



Appendix A: Mitigation Strategies

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Rappahannock-Rapidan Regional Commission Strategies (Region-wide)

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Coordinate inter-regional meetings (with surrounding PDCs) to ensure linkage with evacuation and other emergency planning of adjoining jurisdictions	2005	Multiple	High	None other than staff time	None needed	Rappahannock-Rapidan Regional Commission	Ongoing	RRRC has participated, with member jurisdictions, in meetings with surrounding localities. RRRC staff also regular participates with regional emergency coordinator meetings convened by VDEM Region II staff and will continue to do so in the future.
2	Update floodplain maps across the region as means of improving floodplain management and ensure each jurisdiction maintains ordinances in compliance with NFIP requirements.	2005	Flood	Moderate	Dependent on extent of changes needed	FEMA	Local Jurisdictions, Rappahannock-Rapidan Regional Commission	Ongoing	All local jurisdictions are working with FEMA Region III staff in the ongoing updates to the FIRMs and floodplain mapping updates for the Rappahannock and Potomac watersheds.
3	Conduct NFIP, CRS and Flood Prevention information sessions around the region to improve awareness of flood insurance and how communities can reduce the effects of the flood hazard.	2005	Flood	Moderate	Dependent on number of workshops and attendees	FEMA; VDEM; DCR; Local funds	Rappahannock-Rapidan Regional Commission	Ongoing	RRRC co-hosted a Floodplain Management workshop with staff from the Virginia Department of Conservation and Recreation in October 2017 and will continue to seek opportunities to share information with local staff and the general public
4	Broaden Hazard Mitigation Committee to include review and representation from public, non-profit, and private sector	2005/2018	All	Moderate	None other than staff time	None needed	Rappahannock-Rapidan Regional Commission	Ongoing	2012 and 2018 Plan updates included participation by community colleges, employers, National Parks Service, and outreach to other stakeholders via advertising and newsletter distribution
5	Develop Emergency Preparedness manual and distribute across the region to help prepare for all hazards	2005	Multiple	High	Dependent on scope of project	FEMA	Rappahannock-Rapidan Regional Commission	Completed	The Rappahannock-Rapidan Health District coordinates an Emergency Preparedness Task Force and produces similar materials in support of these efforts
6	Facilitate continued sharing of GIS maps/data, impact studies, ordinances, plans, etc. among member jurisdictions	2005	Multiple	High	None other than staff time	None needed	Rappahannock-Rapidan Regional Commission	Ongoing	Completed on an as-needed basis
7	Facilitate further review of earthquake hazard and its impacts on the region in order to develop locally relevant mitigation strategies	2012	Earthquake	High	Staff time; VDEM/FEMA assistance	None needed initially	Rappahannock-Rapidan Regional Commission	Completed	RRRC staff participated in workshops held by the Virginia Department of Mines, Minerals, and Energy (DMME) regarding earthquake hazard and history in Virginia in 2016 and incorporated relevant data into the 2018 plan update
8	Wildfire prevention and training programs, including support of Firewise training for interested localities	2012/2018	Wildfire	Moderate	Staff time	None needed initially	Rappahannock-Rapidan Regional Commission	As funding allows	DOF data sets were not updated since 2012 plan review, representing potential area for improved data before next plan update
9	Regional Water Supply Planning support to those jurisdictions without water supply plans in place	2012	Drought	Moderate	Staff time	VDEM; DEQ; Local funds	RRRC	Ongoing	Local water supply plans are to be updated in 2018 with RRRC staff assisting local staff on an as-needed basis
10	GIS Data Analysis of Virginia Department of Forestry's Wildland-Urban Interface zones with recent imagery and projected growth areas in region	2012	Wildfire	Moderate	Staff time	DOF grants; Local funds	Rappahannock-Rapidan Regional Commission	Completed	Completed as part of the 2018 plan update and the December 2017 GIS Land Cover data workshop conducted by RRRC staff
11	Assist local jurisdictions with development of Continuity of Operations Planning	2012	Multiple	Low	Staff time	Local funds	Local jurisdictions, RRRC	Ongoing	Local Emergency Management Departments have taken the lead on these activities, along with VDEM Region 2 staff
12	Identify the four missing addresses for repetitive loss properties in the region.	2012	Flood	Moderate	Staff time	None needed	Local Jurisdictions, RRRC	Within 1 year	Not started
13	Improve water monitoring capabilities along major rivers in the region (including additional monitor stations and improved data tracking capabilities)	2012	Flood	Moderate	Unknown	FEMA: HMGP	Local Jurisdictions, RRRC	As funding allows	VDEM and the Army Corps of Engineers have completed a river gauge analysis and added additional monitoring capabilities in the Rappahannock River watershed
14	Develop an education and outreach plan for the upcoming changes in FEMA Flood Insurance Rate Maps (FIRM) for property owners and general public	2018	Flood	High	Dependent on scope of distribution	Local funds, FEMA HMGP, PDM	RRRC, Local jurisdictions	Ongoing	All jurisdictions, RRRC, and VDEM staff working with FEMA to review proposed floodplain and FIRM revisions prior to official adoption of new FIRMs
15	Consider acquisition, elevation, demolition, reconstruction of repetitive loss properties	2018	Flood	Moderate	Dependent on property	FEMA PDM, HMGP	Local jurisdictions	As funding allows	New strategy for 2018

