



## **NRV Hazard Mitigation Plan 2016/2017 Update Steering Committee**

March 2, 2017, 10:30 am - 12:00 pm

New River Room, New River Valley Business Center  
Fairlawn, VA

### **Agenda**

1. Welcome
2. Review upcoming tasks
3. Evaluate and confirm regional goals
4. Identify regional projects
5. Hazard ranking exercise
6. Wrap Up
  - a. Question and answer
  - b. Next steps
  - c. Next meeting – April 6, 2017 – Steering Committee

## NRV Hazard Mitigation Plan 2016/2017 Update Steering Committee Meeting

Meeting Notes

March 2<sup>nd</sup>, 2017

**Attending:** <see list>

### Notes

1. Welcome
  - a. Christy Straight welcomed the group
  - b. Reviewed calendar items (see attachment)
  - c. Reviewed upcoming tasks
    - i. Public involvement
      1. Meetings
      2. Community events
      3. Website push

VDEM requested to be at the public meetings
2. Goals Review
  - a. Michael Gottfredson reviewed goals and strategies with the Committee. The Committee accepted the goals and strategies as presented (see attachment).
3. Regional Project List
  - a. Mr. Gottfredson reviewed the 2011 regional project list with the Committee. The Committee made suggestions, recommendations, and alterations to the projects presented (see attachment).
4. Hazard Ranking Exercise
  - a. Ms. Straight presented the hazard ranking worksheet to the Committee. The Committee requested the NRV Regional Commission to send them the 2011 numbers associated with the rankings. In addition, the Committee asked for a summary of the hazards data from 2012 to present- specifically the frequency, intensity, and area affected for each of the hazards reviewed. The hazard ranking worksheet will be mailed out to steering committee members to be completed before the next meeting with this information.
5. Wrap Up
  - a. Ms. Straight thanked the Committee for meeting, and the meeting was adjourned.
  - b. Next Meeting: April 6<sup>th</sup>, 2017-Steering Committee

# NRV Hazard Mitigation Plan - 2016/17 Plan Update

March 2, 2017 - 10:30 am

	Name	Organization/Representing	Email (if new)
1	Michael Gottfredson	NRVRC	michaelg@nrvrc.org
2	Will Drake	Town of Christmanby	
3	John Ross	Giles County	jross@gilescounty.org
4	Sara Harrington	VDEM	
5	KALI CASPER	BLACKSBURG	
6	Buddy KAST	NARROWS	jkast@townofnarrows.org
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NRV Hazard Mitigation Plan - 2016/17 Plan Update

March 2, 2017 - 10:30 am

	Name	Organization/Representing	Email (if new)
1	A.T. Brantome	RU OEP	
2	Dany Wilson	Pulaski County	
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# Regional Hazard Mitigation Plan Update

Steering Committee

March 2, 2017

# Today we will

- Review upcoming tasks and timeline
- Evaluate and confirm regional goals and mitigation strategies
- Identify regional projects
- Complete a hazard ranking exercise



# Original timeline



# Timeline with VDEM extension



Task	Participants	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17
<b>Meetings</b>															
Steering Committee	All	█	█	█	█	█	█	█	█	█					
Specific Hazards, stakeholder participation	All														
<b>Planning Process</b>															
Public involvement (input & information)	NRVRC/Localities														
Identify regional goals	All	█	█	█	█	█	█								
Identify local mitigation goals and strategies	Localities							█	█						
Identify and analyze regional mitigation actions	All	█	█	█	█	█	█								
Identify and analyze local mitigation actions	Localities							█	█						
Assess capabilities available	NRVRC/Localities							█	█						
Draft plan narrative and mapping for phase	NRVRC														
<b>Deliverable - final draft plan</b>															
Complete final draft narrative and mapping	NRVRC														
Draft out for locality review	Localities														
<b>Review &amp; revisions</b>															
Plan Review by VDEM	VDEM														
Revisions	NRVRC														
Plan Review by FEMA	FEMA														
Revisions, Final approval pending adoption	NRVRC														
<b>Implement, Monitor Plan</b>															
Plan adoption by localities (Sept-October)	Localities														

