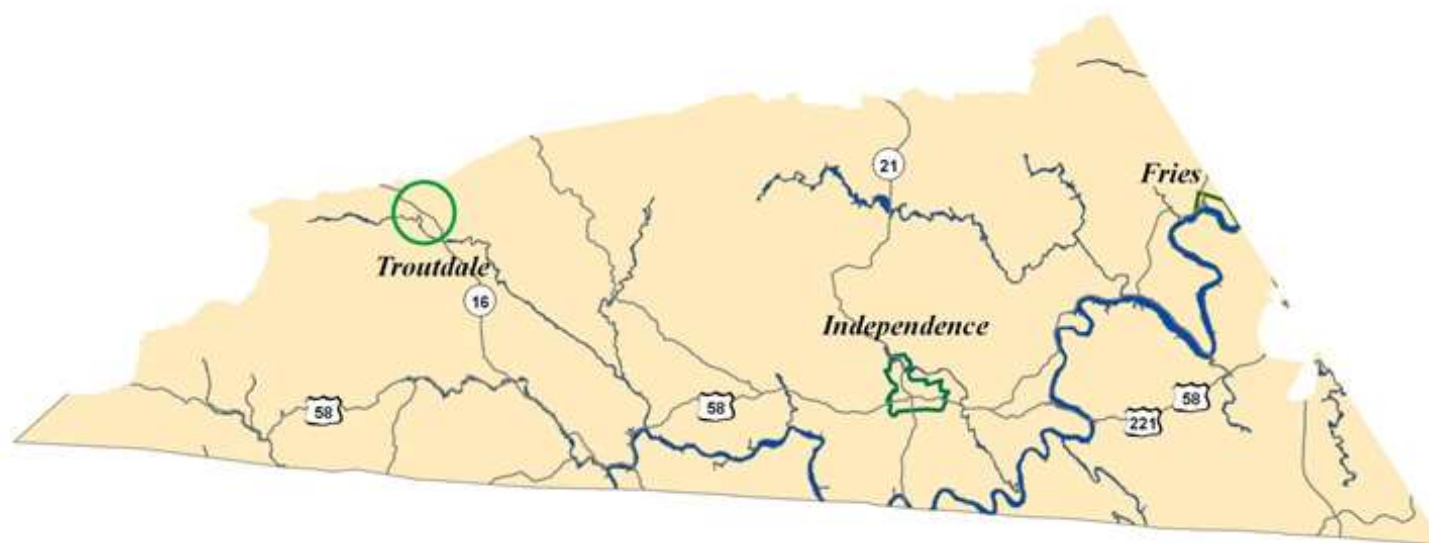
100 Year Floodplain



Map by MRPDC 2018
Source: VDEM 2012

Grayson County

100 Year Floodplain

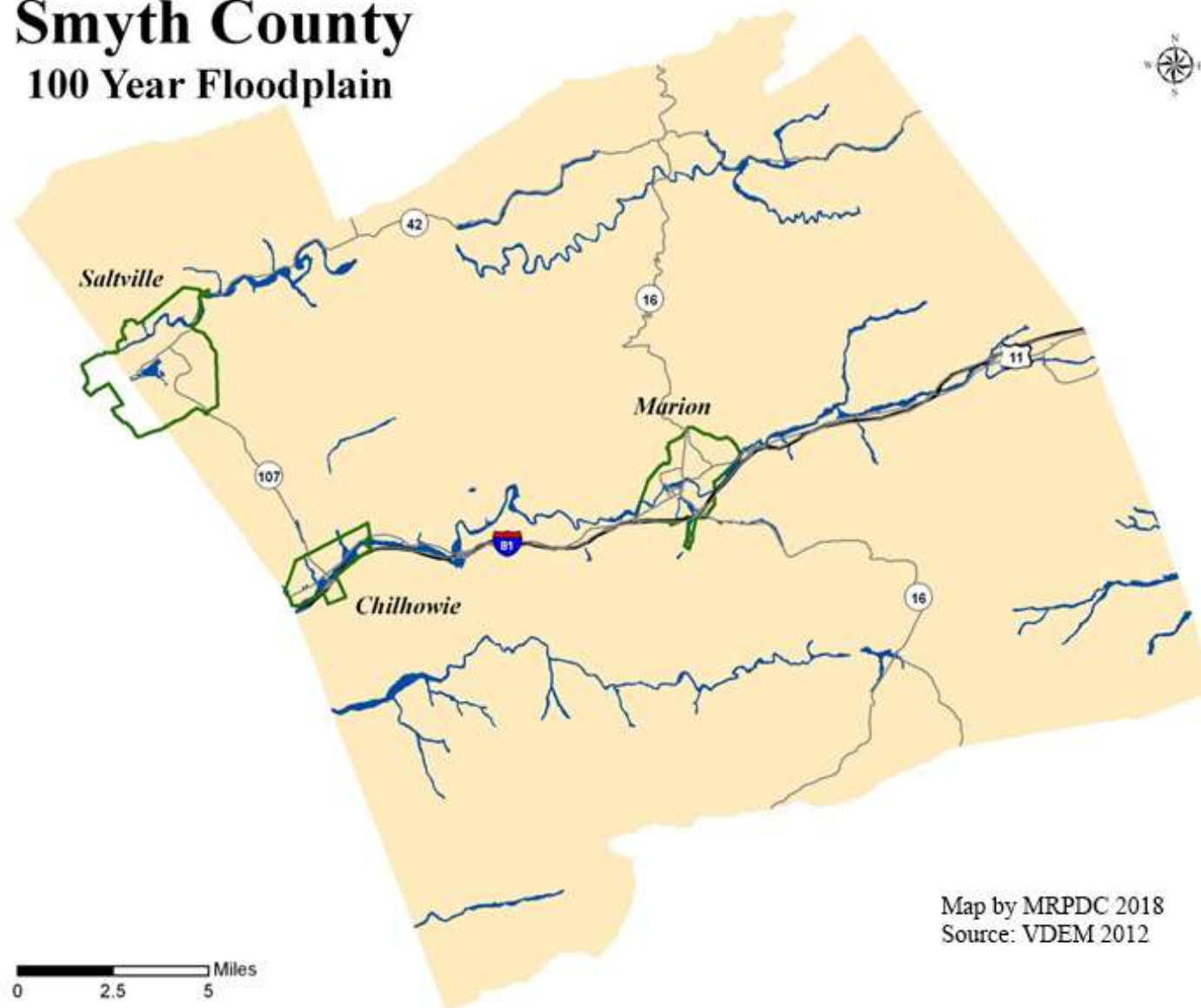


Map by MRPDC 2018
Source: VDEM 2012

0 2.5 5 Miles

Smyth County

100 Year Floodplain



Map by MRPDC 2018
Source: VDEM 2012

Washington County

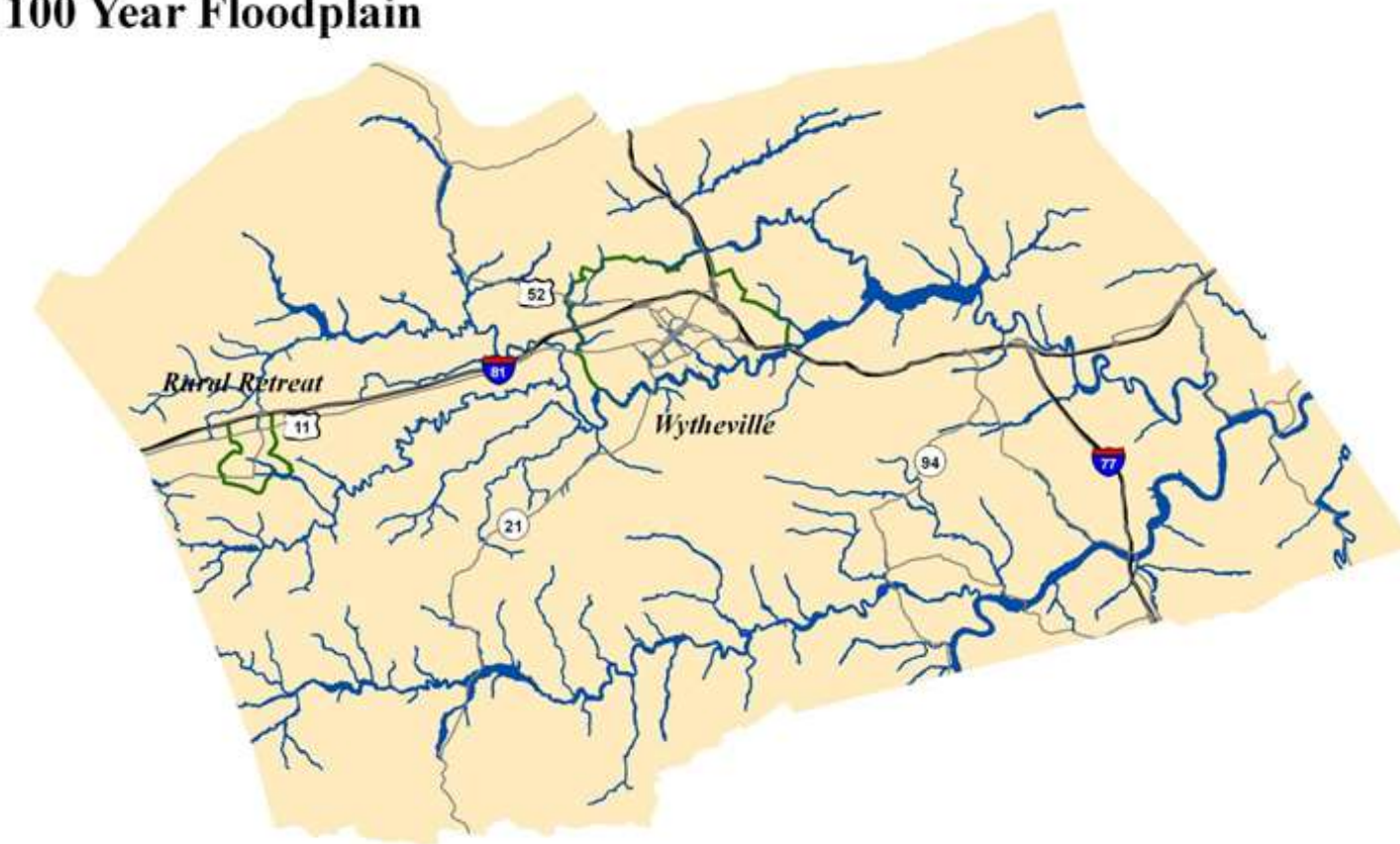
100 Year Floodplain



Map by MRPDC 2018
Source: VDEM 2012

Wythe County

100 Year Floodplain



0 2.5 5 Miles

Map by MRPDC 2018
Source: VDEM 2012

City of Bristol

100 Year Floodplain

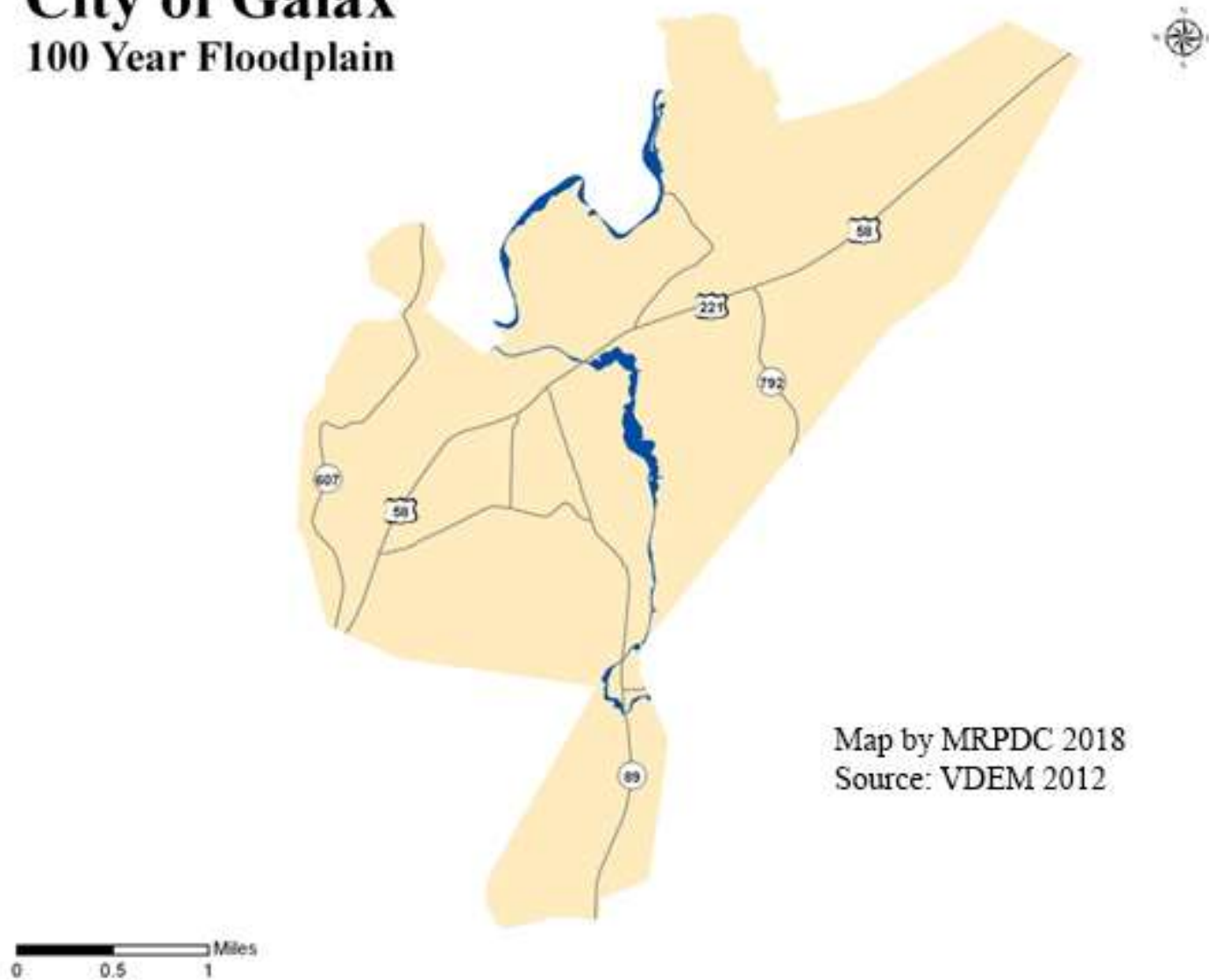


Map by MRPDC 2018
Source: VDEM 2012



City of Galax

100 Year Floodplain



Chapter 30 - FLOODS

FOOTNOTE(S):

⁽³³⁾ **Cross reference**— Buildings and building regulations, ch. 14; environment, ch. 18; streets, sidewalks and other public property, ch. 50; utilities, ch. 54; subdivision, app. A; zoning, app. B; floodplain districts, app. B, art. 7A.

ARTICLE I. - IN GENERAL

Secs. 30-1—30-30. - Reserved.

ARTICLE II. - FLOOD DAMAGE PREVENTION

DIVISION 1. - GENERALLY

Sec. 30-31. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Addition (to an existing building) means any walled and roofed expansion to the perimeter of a building in which the addition is connected by a common loadbearing wall other than a fire wall. Any walled and roofed addition which is connected by a fire wall or is separated by independent perimeter loadbearing walls is new construction.

Appeal means a request for a review of the town's interpretation of any provision of this article or a request for a variance.

Area of shallow flooding means a designated AO or VO zone on the town's flood insurance rate map (FIRM) with base flood depths from one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident.

Area of special flood hazard means the land in the floodplain within the town subject to a one percent or greater chance of flooding in any given year.

Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.

Basement means that portion of a building having its floor subgrade (below ground level) on all sides.

Breakaway wall means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

APPENDIX B

ZONING*

Article 1. General Provisions

- Sec. 1.1. Preamble.
- Sec. 1.2. Title.
- Sec. 1.3. Authority.
- Sec. 1.4. Jurisdiction.

Article 2. Intent and Purpose

- Sec. 2.1. Intent.
- Sec. 2.2. Purpose.

Article 3. Legal Status Provisions

- Sec. 3.1. Interpretation.
- Sec. 3.2. Relationship to other laws and private restrictions.
- Sec. 3.3. Provisions are cumulative.
- Sec. 3.4. Separability.
- Sec. 3.5. Ordinance provisions do not constitute permit.
- Sec. 3.6. Scope of regulations.
- Sec. 3.7. Construction of language.
- Sec. 3.8. Effective date.

Article 4. Administration of Zoning Ordinance

- Sec. 4.1. Creation and authorization of the office of zoning administrator.
- Sec. 4.2. Duties of zoning administrator.
- Sec. 4.3. Plans required for zoning permits.
- Sec. 4.4. Zoning permits required.
- Sec. 4.5. Permits not to be issued.
- Sec. 4.6. Zoning compliance.
- Sec. 4.7. Procedure for principal uses.

Article 5. Enforcement and Remedies

- Sec. 5.1. Complaints regarding violations.
- Sec. 5.2. Penalties for violation.

*** Editor's Note**— Printed in this appendix are the zoning regulations of the town, as adopted by ordinance on December 3, 2001. Amendments to the ordinances are indicated by parenthetical history notes following amended provisions. The absence of a history note indicates that the provision remains unchanged from the original ordinance. Obvious misspellings and punctuation errors have been corrected without notation. For stylistic purposes, headings and catchlines have been made uniform and the same system of capitalization, citation and state statutes, and expression of numbers in text as appears in the Code of Ordinances has been used. Additions made for clarity are indicated by brackets.

Cross references—Any zoning ordinance saved from repeal, § 1-10(11); buildings and building regulations, ch. 14; environment, ch. 18; floods, ch. 30; subdivision, app. A.

State law reference—Zoning, Code of Virginia, § 15.2-2280.

DAMASCUS CODE

- Sec. 5.3. Remedies.
- Sec. 5.4. Remedy procedure.

Article 6. Official Zoning Map

- Sec. 6.1. Incorporation of map.
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ARTICLE 1. GENERAL PROVISIONS

Sec. 1.1. Title.

This ordinance shall be known and cited as the Zoning Ordinance of Damascus, Virginia. The map portion may be cited separately as the Zoning Map of Damascus, Virginia.

Sec. 1.2. Authority.