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Culpeper County

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Develop a coordinated GIS department and improve GIS usage and capacity across county departments; Improve Emergency Operations Center use of GIS	2005	Multiple	Moderate	Staff Salary, Training	FEMA, Local Funds	Culpeper County Planning; Emergency Management	Ongoing	GIS capacity and utilization increased among County departments
2	Enhance current GIS capabilities/data to expand in-house hazard mitigation capabilities	2005	Multiple	Moderate	Staff Salary, Training	FEMA, Local Funds	Culpeper County Planning; Emergency Management	Ongoing	GIS capacity and utilization increased among County departments
3	Develop policies for early drought conservation measures	2005	Drought	Moderate	Staff time	None needed initially	Culpeper County Environmental Services	Ongoing	Joint County/Town Water Supply Plan adopted (2013) and in review
4	Develop Public Awareness campaign for flooding, hurricanes and tropical storms	2005	Flood, Hurricane, Tropical Storms	Moderate	\$1,000 annually	FEMA, local funds	Culpeper County Emergency Services	Ongoing	Ongoing task
5	Develop county-wide warning and alert system	2005	All Hazards	Moderate	Dependent upon upgrades needed	FEMA, VDEM, ISP	Culpeper County Emergency Services	Completed	Replaced Code Red with Rave Alert System
6	Participate in ICS scenario exercises in conjunction with other local jurisdictions	2012	Multiple	Moderate	Staff time	None other than staff time	Culpeper County Emergency Services	Ongoing	County staff participates regularly with VDEM regional exercises
7	Implement Town & County Water & Sewer agreement	2012	Multiple	High	Unknown	Local Funds	Culpeper County Administration	Completed	Completed as part of voluntary settlement agreement between Town and County (2012)
9	Limit the percentage of allowable impervious surface within developed parcels to reduce the impact of erosion and to lessen the impact of flooding	2005	Flood	Moderate	Staff time	None needed	Culpeper County Planning	Completed	In place, reference Culpeper County Code, chapter 11A
11	Require more trees be preserved/planted in landscape designs to reduce the amount of stormwater runoff	2005	Flood	Moderate	Staff time	None needed	Culpeper County Planning	Completed	In place, reference article 33 of Zoning Ordinance
12	Require clustering for PUDs in the zoning ordinance that reduce or eliminate development in known hazard areas (generally flood zones)	2005	Flood	Moderate	Staff time	None needed	Culpeper County Planning	Completed	Floodplain ordinance in place, reference article 8A or Zoning Ordinance
15	Require setbacks from delineated hazard areas (e.g. wetlands, steep slopes)	2005	Multiple	Moderate	Staff time	None needed	Culpeper County Planning	Completed	Addressed as part of floodplain and Zoning ordinance
16	Join the Community Rating System program to reduce the flood insurance premiums of citizens in Culpeper County and to foster better floodplain management practices	2005	Flood	Moderate	Staff time	Local Funds	Culpeper County Emergency Services	Not started	CRS What-If Scenarios received in 2017 from Department of Conservation & Recreation
18	Install generators in shelter locations for use in times of displacement/evacuations	2005	Multiple	Moderate	\$30,000 per generator	FEMA Funds	Culpeper County Emergency Services	Completed	Review of new critical facility needs on an as-needed basis
19	Make sure the new EOC is designed and built in such a way as to be resistant to the effects of natural hazards	2005	Multiple	Moderate	Dependent on EOC design	FEMA Funds	Culpeper County Emergency Services	Completed	EOC construction completed
20	Review Hazard Mitigation Plan and identified strategies as part of regular review and update of other County Plans (Comprehensive Plan, Emergency Operations Plan, Capital Improvements Plan, etc).	2018	All	Moderate	Staff time	Local funds	Culpeper County Emergency Services, Planning	Ongoing	New strategy for 2018
21	Consider acquisition, elevation, or flood-proofing of structures with repetitive loss claims to the National Flood Insurance Program	2018	Flood	Moderate	Dependent on property in question	Local funds, FEMA PDM, HMGP	Culpeper County Emergency Services, Administration	Not Started	Strategy returned to Plan for 2018
22	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and general public	2018	Flood	High	Staff time	Local funds, FEMA PDM, HMGP	Culpeper County Emergency Services, Planning	Not Started	New strategy for 2018