In progress  
Pending  
Complete

# Upcoming tasks

- Public information and involvement strategy (Steering committee)
- Set up public information meetings (Commission staff with locality support)
- Submit local mitigation projects (Localities)
- Confirm maps to include in the plan (Steering committee)
- Draft plan chapters (Commission staff)
- Plan review (Steering committee)

# Regional Goals 2017



- Flooding
- Drought
- Landslides
- Earthquakes, Karst
- Winds
- Severe Weather
- Wildfire
- Human-caused
- Other

# Regional Implementation Projects



- Evaluate 2011 projects
  - See handout
  - 26 projects
  - Questions
    - Has this project been implemented?
    - Is this project still relevant?
    - What other projects are needed?

**2011 Implementation Projects**

Table 5-1. Regional Projects and Priority Rankings

Project Description	Relative Regional Ranking
Additional hazard, risk, damage and scientific data points	High
Regional Water Supply Planning	High
Create all hazards educational materials	High
Develop a regional strategy for participation in "Turn Around, Don't Drown"	High
Wildfire prevention and mitigation such as Firewise training at more woodland home communities, creating defensible space, hazardous fuels reduction, and ignition resistant retrofitting	High
Acquisition and demolition, acquisition and relocation, retrofitting, elevation, floodproofing, mitigation reconstruction of NFIP defined SRL properties, or other mitigation for properties in flood-prone areas	High
Regional Telecommunication Capacity and Interoperability	Medium
Regional inventory of emergency response equipment and personnel	Medium
Provide weather radios to vulnerable populations	Medium
Create all hazards educational program & distribute preparedness kits	Medium
Inventory culverts & identify those that need attention	Medium
Identify emergency shelters & coordinate their use and equipment	Medium
Inventory potential rockfall areas for mitigation benefits	Medium
Identify rockfall issues on trails and walkways	Medium
Coordinate with VDEM too identify companies to provide large, reliable water supplies	Medium
Create karst program to actively map and educate landowners	Medium
Minor localized flood control projects to include but not limited to stormwater management improvements	Medium
Upgrade and implementation of emergency response systems	Medium
Hazard education and outreach	Medium
Regional Damage Assessment Team	Low
Regional Infrastructure and Debris Management Planning Model	Low
Create maps of inaccessible areas for emergency equipment	Low
Rockfall inventory for secondary roads	Low
Improve detour signage	Low
Install notification systems at likely rockfall locations	Low
Inventory smaller and private bridges	Low

# Regional Implementation Projects



- Ranking
  - Social
  - Technical
  - Administrative
  - Political
  - Legal
  - Economic
  - Environmental

# Regional Implementation Projects



- **Social**-will this project be accepted by community?
- **Technical**-is the project feasible? Can it be implemented quickly? Does it need phasing?
- **Administrative**-how much time needed to support project? Staff available to support project?
- **Political**-able to implement at the regional level? Can localities provide matching funds if needed?
- **Legal**-do localities have the authority to implement a certain action?
- **Economic**-how much will project cost? Is funding available? Is there a known funding source?
- **Environmental**-what is the relative risk of the hazard being addressed? Will project affect surrounding land and water resources? Is project consistent with previous community goals?

# Complete the hazard ranking exercise



<b>Frequency</b>	<b>Intensity</b>	<b>Area Affected</b>	<b>Relative Risk</b>
1- Unlikely	1- Negligible	1- Isolated	= (Intensity + Area) * Frequency
2- Seldom	2- Moderate	2- Local Community	
3- Occasional	3- Severe	3- Several Communities	
4- Likely	4- Catastrophic	4- Region-wide	
5- Frequent			



# Wrap up

- Questions?
- Next steps for the plan
- Next meeting – Steering Committee, April 6, 10:30 am
- Contact information for NRVRC
  - Christy Straight ([cstraight@nrvrc.org](mailto:cstraight@nrvrc.org))
  - Michael Gottfredson ([michaelg@nrvrc.org](mailto:michaelg@nrvrc.org))
  - Zach Swick ([zswick@nrvrc.org](mailto:zswick@nrvrc.org))
  - 540.639.9313

Thank you for coming!