This ordinance and map are adopted according to the authority of Code of Virginia, § 15.2-2280 et seq. As specified in the above sections of the Code, the Town of Damascus is authorized to, among other things, provide for the establishment of districts in which the town may regulate, restrict, permit, prohibit and determine the following:

- a. The use of land, buildings, structures and other premises for agricultural, business, industrial, residential, flood protection and other uses;
- b. The size, height, area, bulk, location, erection, construction, reconstruction, alteration, repair, maintenance, razing or removal of structures;
- c. The areas and dimensions of land, water, and air space to be occupied by buildings, structures, and uses, and of courts, yards, and other open spaces to be left unoccupied by uses and structures, including the establishment of minimum lot sizes; and
- d. The filling, excavation or mining of soil or other natural resources.

Sec. 1.3. Jurisdiction.

The provisions of this ordinance shall apply to all land and structures within the corporate limits of the Town of Damascus, Virginia.

ARTICLE 2. INTENT AND PURPOSE

Sec. 2.1. Intent.

This ordinance is intended to ensure the orderly land usage, occupation and development of the Town of Damascus.

Sec. 2.2. Purpose.

The purpose of the zoning ordinance is:

To promote the health, safety and general welfare of the public;

To provide for adequate light, air, convenience of access, and safety from fire, flood, and other dangers;

To reduce or prevent congestion in the public streets;

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To facilitate the creation of a convenient, attractive, and harmonious community;

To protect against one or more of the following: overcrowding of land, undue density of population in relation to the community facilities existing or available, obstruction of light and air, danger and congestion in travel and transportation, or loss of life, health or property from fire, flood, panic, or other dangers; and

To encourage economic development activities that provide desirable employment and enlarge the tax base.

ARTICLE 3. LEGAL STATUS PROVISIONS

Sec. 3.1. Interpretation.

In their interpretation and application, the provisions of this ordinance shall be construed to be the minimum requirements for the promotion of the public health, safety, morale, and general welfare of the residents of Damascus.

Sec. 3.2. Relationship to other laws and private restrictions.

3.2-1. Where the conditions imposed by the provisions of this ordinance are comparable with applicable conditions imposed by another ordinance, law, resolution, rule or regulation, the regulations which are more restrictive shall apply.

3.2-2. This ordinance is not intended to abrogate any easement, covenant, or any other private agreement provided that where the regulations of this ordinance are more restrictive (or impose higher standards or requirements) than such easements, covenants, or other private agreements, the requirements of this ordinance shall govern.

Sec. 3.3. Provisions are cumulative.

This ordinance is cumulative with additional limitations imposed by all other laws and ordinances heretofore passed, or which may be passed hereafter, governing any subject matter appearing in this ordinance.

Sec. 3.4. Separability.

It is hereby declared to be the intention of the town council of the Town of Damascus, Virginia, that the provisions of this ordinance are separable.

Thus, if any court of competent jurisdiction should adjudge any provision of this ordinance to be invalid, such judgment shall not affect any other provision of this ordinance not specifically included in said judgment; or

If any court of competent jurisdiction shall hold invalid the application of any provision of this ordinance to a particular property, building, structure, or use, such judgment shall not affect the application of said provisions to any other property, building, structure, or use not specifically included in said judgment.

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Sec. 3.5. Ordinance provisions do not constitute permit.

Nothing contained in this ordinance shall be deemed to be a consent, license or permit to use any property or to locate, construct, or maintain any building, structure, or facility or to carry on any trade, industry, occupation or activity.

Sec. 3.6. Scope of regulations.

3.6-1. New uses, lots, buildings or other structures.

- a. Upon the effective date of this ordinance, no building or other structure shall hereafter be erected or altered or put to use which is used in any manner contrary to the provisions of this ordinance.
- b. No part of a yard, lot, or other open space, or off-street parking or loading space required in connection with any structure for the purpose of complying with this ordinance shall be included as part of a yard, open space, or off-street parking or loading space similarly required for any other structure.
- c. No yard or lot existing at the time of passage of this ordinance shall be reduced in dimension or area below the minimum requirements set forth herein. Yards or lots created after the effective date of this ordinance shall meet at least the minimum requirements established by this ordinance.

Sec. 3.7. Construction of language.

In the construction of this ordinance, the rules contained in this section shall apply, except when the context clearly indicates otherwise:

3.7-1. The word "shall" is always mandatory and not discretionary; and the word "may" is permissive;

3.7-2. The word "lot" shall include the words "part" or "parcel" and the word "building" or "structure" includes all other structures or parts thereof;

3.7-3. The word "permitted" or words "permitted as of right," means permitted without meeting the requirements for a conditional use by special permit pursuant to article 16 of this ordinance;

3.7-4. The particular shall control the general, words used in the present tense shall include the future, and words used in the singular include the plural, and the plural the singular, unless the context clearly indicates the contrary;

3.7-5. All public officials, bodies and agencies to which reference is made are those of the Town of Damascus, Virginia, unless otherwise specified;

3.7-6. In the case of any difference of meaning or implication between the text of this ordinance and any caption, illustration or table, the text shall control;

3.7-7. Except where definitions are specifically included in various articles and sections, words in the text or tables of this ordinance shall be interpreted in accordance with the definitions in article 20. Where words have not been defined, the standard dictionary definition shall prevail. In any case, the zoning administrator shall have the right to interpret the definition of any word.

Sec. 3.8. Effective date.

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This ordinance shall be in force and effect from and after its passage and adoption.

ARTICLE 4. ADMINISTRATION OF ZONING ORDINANCE*

Sec. 4.1. Creation and authorization of the office of zoning administrator.

The office of zoning administrator is hereby established to administer and enforce this ordinance. The zoning administrator shall be designated by the town council and may be provided with assistance of other persons at the direction of the town council.

Sec. 4.2. Duties of zoning administrator.

The zoning administrator shall be responsible for the administration and enforcement of this ordinance and shall have all necessary authority on behalf of the town council to carry out the following duties:

4.2-1. The zoning administrator shall be responsible for the issuance of zoning permits. The zoning administrator shall review each application for a zoning permit and may require any other information which he may deem necessary for the consideration of the application. In cases where a site plan review (article 11), or a conditional use permit (article 16) is required, or where a variance (article 17), or an amendment (article 19) is requested, the zoning administrator must fulfill the duties specified in the appropriate article.

4.2-2. Upon finding that any provision of this ordinance is being violated, the zoning administrator shall follow the procedures authorized in article 5.

Sec. 4.3. Plans required for zoning permits.

Each application for a zoning permit shall be accompanied by a site plan drawn to scale showing:

- a) The shape and dimensions of the plot to be built upon;
- b) The structures and accessory buildings then existing;
- c) The dimensions and location of all proposed structures, alterations or additions;
- d) The existing and intended uses of the land and of each structure or part thereof;
- e) The number of families or dwelling units, where applicable, the structure is designed to accommodate; and
- f) Any other information that the administrator may deem necessary for consideration of the application.

If the proposed structure or use is found to conform to the provisions of this ordinance, the administrator shall issue a zoning permit to the applicant. (See section 4.7 for a diagram of the above process.)

Sec. 4.4. Zoning permits required.

* **Cross reference**— Administration, ch. 2.

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No structure shall be demolished, erected, moved, added to or materially altered, or land used or occupied, without a zoning permit issued by the zoning administrator.

Sec. 4.5. Permits not to be issued.

No zoning permit shall be issued for any land use, building, structure, or part thereof which is not in accordance with the provisions of this ordinance.

The zoning administrator may require an applicant to provide satisfactory evidence that any delinquent real estate taxes, nuisance charges, and any other charges that constitute a lien on the subject property, that are owed to the Town of Damascus and have been properly assessed against the subject property, have been paid, unless otherwise authorized by the treasurer. In the case that satisfactory proof cannot be provided, and authorization is not granted by the treasurer, no zoning permit shall be issued.

Sec. 4.6. Zoning compliance.

The premises are to be inspected by the zoning administrator, or his or her designee, at the time of the application for the zoning permit, and at any time thereafter that may be necessary, to ensure compliance with the plans and specifications upon which the zoning permit were based as well as compliance with any other provision of this ordinance.

Sec. 4.7. Procedure for principal uses.

(See article 7 and article 8 for principal permitted uses in each zoning district.)

_____ APPLICANT _____	Applicant applies for zoning permit and submits copies of plans as specified in section 4.3 to zoning administrator.
Application	
_____ ZONING ADMINISTRATOR _____	Zoning administrator interprets zoning ordinance, inspects premises, and (if the application conforms to the ordinance) issues a zoning permit.
Zoning Permit	
Permitted Activity	Applicant completes activity for which the permit was issued.
Zoning Compliance	Zoning administrator inspects completed activity(s) to determine conformity to plans and specifications.

ARTICLE 5. ENFORCEMENT AND REMEDIES

Sec. 5.1. Complaints regarding violations.

Whenever a violation of this ordinance occurs, or is alleged to have occurred, any person may file a written complaint. The complaint shall state fully the causes and basis of such complaint and shall be filed with the zoning administrator. The zoning administrator shall properly record the complaint, investigate and take such action as provided for in this ordinance.

Sec. 5.2. Penalties for violation.

Violations for the provisions of this ordinance or failure to comply with any of its requirements, including violations of conditions and safeguards established in connection with grants of variances or conditional uses, shall constitute a misdemeanor and shall be punished as provided for by law. Each day such violation exists shall be deemed as a separate offense.

The owner or tenant of any building, structure or premises and any architect, builder, contractor, agent or other person who commits, participates in, assists in or maintains such violation may each be found guilty of a separate offense and shall be punished as provided for by law.

Sec. 5.3. Remedies.

Upon finding that any provision of this ordinance is being violated, the zoning administrator shall notify in writing the person responsible for such violation and order the discontinuance of the construction and use of illegal buildings, structures, illegal additions, alterations or structural changes; and the discontinuance of any illegal work being done.

Should such notice fail to force compliance with the ordinance, the zoning administrator shall request that the town attorney bring legal action to ensure compliance with the ordinance, including injunction, abatement or other appropriate action or proceeding.

In case any building or other structure is proposed to be erected, constructed, reconstructed, altered, extended or converted, or any building, other structure or land is or is proposed to be used in violation of this ordinance, the zoning administrator or other appropriate authority of the town government or neighboring property owner who would be especially damaged by such violation may, in addition to other remedies, institute an injunction, writ of mandamus or other appropriate action or proceeding to correct or abate such violation, to prevent the occupancy of such building or other structure or land, or to prevent such unlawful erection, construction, reconstruction, alteration, extension, conversion or use.

Sec. 5.4. Remedy procedure.

ZONING ADMINISTRATOR	Detects violation and orders in writing that the violation be corrected.
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Orders Remedy in Writing	
_____ VIOLATOR _____	
Situation Remains in Violation	
_____ TOWN ATTORNEY _____	Initiates appropriate court action.
Court Action	
_____ VIOLATOR _____	

ARTICLE 6. OFFICIAL ZONING MAP

Sec. 6.1. Incorporation of map.

The boundaries of districts established by this ordinance shall be shown on the official zoning map which is incorporated into the provisions of this ordinance. The zoning map in its entirety, including all amendments, is as much a part of this ordinance as if fully set forth and described herein.

Sec. 6.2. Identification and alteration of the official zoning map.

6.2-1. The official zoning map shall be identified by the signature of the mayor and bear the town seal under the following words: "This is to certify that this is the official zoning map referred to in the zoning ordinance of the Town of Damascus, Virginia," together with the adoption date of this ordinance.

6.2-2. If, in accordance with the provisions of this ordinance and the Code of Virginia, changes are made in district boundaries or other matter portrayed on the official zoning map, the changes shall be entered on the official zoning map promptly after the amendment has been approved by the town council.

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6.2-3. No amendment to this ordinance which involves a matter portrayed on the official zoning map shall become effective until such change has been made on the map.

6.2-4. No changes of any nature shall be made in the official zoning map or matters shown thereon except in conformity with the procedures set forth in this ordinance. Any unauthorized change of whatever kind shall be considered a violation of this ordinance and punishable as specified in section 5.2.

Sec. 6.3. Interpretation of the official zoning map.

When uncertainty exists as to the boundaries of districts shown on the official zoning map, the following rules shall apply:

- a. Boundaries indicated as approximately following the centerline of streets, highways, or alleys shall be construed to follow such centerlines;
- b. Boundaries indicated as approximately following platted lot lines shall be construed as following such lot lines;
- c. Boundaries indicated as approximately following corporate limits shall be construed as following such corporate limits;
- d. Boundaries indicated as following railroad lines shall be construed to be midway between the main tracks;
- e. Boundaries indicated as approximately following the centerlines of streams or other bodies of water shall be construed to follow such centerlines;
- f. Distances not specifically indicated on the official zoning map shall be determined by the scale of the map;
- g. Where physical features existing on the ground are at variance with those shown on the official zoning map, or in other circumstances not covered by subsections "a" through "f" above, the board of zoning appeals shall interpret the district boundaries. (See article 18.)

ARTICLE 7. ESTABLISHMENT AND PURPOSE OF DISTRICTS

In order to implement all purposes and provisions of this ordinance, the lands within the corporate limits of the Town of Damascus, Virginia, are divided into the following districts, the purpose of which are as follows:

Sec. 7.1. Residential districts.

The residential districts established in this ordinance are designed to promote and protect the health, safety and general welfare by encouraging the following goals for growth:

- a. Provide sufficient space in appropriate locations for residential developments to adequately meet the housing needs of the present and expected future population and provide a variety of choices in site selections;
- b. Permit improved movement on the public ways and effectively utilize existing public ways, and, as far as possible, mitigate the effects of heavy traffic and more particularly all through traffic in residential areas;

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- c. Protect residential areas against flood, fire, explosions and other dangers;
- d. Protect residential areas against undue congestion, as far as possible, by regulating the density of population, the intensity of activity, and the bulk of buildings in relation to the surrounding land and to one another, and by providing for off-street parking spaces for automotive vehicles;
- e. Provide for access of light and air to windows and for privacy, as far as possible, by controls over the height of buildings and structures;
- f. Provide appropriate space for public and private educational, religious, recreational, and similar facilities and public utilities which serve the needs of nearby residents and coordinate the intensity of residential land use with the appropriate community facilities; and
- g. Provide the most desirable use of land in accordance with the comprehensive plan in order to protect the character of residential neighborhoods, conserve the value of land and buildings, and protect the community's tax revenues.

7.1-1. *R-1 single-family districts.* This district is designed to provide suitable areas for single family dwelling units only where necessary community services and facilities, public utilities and open spaces which serve the residents of the district are available or where the extension of these facilities is physically and economically feasible, and serve the residents of the district. It is the express purpose of this ordinance to exclude from this district all buildings or other structures and uses having commercial characteristics whether operated for profit or otherwise, except that conditional uses and home occupations specifically provided for in these regulations shall be permitted if they otherwise conform to the provisions of this ordinance.

7.1-2. *R-2 single-family and multifamily residential districts requiring site plan review.* This district is designed to provide suitable areas for single or multifamily residential development in areas where necessary community services and facilities are available or where the extension of these facilities is physically and economically feasible. It is the intent of this district to allow multifamily dwelling units in a building provided there is sufficient lot area, parking room and open space in the lot relative to the number of dwelling units. This district also includes community facilities, public utilities and open spaces which serve the residents of the district. It is the express purpose of this ordinance to exclude from this district all buildings or other structures and uses having commercial characteristics whether operated for profit or otherwise, except that conditional uses and home occupations specifically provided for in these regulations shall be permitted if they otherwise conform to the provisions of this ordinance.

7.1-3. *R-3/MHP mobile home park residential district requiring site plan review.* This district is designed to provide suitable areas for residential development and mobile home park residential development where appropriate community services and facilities are provided or where the extension of such facilities will be physically and economically feasible. This district will be characterized by multi-family dwellings, and single-family mobile home dwellings in mobile home parks, and accessory structures. This district will also include community facilities, public utilities and open space uses which serve the residents of the district. Home occupations specifically provided for in these regulations shall be permitted if they otherwise conform to the provisions of this ordinance. Special provisions for mobile homes and mobile home parks are outlined in Chapter 10.

Sec. 7.2. Commercial districts.

The commercial districts established by this ordinance are designed to promote and protect the health, safety and general welfare by encouraging the following goals for growth:

- a. Provide sufficient space for the many and diverse types of commercial activity needed to serve the people and industry of Damascus;

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- b. Promote the improvement and orderly growth of the existing well-located commercial centers;
- c. Protect adjacent residential and recreational areas from offensive and detrimental influences; and
- d. Promote the most efficient and desirable land use.

7.2-1. *C-1 core commercial district.* This district is designed to provide for a wide range of retail, office, and service uses normally found in a central business district. High intensity of use is permitted in this district, and increased building bulk is provided as a means of encouraging such development. This district is intended to be designed in a manner conducive to and safe for a high volume of pedestrian traffic. Since these activities tend to generate relatively large volumes of traffic and have other characteristics detrimental to residential districts, their locations should be removed from the proximity of residential districts as much as possible.

7.2-2. *C-2 general commercial district.* This district is designed to provide adequate space in appropriate locations for the establishment of a wide variety of uses including commercial trades and services, entertainment facilities, offices and establishments engaged in wholesale trade. Since these activities tend to generate low to moderate volumes of traffic, uses and buildings in this district should be screened and designed appropriately to abut residential districts.

7.2-3. It shall be unlawful for any real property owner, tenant, or other person to permanently board up any window in any building in the C-1 core commercial district, C-2 general commercial district or C-3 downtown commercial district.

7.2-4. *C-3 downtown commercial district.* This district is designed to provide for the specific land use types generally associated with historic, central business districts, while allowing flexible use of space for a diverse range of uses as development and redevelopment occurs. High intensity of use is permitted in this district, and increased building flexibility is provided as a means of encouraging such development. As such, this district is intended to be designed in a manner conducive to and safe for a high volume of pedestrian traffic. Specific parking regulations for this district include:

- a. The number of off-street parking spaces required for a new use, new structure, or expanded structure to be prescribed by the zoning administrator.
- b. At a minimum, one off-street parking place shall be provided for each unit serving transient or semi-transient guests for all development, excluding reconstruction of substantially damaged structures.

Sec. 7.3. Industrial district.