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Town of Culpeper

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Enhance current GIS capabilities to expand in-house hazard mitigation capacity	2005	Multiple	Moderate	Dependent on level of enhancement	FEMA, Local funds	Town of Culpeper Department of Planning and Community Development	Ongoing	Town GIS now has layers for 100 year base flood and dam breach inundation zones. Mapping of critical utilities continues.
2	Acquire Global Positioning System (GPS) units to locate critical public infrastructure	2005	Multiple	High	\$11,000 - \$15,000	FEMA	Town of Culpeper	Completed	GPS units available for field measurement for critical utilities.
3	Technology upgrades to allow the Town to more efficiently respond to disasters	2005	Multiple	High	Dependent upon upgrades identified	Grant funds	Town of Culpeper Administration	Ongoing	Police body and vehicle camera system upgrade implemented in 2016. Tyler Munis ERP platform initiated in 2017 and continues with implementation of successive technology modules. Police, public works and utility fleet upgrades and standardization continue for improving fleet reliability and responsiveness. Emergency generator installations completed for Town Hall, Motor Pool and Operations Center. Three trailer mounted portable generators added to fleet in 2014. Five trailer mounted message boards added to fleet from 2012 to 2016. Radio system upgrades conforming to P25 standards underway in 2017 and 2018 and include use of push to talk (PTT) Smart phones.
4	Improve security and protection measures for Town's water plant and water supply reservoirs	2005	Multiple	High	Dependent upon level of enhancement	Federal funding	Town of Culpeper Department of Public Works	Completed	Installation of security video surveillance and enhanced perimeter fencing at Water Treatment Plant.
5	Improve security and protection measures for Town's electric utility and distribution system	2005	Multiple	High	Dependent upon level of enhancement	Federal funding	Town of Culpeper Director of Light and Power	Completed	Installation of security video surveillance and enhanced perimeter fencing at Light & Power facility.
6	Improve security and protection measures for Town's wastewater utility	2005	Multiple	High	Dependent upon level of enhancement	Federal funding	Town of Culpeper Department of Public Works	Completed	Installation of security video surveillance and enhanced perimeter fencing at Water Pollution Control Facility.
7	Provide vegetative buffers where appropriate to offset effects of potential flooding	2005	Flooding	Moderate	Staff time	None other than staff time	Town of Culpeper Departments of Planning and Community Development, Public Works	Ongoing	Continuous during plan review of new developments.
8	Employ the use of impervious surfaces, only where practical, to counteract the effects of flooding in developed areas of town	2005	Flooding	Moderate	Staff time	None other than staff time	Town of Culpeper Departments of Planning and Community Development, Public Works	Ongoing	Continuous during plan review of new developments.
9	Construct Inner Loop road between route 229 and route 522 to provide additional traffic options during flood events	2012	Flooding, Multiple	Moderate	Estimates at VDOT	VDOT, FHWA	Town of Culpeper, VDOT	Completed	Completed and in operation in 2014.
10	Utilize old VDOT Residency property to further streamline maintenance efficiency	2012	Winter Weather, multiple	Moderate	Staff time	None other than staff time	Town of Culpeper Department of Public Works	Completed	Completed an in operation in 2012.
11	Complete and implement mitigation planning policies for dams at Lake Pelham and Mountain Run Lake	2012	Flooding	High	Staff time	DCR, staff time	Town of Culpeper Departments of Public Works, Planning and Community Development	Ongoing	Construction phase with dam rehabilitation for both lakes commenced in June 2017 with completion scheduled for December 2018. Federal and State funding has been provided.
12	Participate in ICS scenario exercises in conjunction with other local jurisdictions	2012	Multiple	Moderate	Staff time	None other than staff time	Town of Culpeper Departments of Public Works, Planning and Community Development	Ongoing	Completed with several ICS scenarios and table top exercises at County E911 Center
13	Review Hazard Mitigation Plan and identified strategies as part of the regular review and updates of other Town Plans, including the Comprehensive	2018	All	Moderate	Staff time	None other than staff time	Town of Culpeper Department of Planning and Community Development	Ongoing	New strategy for 2018

	Plan, Capital Improvements Plan, Emergency Operations Plan, and other plans and documents, as necessary and allowable.								
14	Consider acquisition, elevation, or flood-proofing of structures with repetitive loss claims to the National Flood Insurance Program	2018	Flood	Low	Dependent upon identified property	Federal, State, Local funds	Town of Culpeper Administration	Not started	New strategy for 2018
15	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and general public	2018	Flood	High	Staff time	Local funds, FEMA HMGP, PDM	Town of Culpeper Department of Planning and Community Development	Not started	New strategy for 2018

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Fauquier County

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Build new Emergency Operations Center and Emergency Communications Center	2005	Multiple	High	Undetermined	FEMA HMGP, Local Funds	DFREM	Ongoing	Location and funding options remain unidentified
2	Relocation of structures out of the floodplain	2005/2012	Flood	Low	Dependent upon number structures identified	FEMA HMGP, FMA	Fauquier County Community Development	Not started	Requires study of non-conforming homes in updated FIRM maps; Retain strategy as refined in 2012
3	Join the Community Rating System program to reduce the flood insurance premium of citizens in Fauquier County and to foster better floodplain management practices	2005/2012	Flood	Moderate	Staff time	None needed	Fauquier County Community Development	Ongoing	Program in review at County
4	Improve generator capacity at shelters/schools	2005	Multiple	High	\$35,000 per generator	FEMA HMGP, PDM	DFREM	Ongoing	Implemented as funding is available through local funding streams or grant programs
5	Develop Code Red System throughout county	2005/2012	Multiple	Moderate	Unknown	Local funds	DFREM	Completed	Everbridge notification system in place
6	Prohibit or limit floodplain development through regulatory and/or incentive based measures	2005/2012	Flood	Low	Staff time	None needed	Fauquier County Community Development	Completed	Zoning Ordinance updated at various times to conform to federal law and updated FIRM maps.
7	Establish and manage riparian buffers along rivers and streams to minimize erosion and flooding	2005/2012	Flood	Low	Staff time	None needed	Fauquier County Community Development	Ongoing	Retain strategy as refined in 2012, given pending stormwater and Chesapeake Bay regulations at state level
8	Incorporate into emergency response plans the procedure for tracking high water marks following a flood	2005/2012	Flood	Low	Staff time	None needed	DFREM	Ongoing	Department of Fire, Rescue, and Emergency Management working with National Weather Service and VDOT on a periodic basis to address
9	Retain thick vegetative cover on public lands flanking river to reduce the potential of erosion	2005/2012	Flood	Low	Staff time	None needed	Fauquier County Community Development	Ongoing	Department of Community Development encourages on private lands. Department of Parks & Recreation implements, as able, on public lands
10	Sign a Cooperating Technical Partner (CTP) Agreement with FEMA.	2005/2012	Flood	Moderate	Staff time	FEMA Grants	Fauquier County Community Development	As staff time allows	Requires Floodplain Manager and GIS to work with FEMA to determine county eligibility; and Board of Supervisors authorization to pursue such a designation
11	Determine county's eligibility for Coordinating Cooperative Partner designation	2012	Flood	Moderate	Staff time	Local Funds	Fauquier County Community Development	As staff time allows	Not currently underway
12	Limit the percentage of allowable impervious surface within developed parcels	2005/2012	Flood	Low	Staff time	None needed	Fauquier County Community Development	Ongoing	Monitor pending regulations at state and federal level for changes to impervious surface reductions.
13	Encourage residents to keep storm drains clear of debris during storms	2005/2012	Flood	Moderate	Staff time	None needed	Fauquier County Community Development	As necessary	This is primarily a town function
14	Develop Mobile Data Transmission System that is interoperable with Northern Virginia Public Safety agencies	2005/2012	Multiple	High	Unknown	Local, State, Federal funds	DFREM	Ongoing	Currently in planning stage
15	Require developers to plan for on-site sediment retention.	2005	Flood	High	Staff time	None needed	Fauquier County Community Development	Ongoing	Completed on a regular basis during development review.
16	Develop an open space acquisition, reuse and preservation plan targeting hazard areas.	2005	Flood	Low	\$50,000 to develop plan, additional unknown	FEMA HMGP	Fauquier County Community Development	Ongoing	No formal plan in place. Department of Community Development reviews locations of open space during review of proposed