Approved by the Steering Committee, March 2, 2017

## Flooding: 2017 Goals, Objectives, Strategies

**Goal: Minimize flood-related deaths and losses of existing and future structures.**

- a. *Save lives at imminent risk.*
  - i. Seek grant funding to develop early warning systems in high-risk areas utilizing new technology.
  - ii. Enhance regional capacity for swift-water rescue, including training and equipment purchase.
  - iii. Encourage localities to participate in the Weather Ready Ambassador Program offered by the National Weather Service (NWS).
  - iv. Promote Virginia Department of Transportation flood signage and other awareness activities.
  - v. Increase 2-way communication between NWS and emergency managers during flooding events, as well as communication with residents potentially affected by flooding.
  - vi. Improve regional communication to improve flood response.
  - vii. Increase awareness to public or high-hazard dams.
- b. *Reduce risks to critical facilities.*
  - i. Do not build new critical facilities in high hazard areas (preferred in ordinance format but could be a general policy decision).
  - ii. Identify critical facilities in high-risk areas.
  - iii. Identify measures to reduce risk of critical facilities in high hazard areas.
  - iv. Relocate or mitigate critical facilities currently located in high-risk areas.
- c. *Offer mitigation assistance to owners of flood-prone properties, especially repetitive loss properties.*
  - i. Pursue mitigation grant opportunities or other funding to buy out, elevate, relocate or water-proof flood-prone properties through Federal Emergency Management Agency (FEMA), Virginia Department of Emergency Management (VDEM), and Community Development Block Grants and other sources.
  - ii. Study feasibility of mitigation and other similar opportunities in historic districts or with historic properties.
- d. *Educate citizens about the inevitability of flooding, the dangers it poses to life and property, and the opportunities for mitigation.*
  - i. Seek to update flood insurance studies and maps to understand risks more accurately and provide simplified maps. Educate public on letter of map change procedures.
  - ii. Encourage the development of statewide databases and geographic information systems layers to assist local government planning efforts. Encourage state agencies to acquire and use elevation data that is accurate and compliant with regulations.

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- iii. Encourage collection and development of better hazard history locally and incorporate into geographic information systems. Encourage citizen reporting through smartphone photos and apps.
  - iv. Incorporate hazard mitigation information in the future in the local comprehensive planning process.
  - v. Utilize existing documents and programs from FEMA, the National Flood Insurance Program (NFIP), VDEM, and the NWS to educate the public about hazards and mitigation opportunities.
  - vi. Produce and distribute mitigation information to residents in high-hazard areas.
  - vii. Coordinate with and support Community Emergency Response Team (CERT) information distribution activities in the community.
  - viii. Provide grant-based community workshops along with partnerships with local resources.
  - ix. Educate citizens about the availability and value of NFIP policies and encourage greater participation.
  - x. Educate property owners of structures in floodplain [keep] and how to become more flood resistant.
  - xi. Include a notice that property is in floodplain in deed or plat.
- e. Encourage flood-wise education opportunities for builders and developers. *Limit future development in floodplains.*
- i. Utilize zoning ordinances to further restrict undeveloped floodplains. Encourage localities to review floodplain disclosures in floodplain ordinances.
  - ii. Encourage standards above NFIP standards when considering floodplain development.
- f. *Develop adequate drainage structures and maintenance procedures to prohibit "back-up" flooding in high-hazard areas.*
- i. Identify inappropriate sized culverts and drainage and seek grant and/or state funding for replacement.
  - ii. Pursue streambed clearance through citizen groups and/or Natural Resources Conservation Service as needed to eliminate bottlenecks.
  - iii. Encourage bottomland farm fences to catch debris before reaching culverts.
  - iv. Schedule regular drainage system maintenance including before and after storms.
  - v. Work with VDOT to inventory culverts in the region.
  - vi. Ensure that future culverts are adequately sized for the estimated run-off from storms.
  - vii. Educate landowners about culvert maintenance to ensure culverts continue to efficiently handle stormwater.