The industrial district established by this ordinance is designed to promote and protect the health, safety and general welfare by encouraging the following goals for growth:

- a. Provide sufficient space in appropriate locations which are adequately served by community facilities to meet the needs for industrial expansion in Damascus;
- b. Encourage industrial development which is free from hazards to the public health and which is environmentally safe and nonpolluting;
- c. Protect industrial activities against congestion, encroachment from incompatible land uses and other adverse characteristics;
- d. Protect adjacent residential and commercial areas from incompatible land uses and offensive influences; and
- e. Promote the most efficient and desirable use of land.

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In accordance with these goals, the industrial district is designed to provide space for a limited range of industrial uses which have high performance standards and the least objectionable characteristics. In this district, all industrial operations shall be carried on within completely enclosed neighboring properties. Residential uses are excluded from this district. Only those community facility [facilities] and commercial uses which are essential to provide needed services for industry are permitted in this district.

ARTICLE 7A. FLOODPLAIN OVERLAY DISTRICTS*

SECTION I. GENERAL PROVISIONS

Sec. 7A.1. Purpose.

The purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

- A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.
- B. Restricting or prohibiting certain uses, activities, and development from locating within areas subject to flooding.
- C. Requiring all those uses, activities, and developments that do occur in flood prone areas to be protected and/or floodproofed against flooding and flood damage.
- D. Protecting individuals from buying lands and structures which are unsuited for intended purposes because of flood hazards.

Sec. 7A.2. Applicability.

These provisions shall apply to all lands within the jurisdiction of the Town of Damascus and identified as being in the 100-year floodplain by the Federal Emergency Management Agency.

Sec. 7A.3. Compliance and liability.

- A. No land shall hereafter be developed, and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.
- B. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by manmade or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that areas outside the floodplain districts, or that land uses permitted within districts will be free from flooding or flood damages.

* **Cross reference**— Floods, ch. 30.

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- C. This ordinance shall not create liability on the part of Damascus or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

Sec. 7A.4. Abrogation and greater restrictions.

This ordinance supersedes any regulations currently in effect in flood prone areas. However, any underlying regulation shall remain in full force and effect to the extent that its provisions are more restrictive than this ordinance.

Sec. 7A.5. Severability.

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.

Sec. 7A.6. Penalties.

- A. Any person who fails to comply with any of the requirements or provisions of this ordinance or directions of the building inspector or any other authorized employee of the Town of Damascus shall be guilty of a misdemeanor of the first class and subject to the penalties therefor.
- B. In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this ordinance. The imposition of a fine or penalty for any violation of, or noncompliance with, this ordinance shall not excuse the violation or noncompliance to permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered, or relocated in noncompliance with this ordinance may be declared by the Town of Damascus to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this ordinance.

SECTION II. ESTABLISHMENT OF FLOODPLAIN DISTRICTS

Sec. 7A.7. Description of districts.

The various floodplain districts shall include areas subject to inundation by waters of the 100-year flood. The basis for the delineation of these districts shall be the Flood Insurance Study for the Town of Damascus prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated March 16, 1988, as amended September 29, 2010.

- A. *F-1.* The Floodway District is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the 100-year flood without increasing the water surface elevation of that flood more than one foot at any point. The areas included in this district are especially defined in table 3 of the above-referenced flood insurance study and shown on the accompanying flood boundary and floodway map or flood insurance rate map.
- B. *F-2.* The Flood Fringe District shall be that area of the 100-year floodplain not included in the floodway district. The basis for the outermost boundary of this district shall be the 100-year

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flood elevations contained in the flood profiles of the above-referenced flood insurance study and as shown the accompanying flood boundary and floodway map or flood insurance rate map.

Sec. 7A.8. Official floodplain map.

The boundaries of the floodplain districts are established as shown on the Town of Damascus Flood Insurance Rate Map which is declared a part of this ordinance and which shall be kept on file at the town hall.

Sec. 7A.9. District boundary changes.

The delineation of any of the floodplain districts may be revised by the Town of Damascus where natural or manmade changes have occurred and/or where more detailed studies have been conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency, or an individual documents the need for possibility for such change. However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency.

Sec. 7A.10. Interpretation of district boundaries.

Initial interpretations of the boundaries of the floodplain districts shall be made by the building inspector. Should a dispute arise concerning the boundaries of any of the districts, the board of zoning appeals shall make the necessary determination. The person questioning or contesting the location of the district boundary shall be given a reasonable opportunity to present his case to the board and to submit his own technical evidence if he so desires.

SECTION III. DISTRICT PROVISIONS

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of this ordinance and with all other applicable codes, laws and ordinances such as the Virginia Uniform Statewide Building Code. Prior to the issuance of any such permit, the building inspector shall require all applications to include compliance with all applicable state and federal laws. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this municipality, approval shall be obtained from the division of soil and water conservation (Department of Conservation and Recreation). Further notification of the proposal shall be given to all affected adjacent municipalities. Copies of such notification shall be provided to the division of soil and water conservation (Department of Conservation and Recreation) and the Federal Insurance Administration (Federal Emergency Management Agency).

Sec. 7A.11. Application.

All applications for development in the floodplain district and all building permits issued for the floodplain shall incorporate the following information:

- A. For structures that have been elevated, the elevation of the lowest floor (including basement).

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- B. For structures that have been floodproofed (nonresidential only), the elevation to which the structure has been floodproofed.
- C. The elevation of the 100-year flood.

Sec. 7A.12. Floodway district.

In the floodway district, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local and/or state authorities, as required above.

Sec. 7A.13. Flood fringe and approximated floodplain districts.

In the flood fringe and approximated floodplain districts, the development and/or use of land shall be permitted in accordance with the regulations of this ordinance provided that all such uses, activities, and/or development shall be undertaken in strict compliance with the floodproofing and related provisions contained in the Virginia Uniform Statewide Building Code and all other applicable codes and ordinances.

Sec. 7A.14. Design criteria for utilities and facilities.

- A. *Sanitary sewer facilities.* All new or replacement sanitary sewage [sewer] facilities and private package sewage treatment plants including all pumping stations and collector systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges form [from] the systems into the floodwaters. In addition, they should be located and constructed to minimize or eliminate flood damage and impairment.
- B. *Water facilities.* All new or replacement water facilities shall be designed to minimize or eliminate infiltration of floodwaters into the system and be located and constructed to minimize or eliminate flood damages.
- C. *Drainage facilities.* All storm drainage facilities shall be designed to convey the flow of surface waters without damage to persons or property. The systems shall ensure drainage away from buildings and on-site waste disposal sites. The Town of Damascus may require a primarily underground system to accommodate frequent floods and a secondary surface system to accommodate larger, less frequent floods. Drainage plans shall be consistent with local and regional drainage plans. The facilities shall be designed to prevent the discharge of excess runoff onto adjacent properties.
- D. *Utilities.* All utilities, such as gas lines, electrical and telephone systems being placed in flood prone areas should be located, elevated (where possible), and constructed to minimize the chance of impairment during a flooding occurrence.
- E. *Streets and sidewalks.* Streets and sidewalks should be designed to minimize their potential for increasing and aggravating the levels of flood flow. Drainage openings shall be required to sufficiently discharge flood flows without unduly increasing flood heights.

SECTION IV. EXISTING STRUCTURES IN FLOODPLAIN DISTRICTS

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

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- A. Existing structures and/or uses located in the floodway district shall not be expanded or enlarged unless certification with supporting technical data by a registered engineer is provided demonstration [demonstrating] that encroachments shall not result in any increase in flood levels during occurrences of the base flood discharge, which have been approved by all appropriate local and/or state authorities, as required above.
- B. Any modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use located in any floodplain district, to an extent or amount of less than 50 percent of its market value, shall be elevated and/or floodproofed to the greatest extent possible.
- C. The modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use regardless of its location in a floodplain district, to an extent or amount of 50 percent or more of its market value, shall be undertaken only in full compliance with the provisions of the Virginia Uniform Statewide Building Code.
- D. Uses of adjuncts thereof which are, or become, nuisances shall not be permitted to continue.

SECTION V. SPECIAL EXCEPTIONS AND VARIANCES; ADDITIONAL FACTORS TO BE CONSIDERED

Whenever any person is aggrieved by a decision of the building inspector with respect to the provisions of this ordinance, it is the right of that person to appeal to the Board of Zoning Appeals for a special exception. Such appeal must be filed, in writing, within 30 days after the determination by the building inspector. Upon receipt of such an appeal, the Board of Zoning Appeals shall set a time and place for the purpose of hearing the appeal, which shall be not less than ten nor more than 30 days from the date of the receipt of the appeal. Notice of the time and place of the hearing of the appeal shall be given to all parties at which time they may appear and be heard. The determination by the Board of Zoning Appeals shall be final in all cases.

In passing upon applications for special exceptions and variances, the Board of Zoning Appeals shall satisfy all relevant factors and procedures specified in other sections of the zoning ordinance and consider the following additional factors:

- A. The danger of life and property due to increased flood heights or velocities caused by encroachments. No special exception or variance shall be granted for any proposed use, development, or activity within the floodway district that will cause any increase in flood levels during the 100-year flood.
- B. The danger that materials may be swept on to other lands or downstream to the injury of others.
- C. The proposed water supply and sanitation system and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
- D. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
- E. The importance of the services provided by the proposed facility to the community.
- F. The requirements of the facility for a waterfront location.
- G. The availability of alternative locations not subject to flooding for the proposed use.
- H. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
- I. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.

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- J. The safety of access by ordinary and emergency vehicles to the property in time of flood.
- K. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.
- L. Such other factors which are relevant to the purposes of this ordinance.

The Board of Zoning Appeals may refer any application and accompanying documentation pertaining to any request for a special exception or variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

Special exceptions and/or variances shall be issued only after the Board of Zoning Appeals has determined that the granting of such will not result in:

- (a) Unacceptable or prohibited increases in flood heights;
- (b) Additional threats to public safety;
- (c) Extraordinary public expense; and will not
- (d) Create nuisances;
- (e) Cause fraud or victimization of the public; or
- (f) Conflict with local laws or ordinances.

Special exceptions and/or variances shall be issued only after the Board of Zoning Appeals has determined that the special exception and/or variance will be the minimum required to provide relief from any hardship to the applicant.

The Board of Zoning Appeals shall notify the applicant for a special exception and/or variance, in writing, that the issuance of a special exception and/or variance to construct a structure below the 100-year flood elevation:

- (a) Increases the risks to life and property; and
- (b) Will result in increased premium rates for flood insurance.

A record of the above notification as well as all special exceptions and/or variance actions, including justification for their issuance, shall be maintained and any special exceptions and/or variances shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

ARTICLE 7B. GREEN-SPACE DISTRICT

Sec. 7B.1. Purpose.

The purpose of these provisions is for the promotion of healthy lifestyles and family-friendly spaces. These provisions are designed to create permeable lands to resist flooding, and to provide for the effective use of land otherwise unsuitable for residential or commercial development.

Sec. 7B.2. Applicability.

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These provisions shall apply to all lands within the jurisdiction of the Town of Damascus and identified as being zoned as part of the *G-1 green-space district*.

Sec. 7B.3. Uses.

A. *Principal permitted uses.*

Structures such as gazebos, stages, or pavilions;

Recreational facilities such as basketball courts, tennis courts, skate parks and baseball fields.

B. *Permitted accessory uses.*

Parking lots and public restroom facilities;

Informational structures such as kiosks, signs and poles;

Accessory structures customarily incidental to the above permitted uses.

C. *Prohibited uses.*

Residential and commercial uses and facilities;

Any use not allowed by right or accessory use is prohibited in the G-2 green-space district.

Sec. 7B.4. Bulk regulations.

These bulk regulations apply to all uses or structures located on any lot, including all new developments, enlargements, extensions or conversions located within the G-1 district.

A. *Height, maximum.* No building or structure shall be constructed or erected which contains more than one (1) finished floor, whether designed for storage space, human occupancy or otherwise.

B. *Public access.* Pedestrian and bicycle access shall not be limited beyond what is deemed feasible for the safety and welfare of the public.

C. *Light pollution.* Lighting shall be designed to reduce 1) the inadvertent brightening of the night sky and 2) excessive interference with adjoining properties.

D. *Surfacing.* All parking areas or pedestrian/bicycle access routes shall be surfaced with permeable materials, unless such materials would otherwise cause a hazard to safety of the public.

E. *Landscaping.* All landscaping shall be undertaken in a manner natural to the surrounding eco region. No invasive species shall be introduced or permitted to flourish.

ARTICLE 8. USE REGULATIONS

P - Principal Permitted Use C - Conditional Use (Article 16) A - Permitted Accessory Use (20.2) Uses Not Noted in Tables Are Prohibited	<i>DISTRICT</i>								
<i>Use</i>	<i>R-1</i>	<i>R-2</i>	<i>R-3/MHP</i>	<i>C-1</i>	<i>C-2</i>	<i>C-3</i>	<i>I</i>	<i>F-1/2</i>	<i>G-1</i>

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P - Principal Permitted Use C - Conditional Use (Article 16) A - Permitted Accessory Use (20.2) Uses Not Noted in Tables Are Prohibited	DISTRICT								
Use	R-1	R-2	R-3/MHP	C-1	C-2	C-3	I	F-1/2	G-1
Accessory Structure (20.2)	A	A	A	A	A	A	A		
Automotive Service (20.4)					P	C			
Campground*					P		C		A
Community Education (20.11)		P	P		P	C			
Construction Sales and Service (20.14)				C	P	C	P		
Convenience Sales and Service Business (20.15)				P	P	P	P		
Financial Institution (20.25)				P	P	P			
General Personal Service (20.32)				P	P	P			
Home Occupations (20.33)	A	A	A	A	A	A			
Hospitals (20.34)				P	P				
Library (20.39)	P	P		P	P				
Manufactured Home (20.48)			P						
Manufacturing (20.50)							P		
Mobile Home (20.51) (Also article 10)			P						
Modular Home (20.55)	P	P	P						
Multifamily, Dwelling (20.20)		P	P	P	P	P			
Off-Street Parking and Loading (articles 12 and 13)	A	A	A	A	A	A	A	P	P
Place of Worship (20.58)	P	P	P	P	P	P			
Private Recreation Facility (20.61)	A	A	A					P	
Professional Office and Clinic (20.10, 20.62)	C	C		P	P	P			

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P - Principal Permitted Use C - Conditional Use (Article 16) A - Permitted Accessory Use (20.2) Uses Not Noted in Tables Are Prohibited	DISTRICT								
Use	R-1	R-2	R-3/MHP	C-1	C-2	C-3	I	F-1/2	G-1
Public Buildings				P	P	P			A
Public Park or Playground	P	P	P	P	P	P		P	P
Restaurants (20.64)				P	P	P	P		
Retail Stores and Shops (20.66)				P	P	P	P		
Signs (article 14)	A	A	A	A	A	A	A	A	A
Single-Family Detached Dwelling (20.21)	P	P	P	P	P	P			
Site Plan Review Required (article 11)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tents (20.76) *	A	A	A	A	A	A	A	A	A
Transient and Semi-transient Habitation (20.67, 20.78)	C	C	C	P	P	P	C		
Two-Family Dwelling (20.22)		P	P	P	P	P			
Utility Facilities (20.84)		C	P	P	P	P			C
Veterinary Institution or Kennel (20.37)				C	P		C		
Wholesale Sales (20.85)				P	P		P		

NOTE: For clarification see section in parenthesis.

¹Permitted uses are subject to provisions of the existing underlying districts.

*Tenting shall be allowed as follows:

- a) Non-commercial tenting shall be allowed at all times, and in any district, provided that, on any lot, no more than two tents are erected for no longer than seven days in the aggregate in any calendar month, provided further however that no more than five tents shall be allowed on the following holidays: Trail Days (Wednesday – Monday), Memorial Day weekend, Fourth of July, and Labor Day weekend. Non-commercial tenting means that no consideration or remuneration of any kind is either accepted or given by any person at any time.
- b) Commercial tenting shall be allowed only on the holidays referenced above and only in the districts as noted, provided that, on any lot, no more than ten tents of any size shall be erected on any lot. A Land Use Permit must be obtained prior to any commercial tenting activity. Commercial tenting

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means any tenting activity for which a charge or remuneration of any kind is either accepted or given at any time.

- c) Tents shall be allowed at any time in a permitted campground , so long as the campground is only in the districts noted, has a valid permit from the Virginia Health Department, the campground is screened from all adjacent residentially zoned properties, a minimum number of ten (10) parking spaces (sec. 13.4) are available, tents are placed no closer than 5 feet from any other tent or structure and tents are no closer than 20 feet from any lot line.

ARTICLE 9. BULK REQUIREMENTS

Sec. 9.1. Table of requirements.

The following requirements shall be observed for each district in this ordinance.

District	Minimum Site Size (sq. ft.)	Required Setback Line - Minimum Dimensions		
		Front Yard ¹ (ft.)	Side Yard (ft.)	Rear Yard (ft.)
R-1 Single-Family (with public water and public sewer)	10,000 (or 0.229 acres)	30	10	10
R-2 Single-Family and Multifamily (with public water and public sewer)	10,000 (or 2,500 sq. ft. per dwelling unit, whichever is greater) / 0.229 acres	30	20	20
R-3 Mobile Home Park Residential				
Mobile Home Park	5 acres	—	—	—
Mobile Home Lot	4,500 (individual plot)	15	15	15
Other Uses in Park	10,000	30	15	15
C-1 Core Commercial	—	—	(10)**	(10)**
C-2 General Commercial	15,000	—	(10)**	(10)**
C-3 Downtown Commercial	---	---	(15)**	(15)**
I Industrial	—	20	20 (50)**	20 (50)**

¹On double-frontage and corner sites, there shall be a front yard on each street.

**When abutting a residential district, the minimum setback requirements in parentheses shall apply.

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Sec. 9.2. Requirements applicable to all districts.

9.2-1. *Visibility at intersections.* On a corner lot in any district, except the core commercial district, nothing shall be erected, placed, planted or allowed to be grown in such a manner as to impede vision between a height of 2½ and ten feet above the centerline grades within 15 feet of the intersecting streets.

9.2-2. *Fences, walls and hedges.* Fences, walls and hedges may be permitted in any required yard or along the edge of any yard so long as it does not encroach on any public right-of-way, and also except as prohibited in section 9.2-1. Fences or walls in R-1 and R-2 districts shall not be more than 72” in height and shall be constructed of normal residential materials, such as chain-link, pickets, and the like.