									subdivisions
17	Prohibit any development within the floodplain areas	2005	Flood	Low	Staff time	None needed	Fauquier County Community Development	Completed	Incorporated into County Ordinance
18	Revise and update regulatory floodplain maps	2005	Flood	Moderate	--	FEMA: MMP	Fauquier County Community Development	Completed	Updated floodplain maps adopted and monitored.
19	Designate a local floodplain manager/CRS coordinator that achieves Certified Floodplain Manager certification	2005	Flood	Moderate	Staff time	None needed	Fauquier County Community Development	Ongoing	Certification not yet sought for incumbent in position currently
20	Substitute porous surfaces/pavement for impervious pavement when appropriate to reduce flooding caused by runoff	2005	Flood	Low	Staff time	None needed	Fauquier County Community Development	As necessary	Ongoing, as and where appropriate
21	Retain natural vegetative bed in stormwater channels to reduce erosion	2005	Flood	Low	Staff time	None needed	Fauquier County Community Development	Ongoing	Ongoing, as and where appropriate
22	Install quick connects at critical facilities	2018	All	Moderate	DFREM	FEMA PDM, HMGP, Local Funds	DFREM		New strategy for 2018
23	Review Hazard Mitigation Plan and identified strategies as part of the regular review and updates of other County Plans, including the Comprehensive Plan, Capital Improvements Plan, Emergency Operations Plan, and other plans and documents, as necessary and allowable.	2018	All	Moderate	Staff time	Local Funds, Staff time	DFREM/Community Development	Ongoing	Plans are reviewed on an annual basis
24	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and community at large.	2018	Flood	Moderate	Staff time	Local funds, FEMA HMGP, PDM	Fauquier County Community Development	Not started	New strategy for 2018

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Town of Remington

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Elevate buildings/buy-out land in floodplain.	2005	Flood	Moderate	Unknown	FEMA, Local Funds	Town of Remington Administration	Not started	Cost is prohibitive for Town to proceed and dependent on identified structures
2	The water treatment plant for the Town of Remington on Confederate Boulevard needs a backup generator.	2005	Multiple	High	\$35,000 per generator	FEMA, Local Funds	Town of Remington Superintendant	Ongoing	Not yet purchased
3	Ensure plans for new water treatment facility at 5th Street include backup power generation	2012	Multiple	High	Dependent upon identified solution	Local funds	Town of Remington Superintendant	Completed	Generator installed at facility
4	The sewer plant that serves the Town of Remington needs a backup generator	2005	Multiple	High	\$30,000 per generator	FEMA Funds	Town of Remington Superintendant	Completed	Generator installed at facility
5	Work with FEMA, VDEM, and Fauquier County to update floodplain mapping for the Town of Remington	2018	Flood	Moderate	Staff time	Local funds	Town of Remington Administration	Ongoing	FEMA updates to floodplain areas are ongoing
6	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and community at large	2018	Flood	Moderate	Staff time	Local funds, FEMA HMGP, PDC	Town of Remington Administration	Not started	New strategy for 2018
7	Review Hazard Mitigation Plan and identified strategies as part of the regular review and updates of other Town and/or County Plans, including the Comprehensive Plan, Capital Improvements Plan, Emergency Operations Plan, and other plans and documents, as necessary and allowable	2018	All	Moderate	Staff time	Local funds	Town of Remington Administration	Ongoing	New strategy for 2018
8	Work with Fauquier County and other regional partners to share information regarding hazard mitigation and response with Town citizens	2018	All	Moderate	Staff time	Local funds	Town of Remington Administration	Ongoing	New strategy for 2018