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- viii. Pursue multiple funding opportunities to combine stream restoration projects with flood mitigation projects.
- g. Develop stormwater facilities or upgrades as needed to limit flooding in high hazard areas.*
  - i. Seek grant funding for regional stormwater detention facilities as needed. Reconsider design frequency of occurrence.
  - ii. Seek channel improvements or upgrades as needed to reduce peak flood flows.
  - iii. Pursue combinations of regional stormwater management strategies and onsite strategies.
  - iv. Encourage alternative stormwater management options in both new and existing facilities, such as pervious development choices.
  - v. Inventory stormwater infrastructure to ensure adequate future maintenance.
  - vi. Utilize floodplains as community assets such as parks or other open spaces.
  - vii. Develop strategies for addressing impervious surfaces and their impact on stormwater.
  - viii. Review current parking and development standards to minimize negative stormwater impacts.
- h. Pursue mitigation projects that achieve multiple community goals.*
  - ix. Pursue partnerships with land trusts to promote conservation easements on undeveloped floodplains and wetlands to aid flood mitigation.
  - x. Pursue the affordable housing alternatives for low-income families now living in floodplains.
  - xi. Seek economic development opportunities, such as brownfields, which turn current “liabilities” into community assets. Examples could include recreational area development or green infrastructure stormwater projects.

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## Drought: 2017 Goals, Objectives, Strategies

Goal: Minimize economic losses and health risks during droughts.

- a. *Develop a set of planning tools that mitigate the impacts of drought.*
  - i. Improve data and inventory of water users to better assess the vulnerability of water supplies to drought and increase accessibility to public water systems.
  - ii. Identify back-up water sources or increase storage capacity for public water systems.
  - iii. Develop a system of notification of precipitation predictions that will assist agricultural producers in short-term decision making.
  - iv. Pursue Memorandums of Understanding between localities and companies to haul in water as an alternative source of water during drought conditions.
  - v. Encourage water providers in the region to take advantage of programs designed to prevent leaks and water losses in their systems.
  - vi. Continue efforts to promote interconnections of municipal water systems for use should an emergency situation arise.
  - vii. Encourage the use of notification emails regarding drought alerts from the National Weather Service to water resource managers and emergency service managers.
- b. *Encourage research and development of prediction capabilities that will assist in decision-making during drought conditions.*
  - i. Support the improvement of drought forecasting ,predictions, and resource monitoring (e.g. wells) available from government sources (i.e., NOAA, NWS).
  - ii. Support efforts to develop and improve simulation modeling that provides information regarding all potential impacts and outcomes for decision-makers.
- c. *Promote educational efforts to assist residents in dealing with the impacts of drought.*
  - i. Provide information to residents of existing conservation measures and the sliding scale of prescriptive measures, as found in local water supply plan and drought ordinances, to assist in mitigating the impacts of drought.
  - ii. Promote educational efforts developed for private well owners about proper care and maintenance of their well, as well as the potential impacts associated with drought.

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## Landslides: 2017 Goals, Objectives, Strategies

Goal: Minimize structural damage due to landslides.

- a. *Develop strategies to protect existing structures from the impacts of landslides and debris flows.*
  - i. Identify areas where potential debris flow could be diverted to avoid existing structures.
  - ii. Re-vegetate areas in danger of becoming slides.
  - iii. Collect data on landslides at locality level.
  - iv. Prevent landslide damage at sites with known risks [by implementing projects such as completing feasibility studies and determining a suite of solutions].
- b. *Develop educational materials and notification systems to better inform residents of landslide hazards.*
  - i. Create a database or reporting system for landslides.
  - ii. Notify permit applicants of site vulnerability to landslide and debris flow.
  - iii. Develop appropriate signage that warns of the danger of landslide and rockfall, especially during heavy rain periods.
  - iv. Install warning devices on extremely vulnerable sites that have remote notification for emergency and response personnel.
- c. *Encourage planning practices that mitigate the impacts of landslides and rockfall on new and existing developments.*
  - i. Ensure that the most accurate data is available and incorporated while making planning decisions (i.e., zoning, subdivisions).
  - ii. Restrict future development in landslide prone areas.
  - iii. Continue to improve data available for future planning and mitigation.
  - iv. Incorporate additional language into ordinances to mitigate impacts from landslides.
  - v. Continue to monitor A-rated rockfall cuts for future slope movement.
  - vi. Encourage projects that expand catchment areas (i.e., ditches and shoulders) in potential rockfall areas of roads.
  - vii. Encourage slope protection, reinforcement and reconstruction projects to prevent future rockfall events.
  - viii. Engage in pre-demolition activities that control rockfall events.
- d. *Engage in activities to plan for and avoid future landslide and rockfall impacts.*

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- i. Gather existing route information for detours that may be necessary in the event of a rockfall event.