9.2-3. *Use of required yard area.* Required yard areas may be occupied by driveways, loading, parking and sidewalks unless otherwise specified in this ordinance. All yards not occupied by such uses shall be devoted to landscaping as defined in section 20.38.

9.2-4. *Accessory buildings.* No accessory building may be erected in a front yard, or within five feet of any other building or within five feet of a property line.

9.2-5. *Structures to have access.* Every structure shall be on a lot fronting a public street, and all structures shall be located on lots so as to provide safe and convenient access for servicing, fire protection and required off-street parking.

9.2-6. *Parking, storage or use of major recreational equipment.* No major recreational equipment or vehicle shall be parked or stored in any front yard of any lot in any residential district more than 72 hours.

9.2-7. *One principal building on any lot.* Only one principal building and its accessory buildings shall be erected on any lot.

9.2-8. *Residence, temporary.* No recreational vehicle, trailer, garage, barn or other similar vehicle, building or structure erected on any lot shall be used as a residence, temporarily or permanently, nor shall any residence of a temporary character be permitted for more than ten (10) consecutive days except as otherwise permitted or restricted.

9.2-9. *Height, maximum.* No building or structure shall be constructed or erected which contains more than three (3) finished floors above ground level, whether designed for storage space, human occupancy or otherwise.

ARTICLE 10. R-3/MHP MOBILE HOME PARK RESIDENTIAL DISTRICTS

Sec. 10.1. Purpose and intent.

This district is designed to provide suitable areas for mobile home park residential development (including manufactured home dwellings) where appropriate community services and facilities, public utilities, and open spaces are provided or where the extension of such facilities will be physically and economically feasible. This district is characterized by single family mobile home and manufactured home dwellings in mobile home parks, and accessory structures. Home occupations specifically provided for in these regulations shall be permitted if they otherwise conform to the provisions of this ordinance.

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Sec. 10.2. Uses.

A. Principal permitted uses.

Mobile home and manufactured home dwelling in mobile home park.

Place of worship.

B. Permitted accessory uses.

Private garages and parking areas;

Private swimming pools, tennis courts and other outdoor recreation facilities exclusively for the use of the residents;

Customary home occupations as defined and subject to the provisions of this ordinance;

Accessory structures customarily incidental to the above permitted uses.

C. Prohibited uses. Any use not allowed by right or accessory use is prohibited in the MHP mobile home park residential district.

Sec. 10.3. Bulk regulations.

These bulk regulations apply to all buildings or other structures located on any lot, including all new developments, enlargements, extensions or conversions located in any MHP district.

A. Minimum required lot area. Within all MHP districts, the minimum required lot area for a mobile home park shall be five acres.

B. Minimum mobile home plot size. The minimum plot size for an individual mobile home in the mobile home park shall be 4,500 square feet and served by public sewer.

Sec. 10.4. Yard requirements.

There shall be a minimum of 15 feet between the front, back and sides of any mobile home and the edges of the lot upon which it is situated. In the event that more than one mobile home is located upon a lot, there shall be a minimum of 30 feet between mobile homes.

Sec. 10.5. Special provisions for mobile homes.

Due to the unique characteristics of mobile homes, the following restrictions are applied to eliminate their adverse effects, including potential hazards, and permit such structures as an alternative form of housing:

Any residential mobile home located within the Town of Damascus shall be a minimum of 15 feet in length and a minimum of 7 feet in width.

All mobile homes shall be underpinned, and axles and wheels shall be covered. The trailer hitch shall be removed if it is removable or shielded if not removed. All mobile homes shall be set on firm blocks at a minimum depth of 14 inches. Each mobile home shall be anchored with approved anchors.

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All residential mobile homes shall be permitted only in those locations designated on the zoning map as MHP mobile home park residential district.

All residential mobile homes or manufactured homes shall be newer than 15 years in age when placed within the town limits of Damascus.

Sec. 10.6. Regulations for establishment of mobile home park.

- A. *Licenses and license fees.* No mobile home may be located in the Town of Damascus unless the same shall be in an approved and duly licensed mobile home park.

It shall be unlawful for any person to maintain or operate within the corporate limits of the Town of Damascus any mobile home park unless such person shall first obtain a zoning and occupancy permit for the park. (The Washington County Health Department also requires a permit to operate an MHP.)

- B. *Application for license.* Applications for a mobile home park zoning permit shall be filed with and issued by the zoning administrator. Applications shall be in writing signed by the applicant and shall contain the following:

- (1) The name and address of the applicant.
- (2) The location and legal description of the mobile home park.
- (3) A complete plan of the park showing compliance with section 10.8 of this ordinance.
- (4) Plans and specifications of all buildings and other improvements constructed or to be constructed within the mobile home park. The sketch shall be drawn to scale showing the number and arrangement of mobile home lots, roadways, water supply, water outlets, location and type of sewage, liquid and garbage disposal and location on other facilities.
- (5) Such further information as may be requested by the zoning administrator for determination of compliance with this ordinance.

The zoning administrator, Planning Commission, Washington County Health Department, Washington County Building Inspector, and the Town Council shall review the proposed plans and specifications.

Sec. 10.7. Reserved.

Sec. 10.8. Specifications for mobile home park plan.

The mobile home park shall conform to the following requirements:

- A. The park shall be located on a well-drained site, properly graded to ensure rapid drainage and freedom from stagnant pools of water. The zoning administrator may, in his or her discretion, require an engineer's certificate to ensure compliance.
- B. The minimum required lot area for a mobile home park shall be five acres.
- C. The minimum plot size for an individual mobile home in the mobile home park shall be 4,500 square feet.
- D. All mobile home spaces shall abut upon a driveway of not less than 30 feet in width with unobstructed access to a public street.

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- F. An electric outlet supplying 100 and 220 volts shall be provided for each mobile home space and shall apply with all applicable building code regulations, whether state, county or town. All electrical installations shall be in compliance with the National Electrical Code. Each mobile home shall have a separate electrical meter.
- G. An adequate supply for water under pressure from a source and of a quality approved by the Virginia Department of Health shall be provided; local water authority shall be used. Water shall be piped and metered separately to each mobile home lot.
- H. Liquefied petroleum gas for cooking purposes shall not be used at individual mobile home spaces unless the containers are properly connected by copper or other suitable metallic tubing. Liquefied petroleum gas cylinders shall be securely fastened and adequately protected from the weather. No cylinder containing liquefied petroleum gas shall be located in a mobile home, nor within five feet of a door thereof.
- I. Waste from laundries shall be discharged into a public sewer in compliance with applicable ordinances. All kitchen sinks, washbasins, bath or shower tubs in any mobile home in any park shall empty into the sanitary sewer drain located on the mobile home space. Mobile home parks shall connect to the municipal sewer with approved and sized lines. No storm drains or roof drainage shall be discharged into the public sewer.
- J. Refuse storage, collection and disposal shall be in accordance with other regulations and ordinances of the Town of Damascus.
- K. The mobile home park shall be subject to the rules and regulations of the fire prevention authorities having jurisdiction.
- L. No permanent additions of any kind shall be built onto, nor become a part of, any mobile home, without approval from the Damascus Zoning Administrator.
- M. All service buildings, mobile homes, mobile home spaces and the grounds of the park shall be maintained in a clean, sightly condition and kept free of any conditions that will menace the health of any occupant or the public or constitute a nuisance.
- N. All mobile homes shall be set in accordance with HUD approved manufacturer's specifications.

ARTICLE 11. REGULATIONS FOR SITE PLAN REVIEW

Sec. 11.1. General provisions.

A special site plan review is required for all building construction in all districts except the single-family residential district (R-1). No zoning permit will be issued in any district until the proposed site development plan has been reviewed by the Damascus Planning Commission and approved by the Damascus Town Council.

Sec. 11.2. Purpose.

The site plan review procedure is required in order to make sure that development will not affect the health, safety, or general welfare of the residents of Damascus in an adverse manner. Specifically, this section allows the planning commission and town council to identify at an early stage proposed activities which would cause traffic hazards, flooding, noise, or other nuisances.

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Sec. 11.3. Site plan specifications.

For all proposed development requiring a site plan review, a site plan for the use and development of the entire tract shall be submitted to the zoning administrator. The site plan shall conform to any other requirement contained in this ordinance, as well as the following requirements:

1. Be drawn to a scale of at least one inch equals 50 feet;
2. Include the following:
 - a. All information required under section 4.3
 - b. All existing and proposed roads and drainage ways;
 - c. Curb cuts, drives and parking and loading areas;
 - d. Landscaping and planting screens;
 - e. Building lines enclosing the portion of the tract within which buildings are to be erected;
 - f. The proposed use of the land and buildings; and
 - g. The existing zoning.
3. Include a vicinity map showing the relationship of the proposed development to:
 - a. The surrounding use districts; and
 - b. Surrounding properties.
4. Bear a certificate by a licensed civil engineer, architect, surveyor, or building inspector certifying that the plan as shown is true and correct.
5. Bear a form for certificate of approval by:
 - a. The planning commission.
 - b. The town council.
6. Provide a form for certification by the owner and trustee of the mortgage, if any, that they adopt the plan, and dedicate the streets as shown on the plan and agree to make any required improvements of adjacent streets as shown on the plan.

Sec. 11.4. Site plan review.

The zoning administrator shall forward the site plan to the planning commission for review and approval. The town council shall also review and approve the application, and may review and reverse Planning Commission approvals.

APPLICANT	
Application	

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_____ ZONING ADMINISTRATOR _____	Zoning administrator forwards site plan to planning commission.
Site Plan	
_____ PLANNING COMMISSION _____	Planning commission shall review and approve site plan or state reasons for disapproval.
Approval or Disapproval	
_____ TOWN COUNCIL _____	Town council shall review and approve the application and may review and reverse planning commission approvals.
Approval or Disapproval	
_____ ZONING ADMINISTRATOR _____	If site plan is approved by planning commission and town council, then zoning administrator issues appropriate permits.

Sec. 11.5. Procedure for site plan review.

The zoning administrator shall forward the site plan to the planning commission which shall review and approve the site plan or state reasons for disapproval to the applicant.

Sec. 11.6. Additional requirements for approval of site plan.

11.6-1. Commercial districts.

- a. All uses shall be conducted within completely enclosed buildings except for parking, and loading; exterior storage and other accessory uses as set forth in the site plan.

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- b. The placement of solid waste storage containers is permitted in rear yards only, and such facilities shall be appropriately screened and maintained in a safe and sanitary manner.

11.6-2. *Industrial district.*

- a. All uses shall be conducted within completely enclosed buildings except for parking, loading, and other accessory uses which by their nature must exist outside a building.
- b. Exterior storage may be permitted in the side and rear of the principal building only, provided the location, extent and screening of storage is approved as a part of the site plan by the planning commission; and further, provided that exterior storage shall be screened from public view by a suitable fence, wall or hedge not exceeding eight feet in height with the stored materials to be kept at least two feet below the top of such screen.
- c. All storage areas shall be surfaced. All areas shall be graded and drained so as to dispose of all surface water in the area.
- d. The location of solid waste storage containers shall be located in rear yards only, and such facilities shall be appropriately screened and maintained in a safe and sanitary manner.

11.6-3. *R-2/ R-3 residential districts.* Development shall conform to all general requirements of previously defined residential districts (see article 7) with only the addition of the site plan review procedure to assure the protection of health, safety, and general welfare.

ARTICLE 12. OFF-STREET LOADING REQUIREMENTS*

Sec. 12.1. General provisions.

The following provisions for accessory off-street loading berths are adopted in order to provide needed space off public streets for loading and unloading activities, to limit the use of streets for such purposes, to help relieve traffic congestion in commercial areas, and thus to promote and protect the public health, safety and general welfare.

Sec. 12.2. Applicability.

The provisions of this ordinance on accessory off-street loading regulations shall apply to community facility, commercial, and industrial uses permitted by right, by accessory use or by conditional use in all districts.

Sec. 12.3. Requirements for off-street loading berths.

Off-street loading berths and access ways to loading berths shall be situated so that pedestrian and vehicular traffic is not adversely affected.

Sec. 12.4. Size of required berths.

* **Cross reference**— Motor vehicles and traffic, ch. 34.

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Off-street loading berths, opened or enclosed, shall have minimum dimensions of: length - 55 feet; width - 12 feet; and vertical clearance - 15 feet.

Sec. 12.5. Location of access to the street.

The entrances and exits to all off-street loading berths shall be located at least 50 feet from the intersection of any two streets.

Sec. 12.6. Surfacing.

All off-street loading berths shall be surfaced with asphalt, concrete or other hard-surfaced dustless material, and constructed so as to provide for adequate drainage and prevent the release of dust.

Sec. 12.7. Screening.

All off-street loading berths located adjacent to residences or a residential district shall be screened from the adjoining residential district, by either:

- a. A strip at least four feet wide, densely planted with shrubs or trees which are at least four feet high at the time of planting and which are of a type which may be expected to form a year-round dense screen at least six feet high within three years; or
- b. A wall or barrier of uniformly painted fence of fire-resistant material, at least six feet high but not more than eight feet high, as measured from the finished grade. Such wall, barrier or fence may be opaque or perforated provided that not more than 50 percent of the fence is open.

In addition, such screening:

- a. Shall be maintained in good condition at all times;
- b. Shall not be located within 15 feet of normal vehicular entrances and exits; and
- c. Shall have no signs hung or attached thereto.

Sec. 12.8. Location.

All off-street loading facilities shall be located to the side or in the rear of the principal building.

ARTICLE 13. OFF-STREET PARKING REQUIREMENTS*

Sec. 13.1. Off-street requirements.

In all districts except *C-3 downtown commercial district* (see article 7), off-street parking shall be provided in accordance with the following provisions as a condition precedent to the use.

* **Cross reference**— Motor vehicles and traffic, ch. 34.

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Sec. 13.2. Space requirements for off-street parking.

In the case of a fraction, the number of required off-street parking spaces shall be rounded off to the nearest whole number.

13.2-1. *Residential dwelling.* Two spaces per dwelling unit.

13.2-2. *Place of worship.* The number of spaces to be prescribed by the zoning administrator.

13.2-3. *Community education, visitor or information center.* The number of spaces to be prescribed by the zoning administrator.

13.2-4. *Community and group assembly.* The number of spaces to be prescribed by the zoning administrator.

13.2-5. *Library, public park, playground, or utility facility.* The number of spaces to be prescribed by the zoning administrator.

13.2-6. *Commercial use.* One off-street parking space shall be provided for the specified number of square feet of gross floor area for the following activities:

<i>Activity</i>	<i>Gross Floor Area (Square Feet)</i>
Retail Sales, Convenience Sales and Service	150
Professional Office	150
Animal Care	150
General Personal Service	300
Financial Institution	400
Automotive Repair and Cleaning Vehicular, Craft and Related Equipment Sales, Rental and Service	500
Construction Sales and Service	1,000
Wholesale Sales	1,000
Transportation	5,000
Warehousing	10,000

[13.2-7. Reserved.]

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13.2-8. *Mortuary service.* One space per 1,000 square feet of gross floor area, and when a chapel is provided, one space for every four permanent seats plus one space for every 25 square feet of floor area where temporary seats are used, whichever requires the greater number of spaces.

13.2-9. *Transient habitation.* One space for each unit in a building serving transient guests.

13.2-10. *Industrial use.* One space shall be provided for every 1,500 square feet of gross floor area or one space for every three employees during a single shift or two successive shifts, whichever requires the greater number of spaces.

Sec. 13.3. Additional regulations for off-street parking.

13.3-1. *Building containing two or more uses.* When a building or lot contains two or more uses having different parking requirements, the parking requirements for each type of use shall apply to the extent of that use.

13.3-2. *Operation of off-street parking spaces.* Off-street spaces shall be designed and operated exclusively for the parking of motor vehicles used by the visitors, occupants, employees, patrons or customers of the use associated with the parking facilities.

13.3-3. *Area of off-street parking spaces.* Each off-street parking space, open or enclosed, shall be a minimum of eight feet wide and 18 feet long exclusive of drives, ramps, and aisles.

13.3-4. *Off-site parking requirements.* Off-street parking must be on the same lot as the principal use except where there is no way to arrange the spaces on the same lot as the principal use provided that:

- a. The spaces are located to draw a minimum of vehicular traffic to and through streets having predominately residential frontage;
- b. The spaces are located no further than 200 feet from the nearest boundary of the lot occupied by facility to which the spaces are accessory;
- c. The spaces are in the same fee simple ownership as the use to which the spaces are accessory; and
- d. The spaces conform to all applicable district regulations of both the district in which the principal use is located and in the district in which the spaces are located. In the event of conflict between the applicable district regulations, the most restrictive shall prevail.

Sec. 13.4. Design of off-street parking spaces.

13.4-1. *Location of access to the street.* The entrances and exits of all required or permitted accessory off-street parking facilities with five or more spaces shall be located as far as possible from the intersection of any two streets.

13.4-2. *Surfacing.* All off-street parking areas shall be surfaced with asphalt, concrete or other hard-surfaced material and so constructed to provide for adequate drainage and prevent the release of dust.

13.4-3. *Screening.* Open off-street parking areas with five or more parking spaces which are located on a lot adjacent to the boundary of a residential district shall be screened from the residential district by either:

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- a. A strip at least four feet wide, densely planted with shrubs or trees at least four feet high at the time of planting, and which are of a type which may be expected to form a year-round dense screen at least eight feet high within three years; or
- b. A wall or barrier or uniformly painted fence of fire-resistant material at least eight feet in height. Such wall, barrier, or fence may be opaque or perforated provided that not more than 50 percent of the fence is open.

In addition, such screening:

- a. Shall be maintained in good condition at all times;
- b. Shall not be placed within five feet of the normal vehicular entrances and exits;
- c. Shall have no signs hung or attached thereto; and
- d. Shall not obstruct visibility of motorists at street intersections.

ARTICLE 14. SIGNS

Sec. 14.1. Purpose.

The provisions of this ordinance shall govern the use of signs in all zoning districts of Damascus

Sec. 14.2. Permit required.

No person shall erect, construct, install or maintain any sign on, upon, or within the boundaries of any property without first submitting a drawing to the zoning administrator showing sign lettering dimensions, methods of attachment, the area in which the sign is to be located, and any additional information deemed necessary for the granting of a permit. Upon receiving written approval from the zoning administrator, the proposed sign may be installed/constructed.