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Town of Warrenton

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Coordinate all traffic signals in town. Currently the signals are not coordinated and can cause major problems for emergency vehicles trying to enter and exit the police and fire stations	2005	Multiple	Moderate	\$50,000	Local Funds, VDOT	Town of Warrenton Department of Public Works and Utilities	Ongoing	Phase I completed. Phase II in progress via Revenue Sharing application to VDOT.
2	Verify street addresses and ensure compliance with posting requirements.	2005	All Hazards	High	Staff time	None needed	Town of Warrenton Department of Planning and Community Development	Ongoing	Base map completed and verified. Street addresses assigned as bldg. permits applied for, addresses are corrected as issues are discovered, Community Development coordinates with Fauquier Co E-911 to verify and rectify all addressing inconsistencies in accordance with MSAG.
3	Join the Community Rating System program to reduce the flood insurance premiums of citizens in the Town of Warrenton and to foster better floodplain management.	2005	Flood	Moderate	Staff time	None needed	Town of Warrenton Departments of Public Works and Utilities & Planning and Community Development	Ongoing	Some elements of the CRS program are incorporated into the Planning & Permitting processes. Town has a Certified Floodplain manager to assist with identifying and managing flood risk. The low number of flood insurance policies and at-risk structures in the Town reveals that the identified risk for flood damage is low. No repetitive-loss structures. Town is focusing on Erosion and Sediment control & Stormwater management to address localized flooding issues.
4	Update floodplain map for the Town of Warrenton	2005	Flood	High	\$85,000	FEMA Funds	Town of Warrenton Department of Public Works and Utilities	Ongoing	LOMR for Turkey Creek supplied new information for this watershed and is incorporated into the current map update. RiskMAP process ongoing. 1st review product delivered and reviewed, awaiting final updates.
5	Improve enforcement of erosion and sediment control measures to reduce erosion and flooding problems caused by sedimentation.	2005	Flood	Low	Staff time	None needed	Town of Warrenton Department of Planning and Community Development	Ongoing	Additional Staff hired to address this issue. Inspections and Enforcement current. Training ongoing. Improved permitting and tracking processes.
6	Additional staff training for GIS applications.	2005	Multiple	Moderate	\$2,000 to \$4,000; Dependent upon software needs; training needs	Local Funds	Town of Warrenton Departments of Public Works and Utilities & Planning and Community Development	Ongoing	Working with Fauquier County to combine GIS capabilities. Three (3) GIS Staff – 1 Planning, 1 Utilities, 1 Dept of Public Works.
7	Increase snow removal capabilities	2005	Winter Storms	Moderate	Additional staff time and funding for new equipment	Dependent upon need for new equipment	Town of Warrenton Department of Public Works and Utilities	Ongoing	Contracting additional contractor support annually.
8	Review Hazard Mitigation Plan and identified strategies as part of the regular review and updates of other County Plans, including the Comprehensive Plan, Capital Improvements Plan, Emergency Operations Plan, and other plans and documents, as necessary and allowable.	2018	All	Moderate	Staff time	Local funds	Town of Warrenton Department of Planning and Community Development	Ongoing	New strategy for 2018
9	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and community at large.	2018	Flood	High	Staff time	Local Funds, FEMA HMGP or PDM	Town of Warrenton Department of Planning and Community Development	Ongoing	Staff is working with Fauquier County to review and comment on FIRMs as they are delivered and will assist with implementation and public education throughout this process.
10	Appoint or assign a Risk Manager to develop an education and outreach program for building code, fire code, risk assessment, evacuation, continuity of	2018	All	Moderate	Staff time, other costs dependent upon scope	Local Funds, FEMA, VDEM	Town of Warrenton Department of Planning and Community Development	Not started	Staff with background in risk management has been hired and is developing new permitting and process refinements in cooperation with the Community Development Director.

	operations, and other public safety awareness issues for Town employees and citizens.								
11	Consider acquiring additional generator capacity at critical facilities in Town, including Public Works and Utilities building.	2018	All	Moderate	Variable	Local Funds, FEMA, VDEM	Town of Warrenton Department of Public Works and Utilities	Ongoing	Mobile generator for PW facility and wells.
12	Increase public safety awareness in Transportation initiatives	2018	All	High	Staff time, outreach materials	Local Funds, FEMA, VDEM	Town of Warrenton Department of Planning and Community Development	Ongoing	Objectives identified in Transportation and Comprehensive Plans, Broadview Plan, Old Town. Increasing pedestrian and multi-modal access to Critical Facilities.

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Madison County

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Identify the two repetitive loss properties in the county.	2005	Flood	Moderate	Staff time	None needed	Madison County Emergency Management	Not started	Limited number of repetitive loss properties in the County, and low cost-benefit of potential projects as discussed with VDEM in the past
2	Develop a HAZMAT team to handle possible spills on Route 29	2005	Hazardous Materials	Moderate	Dependent on number of team members and equipment needed	Hazardous Material Emergency Management grant	Madison County Emergency Management	As funding allows	Working through LEPC
3	Expand emergency shelter capabilities for natural disasters and large-scale evacuation	2005	Multiple	Moderate	Dependent upon improvements needed	FEMA	Madison County Emergency Management	Ongoing	Reviewed as part of Emergency Operations Plan
4	Upgrade internal GIS to be used for emergency applications	2018	All	Moderate	Dependent upon extent of upgrades	Local Funds, FEMA, VDEM	Madison County Emergency Management	Ongoing	New strategy for 2018
5	Upgrade county-wide public safety radio system to a regional P25 public safety grade system	2018	All	High	> \$5 million depending upon stand-alone or shared system	Local Funds, VDEM	Madison County Emergency Management	Ongoing	New strategy for 2018