Approved by the Steering Committee, March 2, 2017

## Earthquakes, Karst: 2017 Goals, Objectives, Strategies

Goal: Minimize risks to developments and structures in areas prone to earthquakes and new sinkholes.

- a. *Encourage activities to protect structures from future events.*
  - i. Continue to ensure that seismic requirements are included in building codes.
  - ii. Identify and reinforce existing structures and critical facilities to withstand seismic events.
  - iii. Within site plan development, address topography and karst risk.
- b. *Develop educational programs to increase residents' awareness of likelihood of geologic events.*
  - i. Develop and coordinate training/education activities for all interested and responsible parties (including government staff, non-profits, and other organizations involved in hazard response activities) on appropriate response for geologic events.
  - ii. Maintain awareness of regional seismic activity.
  - iii. Develop informational materials about potential for sinkholes in vulnerable areas.
  - iv. Encourage participation in preparedness events.
- c. *Engage in planning activities to minimize impacts of earthquakes and sinkholes.*
  - i. Identify and mark known sinkholes.
  - ii. Conduct aerial surveys of hazardous conditions resulting from sinkholes.
  - iii. Survey local surveyors, well diggers, septic installers, soil scientists and other local experts to identify new sinkhole locations.
  - iv. Ensure that identified sinkholes are marked on plats, easements, and building permits.
  - v. Conduct water quality assessments to determine impacts of sinkholes on water sources.
  - vi. Encourage further dye tracing to track water as it moves between the surface and below ground.
  - vii. Ensure that groundwater sources are protected from contamination by requiring septic drainfields to be a minimum distance from a known sinkhole.
  - viii. Ensure structures are not placed near known sinkholes.
  - ix. Pursue more detailed karst mapping for localities.

Approved by the Steering Committee, March 2, 2017

## Winds: 2017 Goals, Objectives, Strategies

**Goal: Minimize impacts of significant weather events, such as winter weather and severe weather events in the NRV.**

- d. Encourage activities to prevent impacts during storm events.*
  - i. Promote the installation and maintenance of drift fences to maintain access during snow events.
  - ii. Emphasize that all road maintenance be done prior to storms to prevent access issues.
- e. Develop educational materials and events to prevent loss of life and property in severe weather events.*
  - i. Emphasize what should be done during a storm event (i.e., lightning) to maintain safety.
  - ii. Educate landowners about how overhanging utility lines and trees can cause property damage during a storm.
  - iii. Continue educational efforts during times when events are not occurring (i.e., brochures, websites, awareness weeks-promotions coordination).
  - iv. Create a brochure or handout of local hazards to provide to the community.
  - v. Pursue and maintain Storm Ready designation for the region's communities.
- f. Encourage preparation and planning activities that ensure minimal impacts to life and property.*
  - i. Encourage personal planning for storm events and their impacts.
  - ii. Inventory public facilities to determine the need for back-up power generation.
  - iii. Inventory of possible roof collapses through an analysis of building permits to determine need for future mitigation efforts.
  - iv. Engage in regional emergency management exercises (table-top and field) to train responders.
  - v. Look into technology to be applied on a regional level (damage assessment software such as Crisis Track)