Sec. 14.3. Maximum number.

Any business or nonresidential use may have no more than one sign per street frontage. Small interior signs displaying hours of operation are excluded from the maximum limitation.

Sec. 14.4. Signs in residential districts.

The only signs permitted in residential districts are signs which do not display a commercial message, excluding real estate signs advertising the property on which they are located as for sale, rent or lease, signs allowed without permit (section 14.7), or any signs attendant to a conditional use permit for semi-transient or transient housing, or temporary signs.

Sec. 14.5. General rules for placement and design of signs.

14.5-1. *Prohibition of obstructive and misleading signs.* No sign may be arranged so that it interferes with traffic in any way, including but not limited to; through glare; through blocking of reasonable sight

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lines for streets, sidewalks or driveways; through confusion with a traffic control device (by reason of its color, location, shape, or other characteristics); or through any other means. No sign may be erected which misleads pedestrian or vehicular traffic, by meaning or direction. Rotating beacons and flashing signs are prohibited, excluding small interior signs and state approved traffic control devices.

14.5-2. *Prohibition of moving, changing and mobile signs.* No sign or any portion thereof shall be permitted which is designed to move except for the rotation of barber poles or movement of message boards. Changing signs and multiprism sign units are not permitted except for time and temperature signs. Mobile or trailer mounted signs are not permitted, except for temporary hazard warning signs utilized by the municipal body or a state or federal agency

14.5-3. *Location of signs.* That portion of a sign or a pole or standard of such sign which is in contact with the ground shall be within the lot lines of the property which it represents, not including applicable setbacks or public right-of-way, excluding real estate signs.

14.5-4. *Height of signs.* Signs shall not exceed the height of the structure housing the business advertised or 20 feet, whichever is less.

14.5-5. *Wall signs.* Wall signs for buildings shall not exceed 15% of the area of the wall facing street frontage.

14.5-6. *Overhanging signs.* Overhanging signs or projecting signs referring to business operated on the premises are permitted, provided that any such sign shall not be allowed to protrude more than 3½ feet from the building front, and shall not exceed one square inch for each square foot of that business store front, up to a maximum of 12 square feet. Under-canopy signs are permitted provided they do not exceed 250 square inches and allow a clearance of seven feet from sidewalk to bottom of sign.

14.5-7. *Window signs.* Window signs shall not obstruct more than 35 percent of the visible area of the window if opaque, or be less than 65 percent transparent if covering the entire window surface.

14.5-8. *Sandwich signs.* Moveable A-frame signs shall not be further than 15 feet from the door of the establishment advertised and shall only be allowed during operation hours of the business. Only one sandwich sign shall be allowed per business and no such sign shall be larger than 3 feet high by 1 ½ feet wide. No sandwich sign shall be placed in a manner as to impede traffic on public rights of way.

14.5-9. *Landscaping.* For freestanding signs above 5 feet in height, designed for advertising, the base of the sign shall be landscaped appropriately so as to discourage tampering with the structure of the sign and to foster good community appearance.

14.5-10. *Illumination.* All lighted signs will meet the requirements of the local electrical codes. Neon bulbs and filaments shall not be exposed. Internally illuminated signs shall be required to have an opaque background. Signs shall not be illuminated by strings of lights. Illumination of signs shall be in a manner which does not create light pollution which would affect neighboring properties or the safety of vehicular, pedestrian or bicycle traffic. The American Flag may be illuminated with spot lights.

Sec. 14.6. Nonconforming signs.

Any advertising structure or sign which was lawfully erected and maintained prior to the adoption of this ordinance shall be allowed to remain as a nonconforming sign. Any previously nonconforming sign damaged to the extent that it represents a public hazard as determined by the zoning administrator or where damage exceeds 75 percent of the replacement costs shall be required to conform to the provisions of this

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ordinance. Signs advertising a business which changes ownership or ceases to do business must be removed within 90 days of the date of change of ownership or business closing.

Sec. 14.7. Signs allowed without permit.

The following signs shall be allowed in all districts and are not counted toward the applicable limits on the number of signs allowed, provided that the sign otherwise meets the size limitations which are applicable. No signs allowed under this subsection, excluding traffic control signs, may be illuminated. Signs allowed without permit include:

- a) *Construction signs.* Such signs shall not exceed an area of 32 square feet and shall be removed once construction is completed.
- b) *Flags.* Flags of the United States of America, this commonwealth, or any official government organization and religious, charitable, fraternal, military or community service organization.
- c) *Identification signs.* Signs such as building numbers, addresses, private parking signs.
- d) *Political signs.* Signs expressing support for a candidate for public office or another position regarding a public figure or issue, but bearing no commercial message. Political signs shall be removed within 30 days after the applicable election.
- e) *Public art.* Street graphics and other forms of art such as, but not limited to, murals and sculptures that do not constitute any type of outdoor advertising of a commercial message, and are not displayed with profanity or nudity.
- f) *Indoor promotional signs.* Temporary business or promotional signs displayed inside a building or establishment, which are in view of the general public, including those attached to windows, for a period of less than 90 days.
- g) *Realty signs.* Signs advertising the premises for sale, rent or lease. Such signs shall not exceed 6 square feet in area and 4 feet in height for freestanding signs, and shall be located on the land or premises advertised.
- h) *Traffic control signs.* Traffic, municipal, legal notice, directional or informational signs; railroad crossing signs, danger, safety, temporary or emergency signs.
- i) *Yard sale signs.* Signs advertising a yard or garage sale, not to exceed 4 feet in height or 6 square feet in area per sign. Limited to 1 sign per lot, signs may not be erected for a period exceeding 1 week.
- j) *Memorial plaques or tablets.* Such items memorializing events or persons requiring Town Council approval.
- k) *Outdoor promotional signs.* Temporary business or promotional signs displayed outside a building or establishment, which are in view of the general public, for a period of less than 90 days.

ARTICLE 15. PROVISIONS GOVERNING NONCONFORMING USES

Sec. 15.1. Statement of purpose.

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In order to guide the development of compatible land use patterns in Damascus, nonconforming uses which adversely affect the development of such areas must be subject to certain limitations. The provisions of this article are designed to provide a gradual remedy for existing undesirable conditions which result from incompatible nonconforming uses. While such uses are generally permitted to continue, the provisions are designed to discourage further investment in or continuance of these uses.

Sec. 15.2. Applicability.

The provisions of this article apply to all uses, signs, buildings and structures which are not permitted within the districts in which they are located. Any nonconforming use or structure which existed lawfully at the time of enactment of this ordinance, or any use which shall become nonconforming upon enactment of this ordinance and subsequent amendments, may be continued subject to the provisions of this article. For the purpose of this ordinance, a change in use is a change in the type of activity, however, a change in occupancy or ownership shall not, by itself, constitute a change of use.

Sec. 15.3. Change of nonconforming use to conforming use.

A nonconforming use may be changed to any conforming use. However, all applicable regulations and accessory off-street parking requirements shall apply to such change.

Sec. 15.4. Change of nonconforming use to nonconforming use.

In all districts, a nonconforming use, building or structure may not be changed to another nonconforming use, building or structure.

Sec. 15.5. Discontinuance.

No nonconforming use, structure, use of land or sign shall be reestablished after discontinuance of one year.

Sec. 15.6. Repairs, alterations and expansion of nonconforming structure or use.

15.6-1. *Incidental alterations.* Incidental alterations as defined by this ordinance may be made to a building or structure occupied by a nonconforming use.

15.6-2. *Alterations other than incidental alterations.* No alterations other than incidental alterations shall be made to a building or other structure occupied by a nonconforming use except when made:

- a. In order to comply with requirements of law regarding fire protection, safety of structure, etc.
- b. In order to conform to the applicable district regulations.

15.6-3. *Repair of nonconforming use.* No nonconforming structure or structure used for a nonconforming use shall be rebuilt or repaired after damage exceeding 75 percent of replacement cost unless the use and structure conform to the other provisions of this ordinance.

15.6-4. *Expansion of nonconforming use.* No structure used for a nonconforming use shall be expanded except in conformity with this ordinance. The nonconforming use of land, not involving a building or

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structure, or involving a use or structure which is incidental or accessory to the principal use of the land, shall not be expanded beyond the area it occupies.

15.6-5. *Conditional use permit.* Nonconforming manufactured homes in place at the time of the enactment of this ordinance may be replaced by conditional use permit provided the new unit meets applicable department of housing and community development regulations and the Virginia Uniform Statewide Building Code and is no more than five years old.

Sec. 15.7. Nonconforming signs.

(See section 14.6.)

Sec. 15.8. Existing structures in floodplain districts.

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions may be continued subject to the following conditions:

- a. Existing structures located in the floodway district shall not be expanded or enlarged unless certification (with supporting technical data) by a registered engineer is provided demonstrating that encroachments shall not result in any increase in flood levels during occurrences of the base flood discharge, which have been approved by all appropriate local and/or state authorities, as required in article 7A.
- b. Any modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use located in any floodplain district, to an extent or amount of less than or equal to 50 percent of its market value, shall be elevated and/or floodproofed to the greatest extent possible.

The modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use regardless of its location in a floodplain district, to an extent or amount of 50 percent or more of its market value, shall be undertaken only in full compliance with the provisions of the Virginia Uniform Statewide Building Code and the National Flood Insurance Program.

- c. Uses of appurtenant or accessory structures thereof which are, or become, nuisances shall not be permitted to continue.

ARTICLE 16. CONDITIONAL USE PROVISIONS

Sec. 16.1. General provisions.

General requirements are hereby established which shall apply to all applications for conditional use permits, and specific standards listed shall apply to the issuance of a conditional use permit as appropriate. The board of zoning appeals may impose such other conditions and restrictions as may be necessary to reduce or minimize the injurious effect of the conditional use and ensure compatibility with surrounding property, and the board may also establish dates for the expiration of any conditional use permit as a condition of approval.

Sec. 16.2. Issuance of conditional use permit.

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The board of zoning appeals shall hear and decide, in accordance with the provisions of this ordinance, requests for conditional use permits. For the purposes of administration of this ordinance, conditional uses shall be construed as synonymous with special exceptions, as controlled by Code of Virginia, § 15.2-2310.

Sec. 16.3. Application for conditional use permit.

The application for a conditional use permit shall be made by the property owner or his designated agent, and filed in writing with the board of zoning appeals and shall contain information and exhibits as may be required by the board. Not more than 60 days after filing such applications, a hearing shall be held on the application. Notice of the hearing shall be in accordance with Code of Virginia, § 15.2-2204. A fee payable to the Town of Damascus shall be charged to defray costs of review and processing for each application for a conditional use permit, except that the fee shall be waived for any governmental agency. Upon approval by the board, the zoning administrator shall issue a use permit to the applicant as specified in article 4.

Sec. 16.4. General requirements.

A conditional use permit may be granted provided the board finds that the conditional use:

- a. Is designed, located and operated so as the public health, safety and welfare will be protected;
- b. Will not adversely affect other property in the area in which it is located;
- c. Is within the provision of "conditional uses" as set forth in this ordinance; and
- d. Conforms to all applicable provisions of this ordinance for the district in which it is to be located.

Sec. 16.5. Specific standards.

In addition to the requirements of the applicable district and the general requirements set forth above, a conditional use permit may be granted for the following uses when the following conditions are met as part of the condition for issuance of a permit:

16.5-1. Specific conditions for utility facilities.

- a. All of the bulk regulations of the zoning district shall apply.
- b. The location of the facility shall not materially increase traffic on surrounding streets.
- c. The location of the facility shall not have an adverse effect on surrounding properties.
- d. There shall be provided along the entire site boundaries fencing, screening and landscaping, as appropriate to protect the surrounding area.

16.5-2. Specific conditions for residential unit in C-1 district and C-2 district.

- a. The location of the facility shall not have an adverse effect on surrounding properties.
- b. There shall be provided along the entire site boundaries fencing, screening and landscaping, as appropriate to protect the enclosed area.

16.5-3. Transient/semi-transient habitation in the R-1, R-2 and R-3 district.

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Transient and semi-transient habitation may be permitted only as a conditional use in accordance with Article 8, Use Regulations.

- a. *No adverse effect.* The location, site, and design of such facilities shall be in keeping with the character of the surrounding area, and shall not have an adverse effect on properties within the surrounding area. The activity shall not create any additional noise, vibration, dust, fumes, odors, glare, other than those normally expected in a residential district.
- b. *Planning commission review.* The planning commission shall review and may approve site plans for any new facility to be constructed or any existing facility to be converted for this conditional use prior to the issuance of a conditional use permit.
- c. *Off-street parking.* One space for each unit in a building serving transient guests.
- d. *General conditions.* Proposed uses shall conform to the general bulk, yard, and site requirements.

Sec. 16.6. Conditional use permit appeals.

Any person or any agency of the town government may appeal to the circuit court of the county to review the decision of the board of zoning appeals as provided under Code of Virginia, § 15.2-2314. The court may reverse or affirm, wholly or partly, or may modify the decision brought up for review.

ARTICLE 17. ADMINISTRATION OF VARIANCE PERMITS

Sec. 17.1. Issuance of zoning variance.

The board of zoning appeals shall hear and decide, in accordance with the provisions of this ordinance, requests for zoning variances.

Sec. 17.2. Application for zoning variance.

An application for a zoning variance may be made by any property owner, tenant, government official, department, board or bureau. The application shall be made to the zoning administrator in accordance with rules adopted by the board. The application and accompanying maps, plans or other information shall be transmitted promptly to the board. Not more than 60 days after filing such application, a hearing shall be held on the application. Notice of the hearing shall be in accordance with the hearing procedures in Code of Virginia, § 15.2-2204. A fee payable to the Town of Damascus shall be charged to defray the cost of review and processing for each application for a variance, except that the fee shall be waived for any governmental agency.

Sec. 17.3. Notice to affected property owners.

It shall be the general rule of the board that reasonable efforts shall be made to contact and notify interested parties who, in the opinion of the board, may be affected by any matter brought before the board. In all cases, all owners of record of adjoining property, including those separated by a public way from the premises in question, shall be notified. The notification required to meet this provision shall be accomplished by registered mail addressed to the respective owner at the address given in the latest tax records.

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Sec. 17.4. Standards for variances.

The board shall not grant a variance unless it finds:

- a. That the property owner acquired the property in good faith, and that by reason of exceptional narrowness, shallowness, size or shape, or exceptional topographic conditions or other extraordinary conditions of the property, or of the use or development of property immediately adjacent to it, the strict application of the terms of this ordinance would unreasonably restrict the use of the property;
- b. That the strict application of the ordinance would produce undue hardship;
- c. That the hardship is not generally shared by other properties in the same zoning district and the same vicinity;
- d. That the board is satisfied, upon the evidence heard by it, the granting of such variance will alleviate a significant demonstrable hardship, as distinguished from a special privilege or convenience sought by the applicant;
- e. That the authorization of such variance will not be of substantial detriment to adjacent property and that the character of the district will not be changed by the granting of the variance;
- f. That the condition or situation of the property concerned, or the intended use of the property is not of so general or recurring a nature as to make reasonably practicable the formulation of a general regulation to be adopted as an amendment to the ordinance;
- g. That the variance shall be in harmony with the intended spirit and purpose of this ordinance;
- h. That financial concerns only shall not be considered as a basis for granting a variance; and
- i. That granting the variance requested will not confer on the applicant any special privilege that is denied by this ordinance to other lands, structures or buildings in the same district.

Sec. 17.5. Specific conditions for variances in floodplain district.

In passing upon applications for a variance, the board of zoning appeals shall satisfy all relevant factors and procedures specified in other sections of this zoning ordinance and the following factors:

- a. The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within the floodway district that will cause any increase in flood levels during the 100-year flood.
- b. There is no significant danger that materials may be swept on to other lands or downstream to the injury of others.
- c. The variance will not adversely affect the existing and proposed water supply and sanitation system and the ability of these systems to prevent disease, contamination and unsanitary conditions.
- d. The variance will not increase the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on immediate and adjacent owners.
- g. There is no availability of alternative locations not subject to flooding for the proposed use.
- h. The variance is compatible with the proposed use, with existing development and development anticipated in the foreseeable future.
- i. The variance bears a reasonable relationship to the proposed use to the comprehensive plan and floodplain management program for the area.

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- j. The variance will not adversely affect the safety of access to the property in time of flood of ordinary and emergency vehicles.
- k. The variance will not adversely affect the expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.
- l. Such other factors which are relevant to the purposes of this ordinance in general or this article in particular.

17.5-1. The board of zoning appeals may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for protection and other related matters.

17.5-2. Variances shall only be issued after the board of zoning appeals has determined that the granting of such will not result in:

- (a) Unacceptable or prohibited increases in flood heights;
- (b) Additional threats to public safety;
- (c) Extraordinary public expense;
- (d) Creation of nuisances;
- (e) Cause fraud or victimization of the public; or
- (f) Conflict with local laws or ordinances.

17.5-3. In deciding to grant a variance, the board of zoning appeals shall notify the applicant for a variance, in writing, that the issuance of the variance to construct a structure below the 100-year flood elevation:

- (a) Increases risks to life and property; and
- (b) Will result in increased premium rates for flood insurance.

17.5-4. A record of the above notification as well as all variance actions, including justification for their issuance, shall be maintained and any variances which are issued shall be noted in the annual report submitted to the Federal Insurance Administrator.

Sec. 17.6. Nonconforming does not constitute grounds for granting a variance.

No permitted or nonconforming use of neighboring lands, structures or buildings in the same district, or in other districts, shall be considered grounds for the issuance of a variance.

Sec. 17.7. Prohibition of use variances.

Under no circumstances shall the board of zoning appeals grant a variance to allow a use not permitted under the terms of this ordinance in the district involved, or any use expressly or by implication prohibited by the terms of this ordinance in said district.

Sec. 17.8. Conditions and restrictions by the board.

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The board may impose such conditions and restrictions upon the premises benefited by a variance as may be necessary to comply with the provisions set out in article 18 to reduce or minimize the injurious effect of such variance upon surrounding property and to better carry out the general intent of this ordinance. The board may establish expiration dates as a condition or as a part of the variance. The board may require a guarantee or bond to ensure that the conditions imposed are being and will continue to be complied with.

Sec. 17.9. Variance appeals.