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Town of Madison

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Improve stormwater runoff with the implementation of stormwater management techniques	2005	Flood	High	Town staff has estimates	FEMA, USDA, Soil and Water Conservation	Town of Madison Administration	As funding allows	Work with Rapidan Service Authority to complete
2	Protect utilities by placing overhead wires and cables underground	2005	High winds, tornadoes, hurricanes, winter storms	Moderate	Town staff has estimates for existing line burial; future line burial would be taken care of via ordinance amendments	CDBG	Town of Madison Administration	As funding allows, long-term	Not currently financially feasible
3	Work with County and Regional partners to plan for potential transportation issues related to hazardous materials transported on Route 29	2018	Multiple	Moderate	Staff time	Staff time	Town of Madison, Madison County Emergency Management	Not started	New strategy for 2018
4	Work with local and regional partners on wildfire mitigation actions in the town	2018	Wildfire	Moderate	Staff time	Local funds, FEMA HMGP, PDM	Town of Madison, Madison County Emergency Management, RRRC	Not started	New strategy for 2018

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Orange County

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Identify and develop additional shelter sites for evacuees from within and outside the region	2005/2012	Multiple	High	Staff time	General fund	Orange County Department of Emergency Management	Ongoing	Addressed as needed during updates to Emergency Operations Plan, etc.
2	Expand and fully equip Emergency Operations Center	2005	Multiple	High	\$75,000	General fund, North Anna funds and grants	Orange County Administration, Emergency Management	Ongoing	New Public Safety Building and Emergency Operations Center is in final design phase
3	Expand and fully equip E-911 Center	2012	Multiple	High	\$200,000	Local and grant funding	Orange County Administration, Emergency Management and Emergency Communications	Ongoing	Orange County 911 Center and LEO dispatch are now combined and will be housed in new public safety building
4	Upgrade Reverse 911 system with a modern multi-notification system	2005/2012	Multiple	High	\$40,000	General fund, North Anna funds and grants	Orange County Administration, Emergency Management and Emergency Communications	Ongoing	Rave Alert system implemented
5	Install a generator at the Orange County Courthouse facility	2012	Multiple	Low	\$50,000	General fund, FEMA, grants	Orange County Department of Emergency Management	Not started	To be completed as funding allows
6	Install and replace generators in County Fire and Rescue station #21	2012	Multiple	High	\$58,333	General fund, FEMA, grants	Orange County Department of Emergency Management	Completed	Completed
7	Install and replace generators in County Fire and Rescue station #24	2012	Multiple	High	\$58,333	General fund, FEMA, grants	Orange County Department of Emergency Management	Completed	Completed
8	Install and replace generators in County Fire and Rescue station #29	2012	Multiple	High	\$58,333	General fund, FEMA, grants	Orange County Department of Emergency Management	Completed	Completed
9	Conduct a detailed needs assessment for the county's emergency response services	2005	Multiple	Moderate	Unknown	Local, ODP	Orange County Department of Emergency Management	Ongoing	Fire programs analysis completed in 2014; overall review included as part of public safety building design
10	Upgrade or replace generators at communications sites throughout Orange County and add surveillance equipment. Monitoring systems should also be added to provide the following information: fuel status, generator status, temperature status, generator output status	2012	Multiple	High	\$100,000	General fund, grants	Orange County Department of Emergency Management	Ongoing	Will be included as part of the public safety building project
11	Retrofit Locust Grove Middle School as an emergency shelter with the addition of a generator	2012/2018	Multiple	High	\$50,000	General fund, grants	Orange County Department of Emergency Management	Ongoing	Not yet underway
12	Retrofit Prospect Heights Middle School as an emergency shelter with the addition of a generator	2012/2018	Multiple	High	\$50,000	General fund, grants	Orange County Department of Emergency Management	Ongoing	Not yet underway
13	Retrofit High School Field House as an emergency shelter with the addition of a generator	2012/2018	Multiple	High	\$50,000	General fund, grants	Orange County Department of Emergency Management	Ongoing	Included in 2020 Capital Improvement Plan
14	Apply for and obtain funding for hazard mitigation plan implementation	2005	Multiple	High	Staff time	None needed initially	Orange County Administration, Emergency Management and Emergency Communications	Ongoing	Funding sought in 2020 Capital Improvements Plan and other sources, as available
15	Identify potential terrorism targets (local) and plan for their protection	2005	Terrorism	High	Staff time	State Homeland Security Grant program	Orange County Emergency Operations Center, Local Police	Ongoing	Emergency Services and Sheriff's Office collaborate on response
16	Incorporate Hazard Mitigation plan into Comprehensive Plan and Capital Improvements Plan	2005	Multiple	Moderate	Staff time	None needed	Orange County Administration, Department of Planning and Zoning	Ongoing	Addressed through other means
17	Complete a stormwater drainage study/plan for known problem areas	2005	Flood	Moderate	Staff time	General Fund, grants	Orange County Department of Planning and Zoning	As funding allows	Addressed through other means
18	Develop and implement a multi-hazard public awareness program	2005	Multiple	Moderate	Staff time	General Fund	Orange County Department of Emergency Management and Emergency Communication	Ongoing	County has active communication via social media, training workshops for public