Approved by the Steering Committee, March 2, 2017

## Severe Weather: 2017 Goals, Objectives, Strategies

**Goal: Minimize impacts of significant weather events, such as winter weather and severe weather events in the NRV.**

- a. Encourage activities to reduce impacts during storm events.*
  - i. Promote the installation and maintenance of drift fences to maintain access during snow events.
  - ii. Emphasize that all treatment of roads be done prior to storms to prevent access issues.
  - iii. Ensure necessary resources are available in advance of storms and weather events.
  - iv. Improve collaboration and coordination with VDOT to create opportunities for dialogue on treatment and clearing of roads.
- b. Develop educational materials and events to prevent loss of life and property in severe weather events.*
  - i. Continue educational efforts during times when events are not occurring (i.e., brochures, websites, social media, awareness weeks-promotions coordination).
  - ii. Emphasize what should be done during a storm event (i.e., lightning) to maintain safety.
  - iii. Educate landowners about how overhanging utility lines and trees can cause property damage during a storm.
  - iv. Create a brochure or handout of local hazards to provide to the community.
  - v. Pursue and/or maintain Storm Ready designation for the region's communities.
- c. Encourage preparation and planning activities that minimize impacts to life and property.*
  - i. Encourage personal planning for storm events and their impacts.
  - ii. Inventory public and critical facilities to determine the need for back-up power generation.
  - iii. Inventory and assess critical facilities for possible roof collapses to determine need for future mitigation efforts.
  - iv. Engage in regional emergency management exercises (table-top and field) to train responders.

Approved by the Steering Committee, March 2, 2017

## Wildfire: 2017 Goals, Objectives, Strategies

Goal: Minimize wildfire losses in the “urban wildland interface” areas.

- a. *Educate residents and landowners on possible wildfire mitigation techniques.*
  - i. Educate the homeowners about the need to clear debris to prevent loss to wildfire.
  - ii. Facilitate public awareness of local fire notices.
  - iii. Conduct practice “tagging” exercises to educate homeowners about the realities of wildfire.
  - iv. Encourage the use of Firewise standards in new development and homeowner’s associations.
  - v. Engage with landscaping companies to encourage and utilize Firewise techniques on customers’ property.
- b. *Engage in mitigation and planning activities to minimize wildfire impacts.*
  - i. Ensure that new wildland communities are built to Firewise standards through inclusion in ordinances and building permits.
  - ii. Consider limiting future development in areas with slopes greater than 50% that prevent access by fire equipment.
  - iii. Work with insurance to improve incentives for homeowners engaging in Firewise activities.
  - iv. Improve physical access to community for fire and rescue personnel and equipment.
  - v. Encourage county-wide fire plans and Community Wildfire Protection Plans.
  - vi. Search for funding to increase equipment, training, and personnel to fight wildfires.
  - vii. Enforce existing regulations that home numbers at the road are easily visible for first responders.
  - viii. Improve 911 mapping systems for improved access by first responders.
  - ix. Work with land and home owners with gates or locks to improve fire access.
  - x. Encourage mitigation activities that prevent wildfire damage to structures, including creating a defensible space around a vulnerable structure, structural protection through ignition resistant construction activities, and hazardous fuels reduction activities.

Approved by the Steering Committee, March 2, 2017

## Human-caused: 2017 Goals, Objectives, Strategies

Goal: Support existing efforts in addressing potential impacts of future human-caused events.

- a. Develop information on man-made hazards that impact human health and quality of life, e.g., air, water and soil quality in the NRV.*
- b. Encourage the development and coordination of a regional evacuation plan.*
- c. Encourage the development of added capacity to regional communication systems.*
- d. Support furthering regional response efforts.*

Approved by the Steering Committee, March 2, 2017

## **“Other”: 2011 Goals, Objectives, Strategies**

Promote community awareness and knowledge of hazards and programs available to encourage personal safety and property protection.

- c. Develop a warning system and evacuation procedures to be available for use by the emergency response community.*
- d. Create a system for utilizing event data in real time during a response.*
- e. Encourage research that develops effective thresholds for issuing warnings to the general public regarding possible hazard events.*

Capitalize on available mitigation information, services and funding from various local, regional, state, federal, and non-profit agencies for mitigation planning and implementation.

- f. Provide information and support the utilization of multiple grant sources to maximize a project's potential.*
- g. Weigh the interactions of all natural hazards before acting to address one.*
- h. Give highest priority to projects which achieve multiple goals.*
- i. Develop diverse partnerships, government, private, non-profit, etc.*
- j. Encourage research and development in the most effect means for notifying citizens of impending hazards.*
  - xi. Support research efforts to determine the most effective ways to notify the public of impending events that elicit the desired response.*

Use regional coordination and cooperation, as needed, to enhance mitigation.