Any person including any agency of the town government aggrieved by a decision of the board on a variance may appeal any decision of the board to the circuit court of the county as provided for in Code of Virginia, § 15.2-2314.

Sec. 17.10. Appeal procedure.

<u> </u> APPLICANT <u> </u>	Applicant or aggrieved files a notice of appeal with the zoning administrator.
Notice of Appeal	
<u> </u> ZONING ADMINISTRATOR <u> </u>	Zoning administrator refers case to board of zoning appeals.
Case	
<u> </u> BOARD OF ZONING APPEALS <u> </u>	Board of zoning appeals publishes notice of public hearing, holds a public hearing and decides the case.
Verdict	
<u> </u> ZONING ADMINISTRATOR <u> </u>	Zoning administrator takes action appropriate to the outcome of the case (see section 4.7 or 5.4).

ARTICLE 18. BOARD OF ZONING APPEALS*

Sec. 18.1. Creation, membership and appointment of the board.

The board of zoning appeals is hereby established which may be referred to in this ordinance as the "board" or "board of zoning appeals." The board shall have jurisdiction within the corporate limits of the Town of Damascus, and it shall consist of five residents of the town, appointed by the circuit court of the county, and who may be nominated by the Damascus Town Council. Members may be reappointed to succeed themselves. Members of the board shall hold no other public office in the town except that one may be a member of the planning commission.

Sec. 18.2. Terms of office of board members; vacancies; removals.

The members of the board shall serve for a five-year term, except that original appointments shall be made for such terms that the term of one member shall expire each year. The secretary of the board shall notify the court at least 30 days in advance of the expiration of any term of office, and shall also notify the court promptly if any vacancy occurs. Appointments to fill vacancies shall be only for the unexpired portion of the term. A member whose term expires shall continue to serve until his successor is appointed and qualified. Any board member may be removed for malfeasance, misfeasance or nonfeasance in office, or for other just cause, by the court which appointed him, after a hearing held after at least 15 days' notice.

Sec. 18.3. Staff of board and compensation of board members.

Within the limits of funds apportioned by the town council, the board may employ or contract for secretaries, clerks, legal counsel, consultants and other technical and clerical services. Members of the board may receive such compensation as may be authorized by the town council.

Sec. 18.4. Powers of the board.

The board is hereby vested with the powers to:

- a. Hear and decide appeals from any order, requirement, decision or determination made by an administrative officer in carrying out the administration or enforcement of the ordinance;
- b. Hear and act upon application for variances in accordance with this article to alleviate hardships by virtue of the inability of the land owner to comply strictly with the provisions of this ordinance by reason of unique shape, topography or physical features of the lot;
- c. Hear and decide appeals from the decision of the zoning administrator;
- d. Hear and decide applications for interpretation of the district map where there is any certainty as to the location of a district boundary;
- e. Hear and decide applications for conditional use permits and special exceptions in the manner and subject to the standard set out in article 17;
- f. Hear and decide all other matters referred to it on which it is required to act under this ordinance;
- g. Within its budget appropriation and other funds at its disposal, enter into contracts for such services as it may require.

* **Cross reference**— Boards, committees and commissions, § 2-241 et seq.

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Sec. 18.5. Election of officers.

The board shall elect for its members its own chairman, vice-chairman and secretary who shall service for one year and may upon election serve succeeding terms.

Sec. 18.6. Stay of proceedings.

An appeal shall stay all proceedings in furtherance of the action appealed from, unless the zoning administrator certifies to the board, after such notice of appeal shall have been filed, that by reason of facts stated in the certificate such stay would cause imminent threat to life or property. In such instance, the proceedings shall not be stayed otherwise than by a restraining order, which may be granted by the board or by a court of record on application and on notice to the zoning administrator and for good cause shown.

Sec. 18.7. Rules and proceedings of the board.

The board shall also adopt rules for the conduct of its meetings. Such rules shall at the minimum require that:

- a. The presence of a majority of all members of the board shall constitute a quorum.
- b. No action shall be taken by the board on any case until after a public hearing and notice thereof. Notice of such hearing shall be published once a week for two successive weeks in a local newspaper of general circulation, not less than six days nor more than 21 days after the second advertisement appears. A written notice of the hearing of the appeal shall be sent by mail to the applicant and all directly affected property owners at least ten days before the hearing of the appeal. The notice to the appellant shall be sent by registered mail.
- c. Appeals to the board shall be taken within 30 days after the decision appealed from by filing with the zoning administrator shall then transmit to the board all the papers constituting the record upon which the action was taken.
- d. The board shall fix a reasonable time for hearing the application or appeal, give public notice thereof as well as notify interested parties and decide the same within 60 days.
- e. The board may reverse or affirm, wholly or partly, or may modify an order, requirement, decision or determination appealed from. The concurring vote of three members shall be necessary to reverse any order, requirement, decision or determination of an administrative officer or to decide in favor of the applicant on any matter upon which it is required to pass under the ordinance or to affect any variance from the ordinance.
- f. The board shall keep minutes of its proceedings and other official actions which shall be filed in the office of the board and shall be public records. The chairman of the board or, in his absence, the vice-chairman may administer oaths and compel.
- g. The board may call upon another officer or agency of the Town of Damascus for information in the performance of its duties, and it shall be the duty of such other agencies to render the information to the board as may be reasonably required.
- h. Any office, agency or department of the Town of Damascus or other aggrieved party may appeal any decision of the board to the circuit court of the county as provided for in Code of Virginia, § 15.2-2314.
- i. In decisions on variance or conditional use, the board shall indicate the specific section of this ordinance under which the variance or conditional use is being considered, and shall state its findings beyond such generalities as "in the interest of public health, safety and general welfare."

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The board shall state clearly the specific conditions imposed in granting the variance ordinance or conditional use permit. For variance cases pertaining to hardship, the board shall specifically identify the hardship warranting such action by the board.

- j. At the public hearing of the case before the board, the appellant shall appear in his own behalf or be represented by counsel or agent. If represented by legal counsel, the appellant shall notify the board no less than 30 days prior to the established meeting date. The appellant's side of the case shall be heard first and those in objection shall follow. To maintain orderly procedure, each side shall proceed without interruption from the other.
- k. The Damascus Planning Commission shall be permitted to submit an advisory opinion on any matter before the board, and such opinion shall be made part of the record of the public hearing.

Sec. 18.8. Procedure for permitted Conditional Uses, Variances, Special Exemptions, and questions of map interpretations.

_____ APPLICANT _____	Applicant submits application and plans to zoning administrator.
Application	
_____ ZONING ADMINISTRATOR _____	Zoning administrator refers applicant's case to board of zoning appeals.
Case	
_____ BOARD OF ZONING APPEALS _____	Board of zoning appeals publishes notice of public hearing, holds a public hearing, and decides the applicant's case.
Case	
_____ ZONING ADMINISTRATOR _____	Zoning administrator takes appropriate action (see sections 4.7 and 5.4).

ARTICLE 19. PROCEDURE FOR AMENDMENT

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Sec. 19.1. Authority to amend.

The town council may, from time to time, by ordinance amend, supplement or change the regulations, district boundaries or classifications of property. Amendments may be initiated whenever the public necessity, convenience, general welfare or good zoning practice requires it.

Sec. 19.2. Initiation of amendment.

Amendments may be initiated by resolution of the town council, or by motion of the Damascus Planning Commission or by petition of any property owner addressed to the governing body.

Sec. 19.3. Application for amendment; fee.

An application by an individual for an amendment shall be accompanied by a fee payable to the Town of Damascus and shall also be accompanied by maps, drawings and data necessary to demonstrate that the proposed amendment is in conformance with the comprehensive plan of Damascus and that public necessity, convenience and general welfare require the adoption of the proposed amendment. An accurate legal description and scale drawing of the land and existing buildings shall be submitted with the application.

Sec. 19.4. Review and recommendation by the planning commission.

The planning commission shall review and make recommendations to the town council on all proposed amendments to this ordinance.

Sec. 19.5. Grounds for amendment.

The planning commission, in its review and recommendation, and the town council, in its deliberations, shall make specific findings with regard to the following grounds for an amendment and shall note the findings in the official record as follows:

- a. The amendment is in agreement with the Damascus Comprehensive Plan;
- b. It has been determined that the legal purposes for which zoning exists are not contravened;
- c. It has been determined that there will not be an adverse effect upon adjoining property owners unless such adverse effect can be justified by the overwhelming public welfare;
- d. It has been determined that no property owner or small group of property owners will benefit materially from the change to the detriment of the general public.

Sec. 19.6. Public hearing and notice of hearing.

One joint public hearing or two individual hearings of the planning commission and the town council shall be held on all proposed amendments to this ordinance. Notice of such hearing or hearings shall be published once a week for two successive weeks in a local newspaper of general circulation, not less than six days nor more than 21 days after the second advertisement appears. At least ten days prior to the public hearing, all affected property owners and all adjoining property owners, including those separated by a public way, including those parcels which lie in other localities of the Commonwealth, shall be notified by

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certified mail of the proposed amendment, and the time, date and place of the public hearing. Washington County shall also be notified as an adjoining jurisdiction.

In the case of a proposed amendment to the zoning map, the public notice shall state the general usage and density range of the proposed amendment, and the general usage and density range, if any, set forth in the applicable part of the comprehensive plan.

Sec. 19.7. Amendments affecting zoning map.

Upon enactment of an amendment to the zoning map which is part of this ordinance, the zoning administrator shall cause such amendment to be placed upon the zoning map noting thereon the ordinance number and effective date of such amendatory ordinance.

Sec. 19.8. Effect of denial of application.

Whenever an application for an amendment to the text of this ordinance or for a change in the zoning classification of any property is denied, the application for that amendment shall not be eligible for reconsideration for one year following such denial, except in the following cases:

- a. Upon initiation by the planning commission or town council;
- b. When the new application, although involving all or a portion of the same property, is for a different zoning district than that for which the original application was made;
- c. When the previous application was denied for the reason that the proposed zoning would not conform to the general plan, and the general plan has subsequently been amended in a manner which will allow the proposed zoning.

Sec. 19.9. Amendment procedure.

Amendment	Amendment is initiated by local petition or resolution of town council or planning commission and is submitted to town council.
TOWN COUNCIL	Town council refers proposed amendment to planning commission.
Amendment	
PLANNING COMMISSION	Planning commission submits recommendation to town council.
Recommendation	

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TOWN COUNCIL	Town council notifies all affected property owners and publishes notice of joint public hearing of town council and planning commission.
Approval	Joint public hearing after which town council decides on proposed amendment.

ARTICLE 20. DEFINITIONS

Sec. 20.1. General provisions.

The following definitions shall apply for the interpretation of this ordinance. The dictionary definition will apply to all words not defined in this article.

Sec. 20.2. Appurtenant or accessory.

An activity or structure that is customarily associated with and is appropriately incidental and subordinate to a principal activity and/or structure and located on the same lot, except as provided for under the provisions of accessory off-street parking. This definition does not include “modular home” or “tiny house”.

When in a special flood hazard area, this term shall be additionally defined as a non-residential structure which does not exceed 600 square feet.

Sec. 20.3. Alley.

A public way intended to provide only secondary vehicular access to abutting properties.

Sec. 20.4. Automotive service.

Establishments with the primary purpose of cleaning, servicing, or repairing motor vehicles.

Sec. 20.5. Base flood elevation.

The water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year. The water surface elevation of the base flood in relation to the datum specified on the community’s Flood Insurance Rate Map. For the purposes of this ordinance, the base flood is the 1% annual chance flood.

Sec. 20.6. Basement.

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Any area of a building having its floor sub-grade (below ground level) on all sides.

Sec. 20.7. Building.

A structure, either temporary or permanent, having a roof or other covering and enclosed on all four sides, and designed or used for the shelter or enclosure of any person, animal or property of any kind, excluding tents, recreational vehicles situated on private property and used for purposes of a building, and portable dog houses.

Sec. 20.8. Building height.

The vertical distance from the highest point on a building or other structure, excepting any chimney or antenna on a building, to the average ground level of the grade where the walls or other structural elements intersect the ground.

Sec. 20.9. Bulk.

Describes the size of buildings or other structures, and their relationship to each other, to open areas and to lot lines, therefore including:

- a. The size (including height and floor area) of buildings or other structures;
- b. The area of the lot upon which a residential building is located, and the number of dwelling units within each building in relation to the area of the lot;
- c. The location of exterior walls of buildings or structural beams of other structures in relation to lot lines, to other walls of the same building, or to other structures; and
- d. All open areas relating to buildings or other structures and their relationship thereto.

Sec. 20.10. Clinic.

An establishment where persons are given medical, dental, or surgical treatment by one but not more than four physicians or dentists with no patients lodged overnight. (See section 20.38 for kennels.)

Sec. 20.11. Community education.

Structure or location where knowledge is taught.

Sec. 20.12. Completely enclosed.

Refers to a building or other structure having a roof, and separated on all sides from the adjacent open area or from other buildings or other structures, by exterior walls or party walls.

Sec. 20.13. Conditional use.

A conditional use is a use that would not be appropriate generally or without restriction throughout the district but which, if controlled as to number, area, location or relation to the neighborhood, would not be

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detrimental to the public health, safety, or general welfare. Such uses may be permitted in a district as conditional uses, if specific provisions for such use is made in this ordinance.

Sec. 20.14. - Construction sales and service.

Any establishment involved in the sale of materials for construction.

Sec. 20.15. Convenience sales and services.

Any neighborhood retail establishment which caters to the everyday needs of the adjoining residential areas such as small "country" stores offering a variety of goods or services not to exceed 2,500 square feet in floor area.

Sec. 20.16. Curb level.

The mean of the elevations of the side lot lines extended to the street line.

Sec. 20.17. Development.

Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, temporary structures, the placement of mobile homes, paving, utilities, filling, grading, excavation, mining, dredging, drilling, or other land-disturbing activities or permanent or temporary storage of equipment or materials.

Sec. 20.18. Dwelling, mobile home.

See "Mobile home."

Sec. 20.19. Dwelling, modular home.

See "Modular home."

Sec. 20.20. Dwelling, multifamily.

A building containing three or more dwelling units. The term includes cooperative apartments, condominiums and the like. For purposes of these regulations, regardless of how rental units are equipped, any multifamily dwelling in which units are available for rental partly on a monthly basis and partly for a shorter time period, but with less than 30 percent of the living units under the same ownership or management on the same lot being occupied on a less-than-monthly basis, shall be considered as a semi-transient residential activity.

Sec. 20.21. Dwelling, single-family detached.

A single-family dwelling entirely separated from structures on adjacent lots.

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Sec. 20.22. - Dwelling, two-family.

A detached residential building containing two dwelling units, designed for occupancy by not more than two families.

Sec. 20.23. Dwelling unit.

A room or rooms connected together, constituting a separate independent housekeeping establishment for one family only, for owner occupancy or for rental, lease or other occupancy on a weekly or longer basis, physically separated from any other rooms or dwelling units, and containing independent cooking and sleeping facilities.

Sec. 20.24. Family.

An individual or a group of persons related by blood, marriage, adoption, or in a domestic partnership, living together as a single housekeeping unit.

Sec. 20.25. Financial institution.

Banks, credit unions, and other savings and loan institutions.

Sec. 20.26. Flood or flooding.

A temporary or general condition of partial or complete inundation of normally dry land areas.

Sec. 20.27. Flood, 100-Year.

A flood that, on the average, is likely to be equaled or exceeded once every 100 years (i.e., that has a one percent chance of occurring each year, although the flood may occur in any year). Also described as the “Base Flood”.

Sec. 20.28. Floodplain.

- (1) A relatively flat or low land area adjoining a river, stream, or watercourse which is subject to partial or complete inundation.
- (2) An area subject to the unusual and rapid accumulation or runoff of surface waters from any source.

(As defined by the Damascus Flood Study Map.)

Sec. 20.29. Floodway.

The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point within the community.

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Sec. 20.30. Floor area.

The total of the gross areas of all floors, including usable basements and cellars, below the roof and within the outer surface of the main walls of principal or accessory buildings or the center lines of party walls separating such buildings or portions thereof, but excluding the following:

- a. Areas used for off-street parking spaces or loading berths, driveways and maneuvering aisles relating thereto required in this ordinance.
- b. In the case of nonresidential facilities: arcades, porticoes, and similar open areas which are located at or near street level, which are accessible to the general public, and which are not designed or used for sales, display, storage, service or production areas.

Sec. 20.31. Freeboard.

A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed.

Sec. 20.32. General personal service.

Any establishment not involved in the transaction of goods which caters to the needs of individuals (not including massage parlors).

Sec. 20.33. Home occupation.

An occupation conducted in a dwelling unit, or accessory building, provided that:

- a. Only one person other than members of the family residing on the premises shall be engaged in such occupation;
- b. The use of the dwelling unit for the home occupation shall be clearly incidental and subordinate to its use for residential purposes by its occupants, and not more than 25 percent of the floor area of the dwelling unit shall be used in the conduct of the home occupation;
- c. There shall be no change in the outside appearance of the building or premises, or other visible evidence of the conduct of such home occupation other than one sign, not exceeding four square feet in area, nonilluminated, and mounted flat against the wall of the principal building;
- d. No traffic shall be generated by such home occupation in greater volumes than would normally be expected in a residential neighborhood, and any need for parking generated by the conduct of such home occupation shall be met off the street and other than in a required front yard;
- e. No equipment or process shall be used in such home occupation which creates noise, vibration, glare, fumes, odors, or electrical interference detectable to the normal senses off the lot, if the occupation is conducted in a single-family dwelling, or outside the dwelling unit if conducted in other than a single-family dwelling.

Sec. 20.34. Hospital.

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An institution rendering medical, surgical, obstetrical or convalescent care, including nursing homes, and homes for the aged.

Sec. 20.35. Incidental alterations.

Changes or replacements in the nonstructural parts of a building or other structure without limitations to the following examples:

1. Alteration of interior partitions to improve livability in a nonconforming residential building, provided that no additional dwelling units are created;
2. A minor addition to the exterior of a residential building, such as an open porch;
3. Alterations of interior non-loadbearing partitions in all other types of buildings or other structures; or
4. Replacement of, or minor changes in, capacity of utility pipes, ducts, or conduits.

Sec. 20.36. Junkyard.

The use of any area of land lying within 100 feet of a state highway or the use of more than 200 square feet of land area in any location for the storage, keeping or abandonment of junk, including scrap metals or other scrap materials, or two or more motor vehicles of any kind which are incapable of being legally operated.

Sec. 20.37. Kennel.

A place prepared to house, board, breed, handle, or otherwise keep or care for animals for sale or in return for compensation.

Sec. 20.38. Landscaping.

The planting and maintenance of trees, shrubs, lawns and other ground cover or materials, provided that terraces, fountains, retaining walls, street furniture, sculptures, or other art objects and similar accessory features may be included as landscaping if integrally designed, and permitted as required.

Sec. 20.39. Library.

A building primarily used to store, and allow access to books, films, maps, recorded music, computers and other educational material.

Sec. 20.40. Lot.

A parcel of land of at least sufficient size to meet minimum zoning requirements for use, coverage and area, and to provide such yards and other spaces as required by this ordinance. A lot shall have frontage on an approved public street and shall either be shown on a plat of record or be considered as a unit of property described by metes and bounds.

Sec. 20.41. Lot area.

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The entire area of a lot as defined within this ordinance.

Sec. 20.42. Lot coverage.

That portion of a lot which, when viewed directly from above, would be covered by a building or any part of a structure.

Sec. 20.43. Lot frontage.

The front of a lot shall be the portion nearest the street. For the purposes of determining yard requirements on corner lots and through lots, all sides of a lot adjacent to streets shall be considered frontage, and yards shall be provided as indicated in this ordinance.

Sec. 20.44. Lot line.

A line marking the boundary of a lot.

Sec. 20.45. Lot measures.

- a. *Lot depth* shall be the average horizontal distance between the front and rear lot lines.
- b. *Lot width* shall be the average horizontal distance between side lot lines.

Sec. 20.46. Lot of record.

A lot which is part of a subdivision recorded in the clerk's office of the circuit court, or a lot whose existence, location and dimensions have been legally recorded or registered in a deed prior to the enactment of this ordinance.

Sec. 20.47. Lot types.

The diagram (figure 1) which follows illustrates terminology used in this ordinance with reference to corner lots, interior lots, through lots and reversed frontage lots:

In this diagram:

A = *Corner lot*, defined as a lot located at the intersection of two or more streets. A lot abutting on a curved street or streets shall be considered a corner lot if straight lines drawn from the foremost points of the side lot lines to the foremost points of the lot meet at an interior angle of less than 135 degrees. See lots marked A (1) in the diagram.

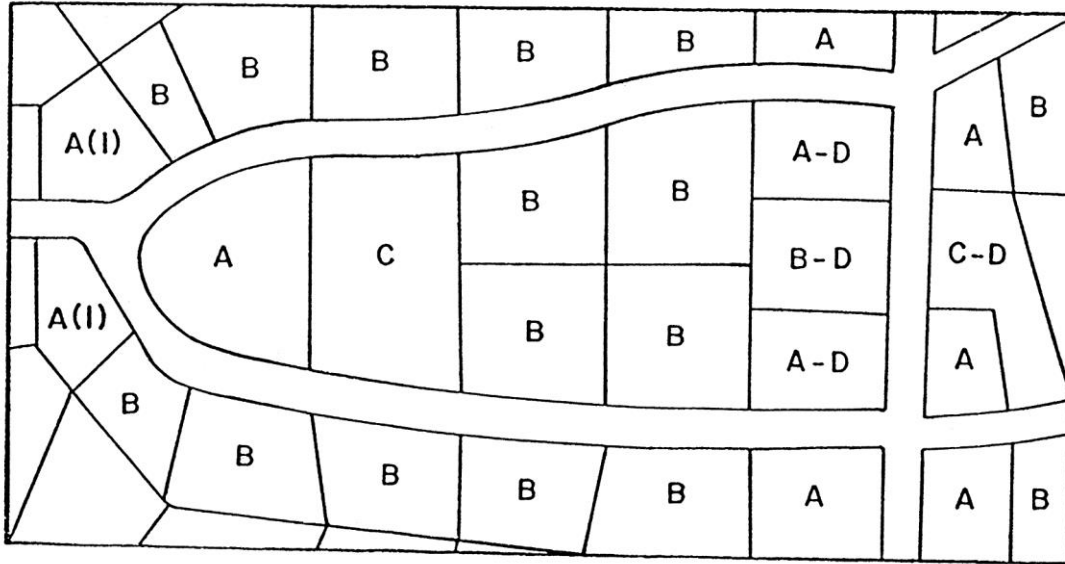
B = *Interior lot*, defined as a lot other than a corner lot with only one frontage on a street.

C = *Through lot*, defined as a lot other than a corner lot with frontage on more than one street. Through lots abutting two streets may be referred to as double-frontage lots.

D = *Reversed frontage lot*, defined as a lot on which the frontage is at right angles or approximately right angles (interior angle less than 135 degrees) to the general pattern in the area. A reversed

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frontage lot may also be a corner lot (A-D in the diagram), an interior lot (B-D) or a through lot (C-D).



Reversed Frontage Lot

Sec. 20.48. Manufactured home.

A structure built *after* June 15, 1976 subject to HUD Title 6 federal regulation, transportable in one or more sections, which is built on a permanent chassis and is designed to be used as a dwelling with or without a permanent foundation, when connected to the required utilities; and includes the plumbing, heating, air conditioning, and electrical systems contained in the structure.

For floodplain management purposes the term “manufactured home” also includes park trailers, travel trailers, mobile homes and other similar vehicles placed on a site for greater than 180 consecutive days.

Sec. 20.49. Manufactured home lot.

A site for the placement of a manufactured home. A manufactured home lot may be formally subdivided into a discrete taxable parcel of land for a permanent structure.

Sec. 20.50. Manufacturing.

The action of or an establishment engaged in the transformation of substances into new products.

Sec. 20.51. Mobile home.

A structure built *prior to* June 15, 1976 not subject to HUD Title 6 federal regulation, transportable in one or more sections, which is built on a permanent chassis and is designed to be used as a dwelling with or without a permanent foundation, when connected to the required utilities; and includes the plumbing, heating, air conditioning, and electrical systems contained within the structure.

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Sec. 20.52. Mobile home park.

An area where two or more mobile homes or trailers can be and are intended to be parked, designed or intended to be used as temporary or permanent living facilities for two or more families.

Sec. 20.53. Mobile home space.

A plot of ground within a mobile home park, designed to accommodate one mobile home, and which has water, sewer and electricity available at the space.

Sec. 20.54. Mobile home stand.

That part of an individual mobile home space which has been reserved for the placement of the mobile home.

Sec. 20.55. Modular home.

A single-family dwelling unit that is constructed to state-wide building code, on or off a frame, basically as a conventionally built wood frame house except it is built at a factory and is transported to the site on which it will be permanently located. Typical characteristics include:

- Often delivered in two or more pieces
- Typically built on crawlspaces or basements
- Usually look like traditional stick-built homes in both size and features

Panelized homes would also fall into this category. This term may also include the term “Tiny house” (See section 20.80 for tiny house).

Sec. 20.56. Motel, hotel, hostel and lodge.

Shall mean the same as "Transient lodging".

Sec. 20.57. Nonconforming.

- a. Any lawful building or other structure which does not comply with any one or more of the applicable bulk regulations; or
- b. Any lawful use which does not comply with any part or any one or more of the applicable regulations pertaining to:
 1. Principal permitted, conditional or accessory uses permitted in the district in which use is located;
 2. Sign regulations; or
 3. Accessory off-street parking and loading requirements;

either on the effective date of this ordinance or as a result of any subsequent amendment.

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Sec. 20.58. Place of worship.

Structure or location where services or rites are held showing reverence for a deity.

Sec. 20.59. Principal activity.

An activity which fulfills a primary function of an establishment, institution, household or other entity.

Sec. 20.60. Principal building.

A building which contains the principal activity or use.

Sec. 20.61. Private recreation facility.

Swimming pools, tennis courts, and other outdoor recreation facilities for use primarily by the lot owner.

Sec. 20.62. Profession (professional office).

The term "profession," as used in this ordinance, is limited in its application to physicians and surgeons, lawyers, members of the clergy, architects, engineers, or other persons holding advanced degrees from institutions of higher learning in the field which they practice. The term is not intended to include insurance agents, insurance adjusters, realtors, photo studios, beauty parlors, barbershops, dance schools, business schools or any persons engaged in sales or trade. In permitting professional office as home occupations, and only as accessory uses in certain districts, it is intended that such offices shall be subject to limitations placed on home occupations but that only offices occupied by persons engaged in professions, as herein defined, shall be permitted.

Sec. 20.63. Recreational equipment, major.

For purposes of this ordinance, major recreational equipment includes boats and boat trailers, travel trailers, tent trailers, pickup campers or coaches (designed to be mounted on automotive vehicles), motorized dwellings such as recreational vehicles commonly called RVs, and the like. Recreational equipment may also be identified as a vehicle which is:

- a) Built on a single chassis;
- b) 400 square feet or less when measured at the largest horizontal projection;
- c) Designed to be self-propelled or towable; and,
- d) Designed primarily not for use as a permanent dwelling but as temporary living quarters.

This term may also include the term "Tiny house" (See section 20.77 for tiny house).

Sec. 20.64. Restaurant.

An establishment where food is ordered, prepared and served for pay.

Sec. 20.65. Residence.

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A building or part of a building containing one or more dwelling units or rooming units, including single-family or multifamily houses, multiple dwellings, boarding or rooming houses, or apartment hotels.

Sec. 20.66. Retail stores and shops.

Buildings for display and retail sale of merchandise or for the rendering of personal services (but specifically exclusive of coal, wood and lumberyards), such as the following examples: drugstores, newsstands, food stores, candy shops, dry goods and notions stores, antique stores and gift shops.

Sec. 20.67. Semi-transient residential establishment.

An establishment where lodging is provided for compensation partly on a monthly or longer basis and partly for a shorter time period, but with less than 30 percent of the living units under the same ownership or management on the same lot being occupied on a less-than-monthly basis; but excluding institutional living arrangements involving the provision of specific kinds of forced residences, such as nursing homes, orphanages, asylums, and prisons.

Sec. 20.68. Setback line.

A line running parallel to the street which establishes the minimum distance the principal building must be set back from the street line.

Sec. 20.69. Sign.

Any writing (including letter, word, or numeral); pictorial presentation (including illustration, or decoration); emblem (including device, symbol, or trademark); flag (including banner or pennant); or any other figure of similar character, which:

- a. Is a structure or any part thereof, or is attached to, painted on, or in any other manner represented on a building or other structure; and
- b. Is used to announce, direct attention, or advertise; and
- c. Is visible from outside a building.

Sec. 20.70. Sign, realty.

A sign indicating pertinent information regarding real property for sale, lease or rent.

Sec. 20.71. - Sign, residential.

An accessory sign which indicates the name and/or address of the occupant or a permitted home occupation.

Sec. 20.72. Story.

APPENDIX B—ZONING

A portion of a building between the surface of any floor and the surface of the floor next above it, or, if there is not floor above it, the space between such floor and the ceiling next above it, provided that the following shall not be deemed a story:

- a. A basement or cellar if the finished floor level directly above it is not more than six feet above the average adjoining elevation of finished grade.
- b. An attic or similar space under a gable, hip or gambrel roof, the wall plates or any exterior walls are not more than two feet above the floor of such space.

Sec. 20.73. Street.

A publicly maintained right-of-way which affords a primary means of access to abutting property. The word "street" shall include the words "road," "highway," "thoroughfare" and "alley."

Sec. 20.74. Street line.

The property line which bounds the right-of-way set aside for use as a street. Where sidewalks exist and the location of the property line is questioned, the edge of the sidewalk farthest from the traveled street shall be considered as the street line.

Sec. 20.75. Structure.

Anything constructed or erected, the use of which requires a location on the ground or attachment to something having a location on the ground. This includes but is not limited to buildings, towers, carports, signs, and smokestacks.

Sec. 20.76. Tent.

A portable or collapsible shelter of fabric designed to serve as a temporary dwelling unit.

Sec. 20.77. Tiny house.

A manufactured dwelling unit constructed subject to state-wide building code, built on a permanent chassis, which in the travelling mode or when erected on site is 400 or less square feet, and may be mobile while on wheels or situated upon a temporary or permanent foundation. The term "tiny house" may be defined under the following requirements:

- a) Recreational equipment, major – tiny house remains in travelling mode, while maintaining fully operational (road-ready) wheels and tires, quick-connect/disconnect utility connections, and unrestricted street access at all times; or
- b) Modular home – tiny house placed on a temporary or permanent foundation.

The term "tiny house" may also be referred to as a tiny home.

Sec. 20.78. Transient lodgings.

DAMASCUS CODE

A building or a group of buildings in which sleeping accommodations are offered to the public and intended primarily for rental to transients with daily charge. Such lodgings must have a Certificate of Occupancy issued by the office of the building inspector.

Sec. 20.79. Travel trailer.

A travel trailer, pickup camper, converted bus, tent trailer, recreational vehicle commonly called an RV, or similar device used for temporary portable housing or a unit which:

- a. Can operate independent of connections to external sewer, water, and electrical systems;
- b. Is identified by the manufacturer as a travel trailer and/or is designed as a travel trailer.

Sec. 20.80. Use.

The purpose for which land or water or a structure thereon is designed, arranged, and intended to be occupied or utilized or for which it is occupied or maintained.

Sec. 20.81. Use and/or occupancy permit.

A written permit issued by the zoning administrator or authorized building inspector, either of which is required before occupying or commencing to use any building or other structure or any lot.

Sec. 20.82. Use, public.

Any use that is under control of a unit of general purpose government or governmental agency.

Sec. 20.83. Use, recreation.

Any use of land or water and facilities provided for the enjoyment of the general public.

Sec. 20.84. Utility facilities.

Any structure involved in the transport of electricity, water, natural gas, sewage or communication.

Sec. 20.85. Wholesale sales.

Any establishment involved with the sale of merchandise to retail establishments.

Sec. 20.86. Yard.

An open space on the same lot with a principal building, open, unoccupied and unobstructed by roofed structures from the ground to the sky except as otherwise provided in this ordinance. The measurement of a yard shall be construed as the minimum horizontal distance between the lot lines and any part of the building, such as roof overhang (see Article 9). Further defined as follows:

APPENDIX B—ZONING

- a) Yard, front – the yard area forward of an imaginary line parallel and extending left and right to the side lot lines from the front fascia of the principal building, excluding any porch or staircase. For determining yard requirements or restrictions, all sides of a lot adjacent to improved streets shall be considered front yard.
- b) Yard, rear – the yard area behind an imaginary line parallel to the rear fascia of the principal building and extending left and right to the side lot lines of any lot.
- c) Yard, side – the area between the front and rear fascia of the principal building on any lot, excluding the area consisting of the front and rear yard.

Building means any structure built for support, shelter or enclosure for any occupancy or storage.

Development means any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavating, drilling operations or permanent storage of materials.

Elevated building means a nonbasement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls or breakaway walls.

Flood and flooding mean a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the unusual and rapid accumulation or runoff of surface waters from any source.

Flood insurance rate map (FIRM) means an official map of the town on which the Federal Emergency Management Agency has delineated both the areas of special flood hazard and the risk premium zones applicable to the town.

Flood insurance study means the official report provided by the Federal Emergency Management Agency. The report contains flood profiles, as well as the flood boundary/floodway map and the water surface elevation of the base flood.

Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Floor means the top surface of an enclosed area in a building (including basement), i.e., top of slab in concrete slab construction or top of wood flooring in wood frame construction. The term does not include the floor of a garage used solely for parking vehicles.

Functionally dependent facility means a facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water. The term does not include longterm storage, manufacture, sales or service facilities.

Highest adjacent grade means the highest natural elevation of the ground surface, prior to construction, next to the proposed walls of a structure.

Manufactured home means a structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. The term also includes park trailers, travel trailers, and similar transportable structures placed on a site for 180 consecutive days or longer and intended to be improved property.

Mean sea level means the same as National Geodetic Vertical Datum (NGVD).

National Geodetic Vertical Datum (NGVD), as corrected in 1929, means a vertical control used as a reference for establishing varying elevations within the floodplain.

New construction means structures for which the start of construction commenced on or after the effective date of the ordinance from which this article derives.

Start of construction (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (PL 97-348)) includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction or improvement was

within 180 days of the permit date. The actual start means the first placement of permanent construction of a structure (including a manufactured home) on a site, such as the pouring of slabs or footings, installation of piles, construction of columns, or any work beyond the stage of excavation or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

Structure means a walled and roofed building that is principally above ground, a manufactured home, a gas or liquid storage tank, or other manmade facilities or infrastructures.

Substantial improvement means any combination of repairs, reconstruction, alteration or improvements to a structure, taking place during the life of a structure, in which the cumulative cost equals or exceeds 50 percent of the market value of the structure. The market value of the structure should be the appraised value of the structure prior to the start of the initial repair or improvement, or in the case of damage, the value of the structure prior to the damage occurring. For the purposes of this definition, substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include any project for improvement of a structure required to comply with existing health, sanitary or safety code specifications which are solely necessary to ensure safe living conditions.

Variance means a grant of relief from the requirements of this article which permits construction in a manner otherwise prohibited by this article where specific enforcement would result in unnecessary hardship.

(Code 1975, § 9-1; Ord. of 9-8-1987, § 9-1)

Cross reference— Definitions generally, § 1-2.

Sec. 30-32. - Lands to which this article applies.

This article shall apply to all areas of special flood hazard within the jurisdiction of the town.

(Code 1975, § 9-2; Ord. of 9-8-1987, § 9-2)

Sec. 30-33. - Basis for establishing the areas of special flood hazard.

The areas of special flood hazard identified by the Federal Emergency Management Agency in its Flood Insurance Rate Map, dated September 1986, with accompanying maps and other supporting data, and any revision to such map, are adopted by reference and declared to be a part of this article.

(Code 1975, § 9-3; Ord. of 9-8-1987, § 9-3)

Sec. 30-34. - Compliance.

No structure or land shall be located, extended, converted or structurally altered without full compliance with the terms of this article and other regulations.

(Code 1975, § 9-5; Ord. of 9-8-1987, § 9-5)

Sec. 30-35. - Abrogation and greater restrictions.

This article is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this article and another ordinance conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

(Code 1975, § 9-6; Ord. of 9-8-1987, § 9-6)

Sec. 30-36. - Interpretation.

In the interpretation and application of this article, all provisions shall be:

- (1) Considered as minimum requirements;
- (2) Liberally construed in favor of the council; and
- (3) Deemed neither to limit nor repeal any other powers granted under state statutes.

(Code 1975, § 9-7; Ord. of 9-8-1987, § 9-7)

Sec. 30-37. - Warning and disclaimer of liability.

The degree of flood protection required by this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This article does not imply that land outside the areas of special flood hazard or uses permitted within such areas of special flood hazard or uses permitted within such areas will be free from flooding or flood damages. This article shall not create liability on the part of the town or by any officer or employee of the town for any flood damages that result from reliance on this article or any administrative decision lawfully made under this article.

(Code 1975, § 9-8; Ord. of 9-8-1987, § 9-8)

Sec. 30-38. - Penalties for violation.

Violation of the provisions of this article or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with grants of variance or special exceptions, shall constitute a misdemeanor. Any person who violates this article or fails to comply with any of its requirements shall, upon conviction, be fined not more than \$1,000.00, and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense. Nothing contained in this section shall prevent the town from taking such other lawful action as is necessary to prevent or remedy any violation.

(Code 1975, § 9-9; Ord. of 9-8-1987, § 9-9)

Secs. 30-39—30-60. - Reserved.

DIVISION 2. - ADMINISTRATION

FOOTNOTE(S):

⁽³⁴⁾ **Cross reference**— Administration, ch. 2.

Sec. 30-61. - Designation of zoning administrator.

The zoning administrator is appointed to administer and implement the provisions of this article.

(Code 1975, § 9-10; Ord. of 9-8-1987, § 9-10)

Sec. 30-62. - Duties and responsibilities of the zoning administrator.

- (a) Duties of the zoning administrator shall include but not be limited to, the following:
 - (1) Review all development permits to ensure that the permit requirements of this article have been satisfied.
 - (2) Verify and record the actual elevation, in relation to mean sea level, of the lowest floor of all new or substantially improved structures, in accordance with section 30-64
 - (3) Verify and record the actual elevation, in relation to mean sea level, to which the new or substantially improved structures have been floodproofed, in accordance with section 30-64
 - (4) When floodproofing is utilized for a particular structure, obtain certification from a registered professional engineer or architect, in accordance with this article.
 - (5) Where interpretation is needed as to the exact location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), make the necessary interpretation. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in this article.
 - (6) When base flood elevation data or floodway data have not been provided in accordance with [section 30-33](#), obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state or other source, in order to administer the provisions of this article.
- (b) All records pertaining to the provisions of this article shall be maintained in the office of the zoning administrator and shall be open for public inspection.

(Code 1975, § 9-12; Ord. of 9-8-1987, § 9-12)

Sec. 30-63. - Establishment of development permit.

A zoning permit shall be required in conformance with the provisions of this article prior to the commencement of any development activities.

(Code 1975, § 9-4; Ord. of 9-8-1987, § 9-4)

Sec. 30-64. - Permit procedures.

Application for a zoning permit shall be made to the zoning administrator on forms furnished by him prior to any development activities and may include but need not be limited to the following plans in duplicate drawn to scale showing the nature, location, dimensions and elevations of the area in question; existing or proposed structures, fill, storage of materials, and drainage facilities; and their locations. Specifically, the following information is required:

- (1) In the application stage:
 - a. Elevation in relation to mean sea level of the proposed lowest floor of all structures.
 - b. Elevation in relation to mean sea level to which any nonresidential structure will be floodproofed.
 - c. A certificate from a registered professional engineer or architect that the nonresidential floodproofed structure will meet the floodproofing criteria in sections 30-92 through 30-95
- (2) In the construction stage, provide a floor elevation or floodproofing certification after the lowest floor is completed. Upon placement of the lowest floor, or floodproofing by whatever construction means, or upon placement of the horizontal structural members of the lowest floor, whichever is applicable, it shall be the duty of the permit holder to submit to the zoning administrator a certificate of the elevation of the lowest floor, floodproofed elevation, or the elevation of the lowest portion of the horizontal structural members of the lowest floor, whichever is applicable, as built, in relation to mean sea level. This certification shall be prepared by or under the direct supervision of a registered land surveyor or professional engineer and certified by the surveyor or engineer. When floodproofing is utilized for a particular building, the certification shall be prepared by or under the direct supervision of a professional engineer or architect and certified by the engineer or architect. Any work undertaken prior to submission of the certification shall be at the permit holder's risk. The zoning administrator shall review the floor elevation survey data submitted. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further progressive work's being permitted to proceed. Failure to submit the survey or failure to make the required corrections shall be cause to issue a stop work order for the project. Violation of a stop work order shall result in a fine of \$500.00 a day.

(Code 1975, § 9-11; Ord. of 9-8-1987, § 9-11)

Sec. 30-65. - Variance procedures.

- (a) The planning commission as established by the town shall hear and decide appeals and requests for variances from the requirements of this article.
- (b) The planning commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision or determination made by the zoning administrator in the enforcement or administration of this article.
- (c) Any person aggrieved by the decision of the planning commission or any taxpayer may appeal such decision to the board of zoning appeals or the town council.
- (d) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places without regard to the procedures set forth in the remainder of this section, except for subsection (h) of this section, and provided the proposed reconstruction, rehabilitation or restoration will not result in the structure's losing its historical designation.

- (e) In passing upon such applications, the planning commission shall consider all technical evaluations, all relevant factors, all standards specified in other sections of this article, and the following:
 - (1) Danger that materials may be swept onto other lands to the injury of others.
 - (2) Danger to life and property due to flooding or erosion damage.
 - (3) Susceptibility of the proposed facility and its contents to flood damage.
 - (4) Importance of the services provided by the proposed facility to the town.
 - (5) Necessity of the facility to a waterfront location, in the case of a functionally dependent facility.
 - (6) Availability of alternative locations, not subject to flooding or erosion damage for the proposed use.
 - (7) Compatibility of the proposed use with existing and anticipated development.
 - (8) Relationship of the proposed use of the comprehensive plan and floodplain management program for that area.
 - (9) Safety of access to the property in times of flood for ordinary and emergency vehicles.
- (f) Upon consideration of the factors listed in subsection (e) of this section and the purposes of this article, the planning commission may attach such conditions to the granting of variances as it deems necessary to further the purposes of this article.
- (g) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- (h) Conditions for variances are as follows:
 - (1) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief; and in the instance of a historical building, a determination that the variance is the minimum necessary so as not to destroy the historic character and design of the building.
 - (2) Variances shall only be issued upon a:
 - a. Showing of good and sufficient cause;
 - b. Determination that failure to grant the variance would result in exceptional hardship; and
 - c. Determination that the granting of a variance will not result in increased flood heights, additional threats to public safety or extraordinary public expense; create a nuisance; cause fraud on or victimization of the public; or conflict with existing local laws or ordinances.
 - (3) Any applicant to whom a variance is granted shall be given written notice specifying the difference between the base flood elevation and the elevation to which the structure is to be built and stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
 - (4) The zoning administrator shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency upon request.

(Code 1975, § 9-13; Ord. of 9-8-1987, § 9-13)

Secs. 30-66—30-90. - Reserved.

DIVISION 3. - FLOOD HAZARD REDUCTION STANDARDS

Sec. 30-91. - General standards.

In all areas of special flood hazard, the following provisions are required:

- (1) New construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.
- (2) Manufactured homes shall be anchored to prevent flotation, collapse or lateral movement. Methods of anchoring may include but are not limited to use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state requirements for resisting wind forces.
- (3) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- (4) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.
- (5) Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- (6) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- (7) New and replacement sanitary sewer systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.
- (8) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
- (9) Any alteration, repair, reconstruction or improvements to a structure which is in compliance with the provisions of this article shall meet the requirements of new construction as contained in this article.

(Code 1975, § 9-14; Ord. of 9-8-1987, § 9-14)

Sec. 30-92. - Specific standards.

In all areas of special flood hazard where base flood elevation data have been provided, as set forth in section 30-33 or section 30-62, the following provisions are required:

- (1) *Residential construction.* New construction or substantial improvement of any residential structure shall have the lowest floor elevated no lower than one foot above the 100-year flood elevation. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate the unimpeded movements of floodwaters shall be provided in accordance with standards of sections 30-92 through 30-95
- (2) *Nonresidential construction.* New construction or substantial improvement of any commercial, industrial or nonresidential structure shall have the lowest floor elevated no lower than one foot above the level of the 100-year flood elevation. Structures located in all A zones may be

floodproofed in lieu of being elevated provided that all areas of the structure below the required elevation are watertight, with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the official as set forth in section 30-64

- (3) *Elevated buildings.* New construction or substantial improvements of elevated buildings that include fully enclosed areas formed by foundation and other exterior walls below the base flood elevation shall be designed to preclude finished living space and designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls.
 - a. Designs for complying with this requirement must either be certified by a professional engineer or architect or meet the following minimum criteria:
 1. Provide a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
 2. The bottom of all openings shall be no higher than one foot above grade; and
 3. Openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwaters in both directions;
 - b. Electrical outlets are prohibited below the 100-year flood elevation;
 - c. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment used in connection with the premises (standard exterior door) or entry to the living area (stairway or elevator); and
 - d. The interior portion of such enclosed area shall not be partitioned or finished into separate rooms.
- (4) *Floodways.* Located within areas of special flood hazard established in section 30-33 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and has erosion potential, the following provisions shall apply:
 - a. Prohibit encroachments, including fill, new construction, substantial improvements and other developments, unless certification (with supporting technical data) by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in flood levels during occurrence of the base flood discharge;
 - b. If subsection (4)a of this section is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this division;
 - c. Prohibit the placement of manufactured homes (mobile homes), except in an existing manufactured homes (mobile homes) park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring standards of subsection 30-91(2), and the elevation standards of subsection (1) of this section are met.

(Code 1975, § 9-15; Ord. of 9-8-1987, § 9-15)

Sec. 30-93. - Standards for streams without established base flood elevations and/or floodways.

Located within the areas of special flood hazard established in section 30-33, where small streams exist but where no base flood data have been provided or where no floodways have been provided, the following provisions apply:

- (1) No encroachments, including fill material or structures, shall be located within a distance of the stream bank equal to two times the width of the stream at the top of the bank or 20 feet each side from the top of the bank, whichever is greater, unless certification by a registered professional engineer is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- (2) New construction or substantial improvements of structures shall be elevated or floodproofed to elevations established in accordance with subsection (1) of this section.

(Code 1975, § 9-16; Ord. of 9-8-1987, § 9-16)

Sec. 30-94. - Standards for subdivision proposals.

- (a) All subdivision proposals shall be consistent with the need to minimize flood damage.
- (b) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
- (c) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards.
- (d) Base flood elevation data shall be provided for subdivision proposals and other proposed development (including manufactured home parks and subdivisions) which is greater than the lesser of 50 lots or five acres.

(Code 1975, § 9-17; Ord. of 9-8-1987, § 9-17)

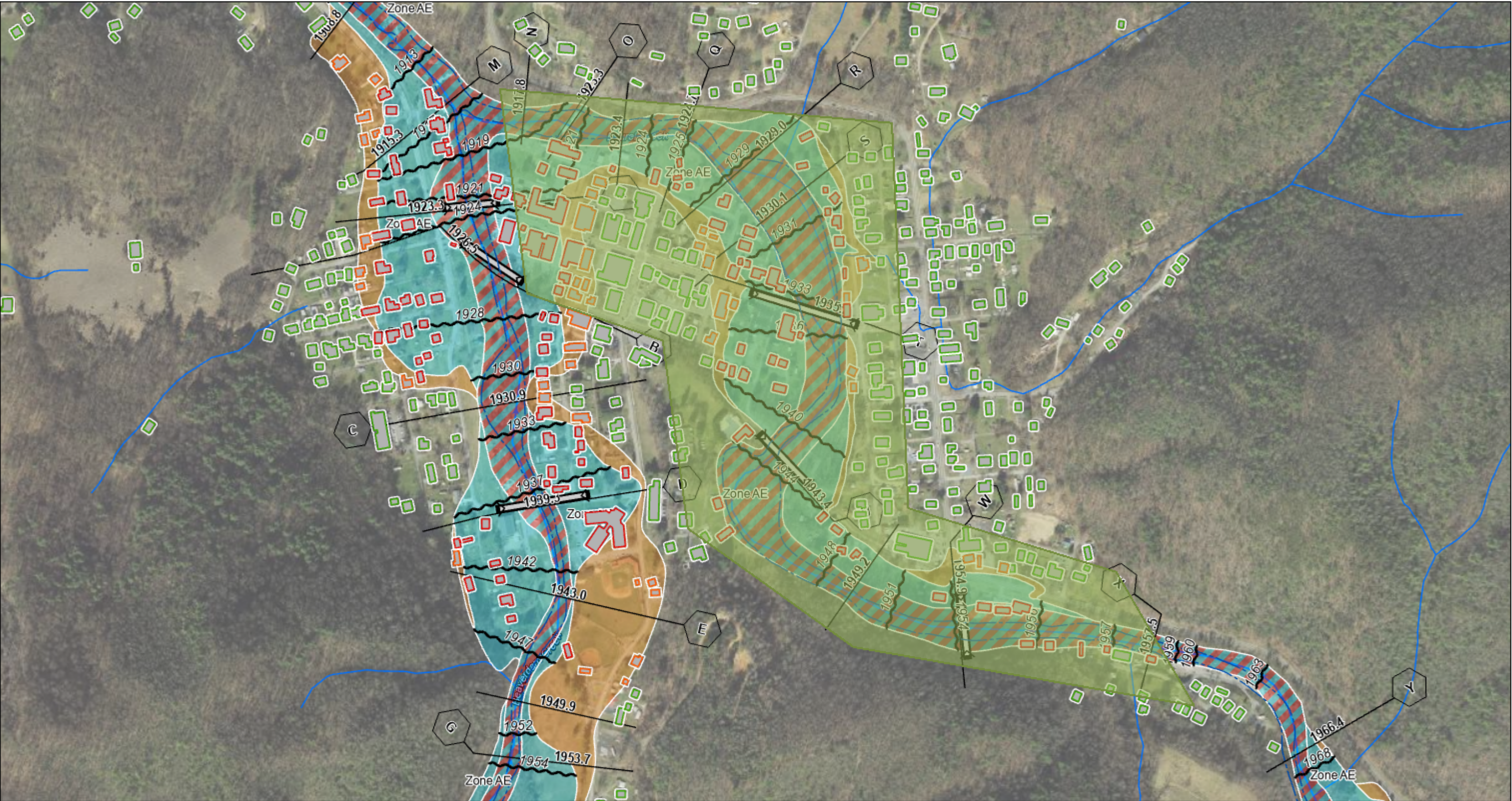
Sec. 30-95. - Standards for areas of shallow flooding (AO zones).

Located within the areas of special flood hazard established in section 30-33 are areas designated as shallow flooding areas. These areas have special flood hazards associated with base flood depths of one to three feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate; therefore, the following provisions apply:

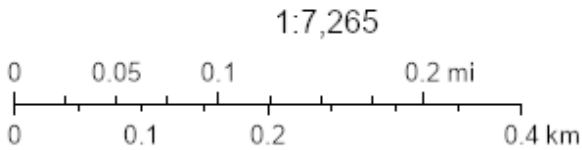
- (1) All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated to the depth number specified on the flood insurance rate map, in feet, above the highest adjacent grade. If no depth number is specified, the lowest floor, including basement, shall be elevated at least two feet above the highest adjacent grade.
- (2) All new construction and substantial improvements of nonresidential structures shall:
 - a. Have the lowest floor elevated to the depth number specified on the flood insurance rate map, in feet, above the highest adjacent grade; if no depth number is specified, the lowest floor shall be elevated at least two feet above the highest adjacent grade; or
 - b. Together with attendant utility and sanitary facilities, be completely floodproofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

(Code 1975, § 9-18; Ord. of 9-8-1987, § 9-18)

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MOUNTAIN MEDIA



MOUNTAIN MEDIA











VFRIS Exporter



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BuildingFootprints_WSE

0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard; Regulatory Floodway

Area of Minimal Flood Hazard

Cross Sections

Base Flood Elevations

Profile Baselines

General Structures

Bridge

Dam, Weir, Jetty

Flood Hazard Boundaries

Other Boundary

Flood Hazard Area

0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

Regulatory Floodway

Social Vulnerability Block Groups 2020

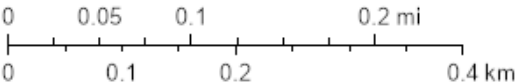
Moderate Social Vulnerability

High Social Vulnerability

NHDFlowLine_Named

NHDFlowLine_Unnamed

1:7,265



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info@damascus.org

January 10, 2025

Angela Davis, CFM
Director of Floodplain Management Division
600 East Main Street, 24th floor
Richmond, VA 23219
Attn: CFPF Round 5 Grant Submittal

**Community Flood Preparedness Fund – Round 5
CID#510170 – Town of Damascus – Resilience Plan**

Division of Floodplain Management,

The Town of Damascus has endeavored for years as part of our community revitalization efforts to become more economically resilient, environmentally sustainable, and flood resilient, but progress has been slow. Annually, the town suffers from pluvial flooding and at least minor riverine flooding events. In 1977, the town experienced the most catastrophic flooding event in memorable history, mostly from the floodwaters of Beaverdam Creek; however, in September 2024, the town received another historic flood event from Hurricane Helene, this time from the floodwaters of Laurel Creek. The town is ready to respond as best it can in the wake of this historic disaster.

The Town of Damascus believes that a resilience plan is necessary for the long-term viability and sustainability of the town. As citizens and business owners invest in rebuilding their homes and businesses, the town is dedicated to rebuilding a stronger, more resilient community. Unfortunately, the town lacks the financial and staff capacity to undertake major planning and policy activities without outside assistance, and the disaster of Hurricane Helene has rendered the town's situation dire – even so, the town remains diligent in our recovery efforts.

The town and community hereby request funding from the Community Flood Preparedness Fund and any other assistance that DCR can spare for our successful flood recovery and flood resilience.

Sincerely,

Katie M. Lamb, Mayor

Cc: Chris Bell, Town Manager

"The Strength of a Town Lies in the Confidence and Cooperation of Its People"