19	Develop an internal GIS that may be used for analysis in times of emergency	2005/2012	Multiple	Moderate	Staff time	FEMA, VGIN, Local Funds	Orange County Department of Planning and Zoning	Ongoing	Position created and implementation to begin in 2019
20	Identify flood inundation zones for all dams regulated through the Virginia Department of Conservation and Recreation Dam Safety program	2005	Flood	Moderate	Staff time	General fund, DCR	Orange County Department of Planning and Zoning	Completed	Included in County GIS and as appendix to Hazard Mitigation Plan
21	Upgrade or replace outdated storage shed at the Orange County Sheriff's office	2012	Multiple	High	Unknown	General fund, FEMA	Orange County Department of Emergency Management, Sheriff's Office	Ongoing	Will be completed as part of County Public Safety Building project
22	Prepare for loss of electricity at vulnerable facilities	2005	Multiple	High	Staff time	General fund	Orange County EOC	Ongoing	Overall strategy addressed by other strategies, also continually reviewing options
23	Create an evacuation plan and clean up scenario in the event of a train derailment resulting in a toxic spill	2005	Hazardous Materials	Moderate	Dependent on location	HMEP grants	Orange County/Town of Orange	Ongoing	Included in County Emergency Operations Plan
24	Identify/prepare evacuation routes and shelter locations for natural or man-made disasters	2005	Multiple	Moderate	Staff time	General Fund, FEMA grants	Orange County EOC	Ongoing	Included in County Emergency Operations Plan
25	Develop a terrorism response plan	2005	Terrorism	Moderate	Staff time	General fund	Orange County Administration, EOC, Planning	Delete	Partially covered through other plans
26	Design an early warning system for hazard events	2005	Multiple	Moderate	Staff time	General fund	Orange County EOC, Law enforcement	Ongoing	Rave Alert System implemented
27	In the floodplain ordinance, identify "flooding due to manmade structure" as a concern within the County, also determine ways to regulate development within the flood inundation zones as a function of the floodplain ordinance	2005	Flood	Moderate	Staff time	General fund	Orange County Planning and Zoning	Ongoing	Floodplain ordinance in place; Working through 2018 FIRM updates before proceeding
28	Prepare for radiological problems from North Anna nuclear power station	2005	Hazardous Materials	High	Staff time	HMEP grants	Orange County EOC	Ongoing	Regular participation in multi-jurisdictional drills with North Anna, VDEM, and other localities
29	Prevent development between Lake of the Woods Dam and the Rapidan River	2005	Flood	Moderate	Staff time	General fund	Orange County Planning and Zoning	Ongoing	Addressed through Dam Inundation statute; Not expressly prohibited at this time

2018 Rappahannock-Rapidan Region Mitigation Strategies & Status Reports

Town of Gordonsville

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Identify and develop additional shelter sites for evacuees from within and outside the Town	2018	All	High	Staff time, other costs dependent upon site requirements	Local funds	Town of Gordonsville Manager's Office/Police Department	Ongoing	New strategy for 2018
2	Install a generator at Gordonsville Town Hall	2018	All	High	~\$50,000	Local funds, FEMA HMGP, PDM	Town of Gordonsville Manager's Office/Police Department	Not started	New strategy for 2018
3	Install and replace generators in County Fire and Rescue station #24	2018	All	High	~\$50,000	Local funds, FEMA HMGP, PDM	Orange County Department of Emergency Management, Town of Gordonsville	Completed	Completed according to Orange County
4	Retrofit Gordon Barbour Elementary School as an emergency shelters with the addition of a generator	2018	All	Moderate	> ~\$50,000	Local funds, FEMA HMGP, PDM	Orange County Department of Emergency Management, Town of Gordonsville	Not started	Coordination with County and School System
5	Apply for and obtain funding for hazard mitigation plan implementation	2018	All	High	Dependent upon project	Local funds, Federal/State/Private grants	Town of Gordonsville Manager's Office/RRRC	Not started	New strategy for 2018
6	Identify potential terrorism targets (local) and plan for their protection	2018	Multiple	High	Staff time	Local funds, SHSP grants	Town of Gordonsville Manager's Office/Police Department	Ongoing	Coordination with County staff
7	Incorporate Hazard Mitigation Plan into Comprehensive Plan and Capital Improvements Plan	2018	All	Moderate	Staff time	Local funds	Town of Gordonsville Manager's Office	Ongoing	New strategy for 2018
8	Complete a stormwater drainage study/plan for known problem areas	2018	Flood	Moderate	Unknown	Local funds, Federal/State grants	Town of Gordonsville Manager's Office/RRRC	Not started	New strategy for 2018
9	Develop and implement a multi-hazard public awareness program	2018	All	Moderate	Staff time	Local funds	Town of Gordonsville Manager's Office/Police Department	Ongoing	Coordination with County and Regional partners
10	Prepare for loss of electricity at vulnerable facilities	2018	All	High	Unknown	Local funds, State/Federal/Private grants	Town of Gordonsville Manager's Office/Police Department	Not started	New strategy for 2018
11	Create and evacuation plan and clean up scenario in the event of a train derailment resulting in a toxic spill	2018	Hazardous Materials	Moderate	Dependent on location	Local funds, SHSP grants	Orange County Department of Emergency Management, Town of Gordonsville Manager's Office/Police Department	Ongoing	Included in County Emergency Operations Plan
12	Identify/Prepare evacuation routes and shelter locations for natural or man-made disasters	2018	Multiple	Moderate	Staff time	Local funds, FEMA grants	Orange County Department of Emergency Management, Town of Gordonsville Manager's Office/Police Department	Ongoing	Included in County Emergency Operations Plan
13	Develop a terrorism response plan	2018	Terrorism	Moderate	Staff time	Local funds	Orange County Department of Emergency Management, Town of Gordonsville Manager's Office/Police Department	Ongoing	Partially covered through other County/State plans
14	Design an early warning system for hazard events	2018	All	Moderate	Staff time	None needed initially	Town of Gordonsville Manager's Office/Police Department	Ongoing	Public outreach via website, Town alert lists

2018 Rappahannock-Rapidan Region Mitigation Strategies & Status Reports

Town of Orange

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Plan for derailment of freight trains which pass through center of town (4,000 pop) – Large tank cars, chlorine, anhydrous, etc.	2005	Hazardous Materials	Moderate/High	Dependent upon location and event	Hazardous Materials Emergency Preparedness grant	Town of Orange; Railroad	Ongoing	County addresses through Emergency Operations Plan and other plans. Town may also consider short-term safety improvements at rail crossings
2	Implement preferred recommendation of the 2006 Baylor Creek Stream Restoration Study	2012	Flood	Moderate	Dependent upon recommendations implemented	Federal/State level grants	Town of Orange Department of Community Development	Not started	
3	Perform floodplain mapping of Town to determine base flood elevations.	2012	Flood	Low	Staff time	None needed initially	Town of Orange Department of Community Development	Ongoing	Town staff participating with FEMA in floodplain and FIRM updates in 2018
4	Purchase residences in area(s) subject to recurrent flooding	2005	Flood, Hurricane, Tropical Storms	Low	Dependent on number to be acquired	FEMA, local funds	FEMA, Insurance	Not started	Town staff unaware of specific structures subject to recurrent flooding (2018)
5	Review Hazard Mitigation Plan and identified strategies as part of the regular review and updates of other County Plans, including the Comprehensive Plan, Capital Improvements Plan, Emergency Operations Plan, and other plans and documents, as necessary and allowable	2018	All	Moderate	Staff time	Local funds	Town of Orange	Ongoing	New strategy for 2018
6	Develop an education and outreach plan for the upcoming changes in FEMA flood mapping and Flood Insurance Rate Maps (FIRM) for property owners and community at large	2018	Flood	High	Staff time	Local funds, FEMA HMGP or PDM	Town of Orange Community Development	Ongoing	New strategy for 2018

2018 Rappahannock-Rapidan Region Mitigation Strategies & Status Reports

Rappahannock County

Project #	Strategy	Year Added	Hazard(s) Addressed	Priority	Estimated Cost	Funding Sources	Lead Agency/Department	Status/Schedule	Comments
1	Improve GIS data within the county in order to perform more accurate risk assessments.	2005	All	Low	Dependent on scope of project	Local Funds, Grants	Rappahannock County E-911 Coordination	Ongoing	Grant submitted for Next Generation 911 upgrades
2	Develop/revitalize relationship with Red Cross for shelter operations planning.	2005	All	High	None needed initially	None needed initially	Rappahannock County Emergency Coordination	Ongoing	Updated agreements needed with Red Cross. Partnership in place.
3	Join the Community Rating System program to reduce the flood insurance premiums of citizens in the Rappahannock County and to foster better floodplain management practices.	2005	Flood	Low	\$1,000 to \$3,000	Local Funds	Rappahannock County Administration	Ongoing	No formal movement towards joining CRS. What-if Scenario provided during plan update.
4	Coordinate wildfire planning with Shenandoah National Park.	2005	Wildfire	High	None needed initially	None needed initially	Rappahannock County Administration/Emergency Coordination	Ongoing	Included in Emergency Operations Plan and joint meetings held to discuss past events
5	Promote "Firewise" fire protection by providing literature/brochures with each building permit issued in County for rural area construction.	2005	Wildfire	Moderate	<\$1,000 annually	General Funds	Rappahannock County Administration	Ongoing	Has been implemented and part of continuing local coordination
6	Design and build a new EOC.	2005	All	High	Unknown	General Funds, FEMA	Rappahannock County Administration	Ongoing	County Space Study planned in 2018/2019 to determine needs for all County buildings/departments
7	Identify relocation of commercial uses in floodplain	2005	Flood	Moderate	\$1 to 1.5M	FEMA HMP Grants	Rappahannock County Building Official	Not started	Floodplain and FIRM updates taking place in 2018
8	Install emergency generators at county emergency shelters – Amissville Fire Department, Washington Fire Department, Sperryville Fire Department	2012	All	High	Unknown	General Funds, FEMA	Rappahannock County Emergency Coordination	Ongoing	Generators in place in some locations
9	Install emergency generators at primary county emergency shelters at Rappahannock Elementary School and Rappahannock County High School	2012	All	High	Unknown	General Funds, FEMA	Rappahannock County Emergency Coordination	Ongoing	Coordinate with schools to identify what is required for connection
10	Coordinate and assist with exercise and scenario planning on an annual basis	2018	All	Moderate	Staff time	Local funds, SHSP grants	Rappahannock County Emergency Coordination	Ongoing	New strategy for 2018
11	Coordinate review of hazard mitigation plan with other plans, including Comprehensive Plan and Emergency Operations Plan	2018	All	Moderate	Staff time	Local funds	Rappahannock County Emergency Coordination	Ongoing	New strategy for 2018