- k. Create a system for local government and residents to provide feedback on mapping and historical data for future plan updates.*
- l. Improved regional coordination between localities and agencies for data sharing.*
- m. Continue to gather data and develop more information related to hazards and their potential impacts throughout the region.*
- n. Develop tools for local government staff to most effectively notify citizens of impending events.*
  - i. Develop a regional strategy for using notification system to be most effective, including ways to utilize the existing system for additional notifications.*
  - ii. Develop a set of actions that can be taken by the public to be correlated with specific notifications.*

## 2017 Implementation Projects

Table 5-1. Regional Projects and Priority Rankings

Project Description	Relative Regional Ranking
Additional hazard, risk, damage and scientific data points	High
Regional Water Supply Planning	High
Create all-hazards educational materials	High
Develop a regional strategy for participation in "Turn Around, Don't Drown"	High
Wildfire prevention and mitigation such as Firewise training at more woodland home communities, creating defensible space, hazardous fuels reduction, and ignition resistant retrofitting	High
Acquisition and demolition, acquisition and relocation, retrofitting, elevation, floodproofing, mitigation reconstruction of NFIP defined SRL properties, or other mitigation for properties in flood-prone areas	High
<del>Regional Telecommunication Capacity and Interoperability</del>	<del>Medium</del>
<del>Upgrade emergency response systems to improve regional capacity and interoperability</del>	
<del>Create a regional Regional</del> inventory of emergency response equipment <u>is needed in communities and personnel</u>	Medium
<del>Designate a regional contact or designee for identifying what equipment and resources may be available for inter-agency loan</del>	
Provide weather radios to vulnerable populations	Medium
Create all hazards educational program & distribute preparedness kits	Medium
Inventory culverts & identify those that need attention	Medium
Identify emergency shelters & coordinate their use and equipment	Medium
<del>Done Inventory potential rockfall areas for mitigation benefits</del>	<del>Medium</del>
Identify rockfall <u>and landslide</u> issues on trails and walkways	Medium
Coordinate with VDEM to <u>e</u> identify companies to provide large, reliable water supplies	Medium
Create karst program to actively map and educate landowners	Medium
<del>Support minor</del> <u>Minor</u> -localized flood control projects to include but not limited to stormwater management improvements	Medium
<del>Upgrade and implementation of emergency response systems</del>	Medium
<del>Duplicate project Hazard education and outreach</del>	Medium
<u>Develop a</u> Regional Damage Assessment Team	Low
<u>Develop a</u> regional <u>damaged</u> infrastructure and debris <u>impact</u> management planning model	Low
<u>Identify and C</u> create maps of inaccessible areas for emergency equipment <u>identifying areas and establishing criteria for inaccessible roads as a planning tool for development</u>	Low

Rockfall <u>and landslide</u> inventory for secondary roads	Low
Improve detour <u>signage</u> <u>routing</u>	Low
<u>Development and implement</u> <del>Install</del> notification systems at likely rockfall locations	Low
Inventory <u>public</u> <del>smaller</del> and private bridges <u>for weight capacity (especially with respect to capacity to carry first responder vehicles)</u>	Low
<u>Review regional solid waste management capacity during and after disasters</u>	
<u>Review and identify opportunities to improve ISO rating in the region's communities</u>	
<u>Obtain and install VDOT high water area signage with flood-gauge markers</u>	

# NRV Hazard Mitigation Plan 2017 Update

## Relative Hazard Ratings

Hazard	Frequency	Intensity	Area Affected	Relative Risk
	1- Unlikely 2- Seldom 3- Occasional 4- Likely 5- Frequent	1- Negligible 2- Moderate 3- Severe 4- Catastrophic	1- Isolated 2- Local Community 3- Several Communities 4- Region-wide	(Intensity + Area) * Frequency
Drought				0
Geologic				
Landslide				0
Rockfall				0
Karst				0
Earthquake				0
Severe Weather				
Tornado				0
Freezing Temperatures				0
High Winds				0
Ice Storms				0
Snowfall				0
Wildfire				0
Flooding				0
Human-Caused				0

Comments: