

## **Chapter 6. Community Summaries**

Participating localities submitted updated community summaries for this plan revision. Each summary includes a brief overview of the hazards of concern for that locality, current or ongoing mitigation efforts, and an updated list of projects identified for future mitigation opportunities.

### **6.1 Floyd County**

#### **6.1.1 Hazards and Risks**

Floyd County's principal natural hazards are flooding, severe drought, and wildfire.

The County is prone to flash-flooding. In September 2015, at least 8-10 inches of rain fell on saturated land producing flash flooding which damaged scores of homes – including major damage to 25 homes – plus damaged roads, bridges and farms. Given that the United States Geological Survey (USGS) also suggests that Floyd County is particularly prone to landslide incidents, if a forecasted hurricane-remnant system had passed through 3 days later as forecasted, the damage could have been catastrophic.

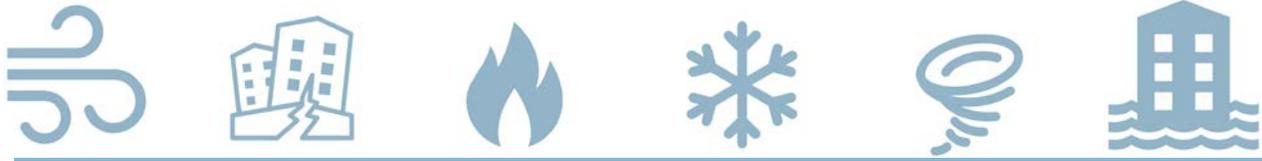
Drought is also a major risk for the County. About 85% of county residents rely on private water systems. The 1998-2002 drought caused hundreds of households to lose their spring or well, requiring a new well. However, even many new wells have very limited yields.

Housing developments on sloped, wooded areas are at significant risk of wildfire damage.

In terms of man-made hazards, the location of gas/oil storage facilities in or near the Town of Floyd poses a risk.

#### **6.1.2 Mitigation**

Floyd County has no stream gauges in the Little River basin (vast majority of the County) and only one rain gauge in this basin (USGS in Willis) is connected with the National Weather Service and only reports on an hourly basis (rather than in real-time). This one rain gauge is outside the central part of the County that was hit hard by the September 2015 flooding, so there was no early warning to residents. An early warning system is critically needed to protect lives when flash flooding occurs. Due to the abundance of streams in the County, several stream and rain gauges are needed for adequate coverage. The County is currently working with the Virginia Department of Emergency Management (VDEM), National Weather Service/National Oceanic and Atmospheric Administration, USGS as well as the Floyd-Floyd County Public Service Authority engineer to identify priority sites for gauges.



Likewise regarding flooding, analysis following the 2015 flooding revealed the need for more training for first-responders and more education for residents. The County will coordinate with VDEM on this.

In addition to flood mitigation, the County needs to better monitor and model water systems to mitigate the effects of drought. Most of the gauges could be Integrated Flood Observation and Warning Systems, but ideally one would also provide volume flow measurement to aid in water modeling for flooding and drought. Another mitigation strategy for drought is to expand the tiny public water and sewer system (that currently serves only the Town of Floyd and immediate vicinity) so that fewer households are reliant on one single well (which relies on water in one small underground crack in the rock.) The public system currently relies on 5 wells within a relatively small area, so it, too, needs diversified supplies of water.

For all types of natural and man-made disasters, communication is key. Floyd County continues to try to update its communication system to maximum coverage area and interoperability.

Floyd County will seek help from the Virginia Department of Forestry to do more dry hydrants and have more Firewise training and planning to enhance wildfire mitigation. Also training, perhaps from the Virginia Department of Fire Programs, is needed related to potential gas leakage disasters.

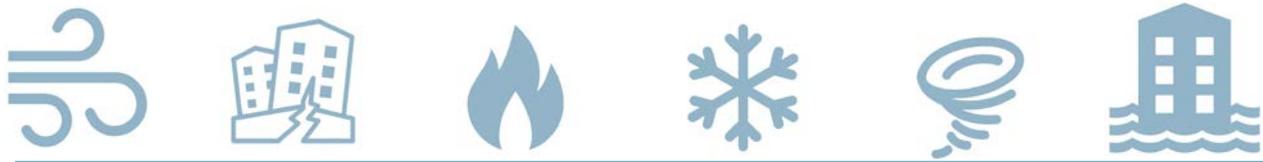
In terms of existing mitigation, in the 2012 Comprehensive Plan, the County recognized the need to better understand water resources and plan for the future. With respect to infrastructure, Floyd County has done some work to replace public water and sewer lines to improve reliability and there is more work to be done as funding allows. It likewise recognized the important role that forests, wetlands and open-space play as natural mitigation. Floyd County participates in the National Flood Insurance Program (NFIP), regulating future floodplain development and offering residents the opportunity to purchase flood insurance.

### 6.1.3 Mitigation Opportunities

Floyd County has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-1. Floyd County Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Early Warning System: stream gauges and rain gauges	Flooding and Drought	High
Communication Coverage within Floyd County	All natural and human-caused	High
Detailed Flood Studies along portions of Little River to identify 100-year floodplain elevation.	Flooding	High
Upgrading and Expanding Public Water and Wastewater Systems	Drought and Flood	High



Project	Hazard(s) Mitigated	Priority
Work with RC&D for Firewise training at more woodland home locations.	Wildfire	Medium
Water Resource Study	Drought, Wildfire, Flooding	Medium
Additional dry hydrants	Wildfire	Medium
Table-top exercise to identify needs related to private gas and oil tanks in/near Town of Floyd.	Human-caused	Medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium

## 6.2 Giles County

### 6.2.1 Hazards and Risks

Giles County's principal natural hazard is recurring flooding in its towns and along Doe Creek and Little Stony. Giles County also has some risks associated with drought and wildfire that can be mitigated. Moreover, there is the predominance of forest land in Giles County and increasing residential development nearby. Also, Giles County was the epicenter of the 1897 earthquake, the 3rd largest in eastern United States history. Giles County is also prone to sinkholes and landslides.

### 6.2.2 Mitigation

Giles County as well as the Towns of Narrows, Pearisburg, Pembroke and Rich Creek participate in the NFIP, regulating future floodplain development and offering residents the opportunity to purchase flood insurance. The County also benefits from the IFLOWs of rain and stream gauges operated by the NWS. Giles County has also worked with the Natural Resources Conservation Service to improve streambeds and streambanks in critical areas. Also County, Town and VDOT officials have stepped up drainage maintenance, before and after major weather events. The County's volunteer emergency personnel are also participating in the formation of a regional swift water rescue team.

In terms of drought, Giles County is participating in the regional water supply planning effort, to help ensure reliability and maximum cost-effectiveness. Concerning wildfire mitigation, Giles County collaborates with the Virginia DOF and the national forest service to do firefighter training and outreach. Giles County received a "Storm Ready" designation from the NWS on May 13, 2009. The County was the 6th locality out of 52 eligible to receive the designation.

Giles County participates in the "Code RED" emergency notification network to communicate potentially hazardous situations to citizens by telephone (both cellular and land-line numbers). This system has been used by the sheriff's office to notify residents of rising water and road closures due to flooding.



### 6.2.3 Mitigation Opportunities

Giles County and the towns have identified several mitigation opportunities. Cost-effective projects are listed in the tables below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-2. Giles County Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Identify culvert replacement needs to reduce flooding	Flooding	High
Replace culverts to reduce flooding	Flooding	High
SRL Structure Acquisition and Demolition	Flooding	High
A full-time state forester for Giles County	Wildfire	High
Emergency Services Coordinator Position	All natural and human-caused	Medium
Pursue additional water sources	Drought, Wildfire	Medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium

**Table 6-3. Town of Narrows Hazard Mitigation Opportunities**

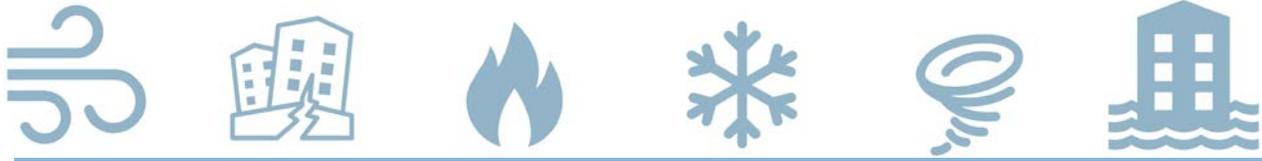
<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Debris containment	Flooding	High
Stormwater facilities	Flooding	High

**Table 6-4. Town of Pearisburg Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Upgrade stormwater system	Flooding	High
Business 460 stormwater mitigation	Flooding	High

**Table 6-5. Town of Pembroke Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Engineering study of structural needs	Flooding	High
Early warning system	Flooding	High
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium



**Table 6-6. Town of Rich Creek Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Replacement of Wastewater Treatment Plant	Flooding	High
Storm Water Drain Replacement	Flooding	Medium
Adoption and enforcement of floodplain management requirements, including regulating all and substantially improved construction in the Special Flood Hazard Area	Flooding	Medium
Floodplain identification and mapping, including any local requests for map updates, if needed	Flooding	Medium

## 6.3 Montgomery County

### 6.3.1 Hazards and Risks

Montgomery County's principal natural hazard is recurrent flooding in its villages and towns (discussed separately), in the eastern part of the county (Shawsville, Elliston & Lafayette areas) and along Plum Creek. Montgomery County also has some risks associated with drought and wildfire that can be mitigated. Specifically, agricultural interests have proven quite vulnerable to drought. Similarly, the county is experiencing the push of residential development into sloped, wooded areas, posing significant wildfire risks. Montgomery County is also prone to sinkholes and landslides and has slight earthquake risks.

### 6.3.2 Mitigation

Montgomery County participates in the NFIP, regulating future floodplain development and offering residents the opportunity to purchase flood insurance. The County's floodplain regulation is more stringent than what is required by the NFIP. Montgomery county's FIRMs were last updated in September 2009, when FEMA digitized the previous maps and fit the flood information to topography data provided by the County. One new detailed study was conducted along Plum Creek. In addition, flood zone designations have been incorporated into GIS layers for staff use during the permitting process. Montgomery County also utilizes planning and development software to track flooding hazards during the permitting process.

Montgomery County has worked with the Natural Resources Conservation Service to improve streambeds and streambanks in critical areas. The County also benefits from the IFLOWS of rain and stream gauges operated by the NWS and a reverse 911 system. Also, several of the County's volunteer fire and rescue squads participated in the formation of a regional swift water rescue team. In an effort to ensure citizens receive timely warnings in a major storm event, Montgomery County has worked to receive "Storm Ready" designation from the NWS. Montgomery County was declared a "Storm Ready Community" in November 2010.

In terms of drought, Montgomery County is participating in the regional water supply planning effort, to help ensure reliability and maximum cost-effectiveness. Concerning wildfire



mitigation, Montgomery County has mapped the areas of wildfire risk and collaborates with the Virginia DOF and the national forest service to do firefighter training and outreach.

Montgomery County is actively pursuing several mitigation projects currently, including the development of documents to promote underground pipeline safety, and obtaining additional IFLOWs gauges. These are included in the table below. Hazards and corresponding goals have been detailed in the Environmental Resources section of the 2025 comprehensive plan. In addition to floodplain data, the County has utilized its GIS system capabilities by adding additional layers to identify Claytor Lake inundation zones, wildfire risks, karst areas, shrink-swell soils and underground gas pipeline locations.

### 6.3.3 Mitigation Opportunities

Montgomery County has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

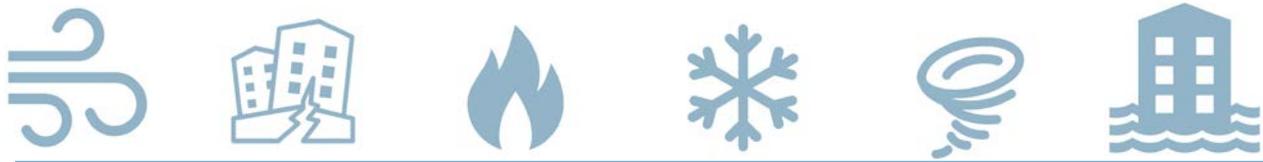
**Table 6-7. Montgomery County Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Property acquisition in flood-prone areas	Flooding	High
Equalization basin	Flooding	High
Predevelopment database	Flooding, Geologic, Wildfire, Drought	High
Develop and promote pipeline safety	Human-caused	High
Additional IFLOWs gauges	Flooding	Medium
Expand current karst mapping	Geologic	Low
Residential acquisition (landslide) on Elliot Creek	Flooding, Geologic	Low
Acquisition of Plum Creek area businesses	Flooding	Low
Streambed/streambank restoration	Flooding, Drought	Low
Utilize zoning ordinances to further restrict undeveloped floodplains	Flooding	Medium
Encourage standards above NFIP standards when considering floodplain development	Flooding	Medium

## 6.4 Town of Blacksburg

### 6.4.1 Hazards and Risks

The Town of Blacksburg's principal natural hazard is recurrent flooding along Stroubles Creek. Blacksburg also has some risks associated with wildfire, drought and earthquakes that can be mitigated.



### 6.4.2 Mitigation

The Town of Blacksburg participates and is in good standing with the NFIP. The town zoning ordinance consists of the Floodplain Overlay and Creek Valley Overlay districts to regulate uses, activities, and development in flood prone areas defined by FEMA and the Town of Blacksburg. The Town Floodplain Management Program meets and or exceeds the minimum standards set forth by the NFIP and employs Certified Floodplain Managers (CFM) to manage the program. The Floodplain Overlay section of the zoning ordinance was updated to reflect new FEMA maps and regulations in 2009. The Town does utilize both a subdivision and zoning ordinance based on the town comprehensive plan to guide growth and development. The most recent comprehensive plan was approved by the Town Council in 2016.

Emergency Operation Plans are in place in the Police Department, Fire Department, Rescue Squad, and the Public Works Department. Plans covering various situations are in place in the Engineering Department, Finance Department, and the Technology Department. There is also a draft Emergency Management Plan that the Emergency Preparedness Committee has reviewed. Additionally, the Town has constructed a new rescue station in 2016 to serve the heavily residential neighborhoods around Patrick Henry Drive. Fireflow has been improved in the High Water system affecting 10 homes.

In the event of a significant emergency the Virginia Department of Emergency Management (VDEM) coordinates assistance through Montgomery County who in turn assists the Town. Depending on the type of emergency the Town Manager may designate the Police Chief, Fire Chief, Rescue Chief, or another Department Director as the lead individual depending on the specifics of the situation. The Town also maintains a Comprehensive Emergency Management Strategic Plan.

### 6.4.3 Mitigation Opportunities

The Town of Blacksburg has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-8. Town of Blacksburg Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Series of stormwater detention ponds	Flooding	High
Hazard related GIS layers	All natural and human-caused	High
Development of water supply plan which includes a drought ordinance	All natural and human-caused	High
Implement remote monitoring system for utility operation	All natural and human-caused	Medium
Provision of back-up power for critical infrastructures	All natural and human-caused	Medium
Increase water storage	All natural and human-caused	Medium



<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Increase fireflow for Town's High System	All natural and human-caused	Medium
Emergency water interconnection between High System and Low System	All natural and human-caused	Medium
Provision of backup power at critical intersections	All natural and human-caused	Medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium
Continuous Sewer Capacity Studies	All natural and human-caused	Medium
Water Supply Redundancy - Construction of new line from the water treatment facility to provide redundancies in water supply.	Flooding	Medium
Creation of development guidelines for wildfire prevention	Wildfire	Low
Undergrounding utilities	Wildfire, wind, winter weather	Low
Town Stormwater Assessment of Impact from Potentially More Volatile Storms	Flooding	Low

## 6.5 Town of Christiansburg

### 6.5.1 Hazards and Risks

The Town of Christiansburg's principal natural hazard is recurring flooding, including in areas which are not shown as flood hazard areas on the FIRMs. Christiansburg also has some risks associated with drought and earthquakes that can be mitigated.

### 6.5.2 Mitigation

The Town of Christiansburg participates in the NFIP, regulating future floodplain development and offering residents the opportunity to purchase flood insurance. Christiansburg has participated in flood mapping updates for the area. Those maps have been updated and are being used. The Town's emergency personnel participate in a regional swift water rescue team and the Town maintains an Emergency Operations Plan (EOP) to coordinate its emergency response. The EOP was most recently updated in 2017 and works to anticipate the needs of the organization during an incident and provides guidance across town departments, agencies, and response organizations. The Town updated its 2013 Comprehensive Plan with amendments for Urban Development Areas in 2016. The town does include regulations beyond FEMA and NFIP minimums in their zoning ordinance and addresses floodplains in its comprehensive plan descriptively under the natural environment chapter and again in the goals, strategies, and objectives of the comprehensive plan.

### 6.5.3 Mitigation Opportunities

The Town of Christiansburg has identified several mitigation opportunities. Cost-effective projects are listed in the table below.



**Table 6-9. Town of Christiansburg Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Park Street Sidewalk and Storm Drain Project - Phase 2	Flooding	High
Church, Rigby, Ellett Drainage Improvements	Flooding	High
Downtown Drainage Improvements - West Main Street	Flooding	High
Downtown Drainage Improvements - North Franklin Street Project	Flooding	High
Hans Meadow Drainage Improvements - Phase 2	Flooding	High
Home acquisition	Flooding	Low
Undergrounding utilities	Wildfire, wind, winter weather	Low
Monitor and update the Town's zoning ordinance as needed to reflect any change in NFIP standards	Flooding	Medium

## 6.6 Pulaski County

### 6.6.1 Hazards and Risks

Pulaski County's principal natural hazard is recurring flooding, largely near the Town of Pulaski (which will be discussed separately) and along streams like Big Reed Island Creek. The county also has some risks associated with drought and wildfire that can be mitigated. Specifically, agricultural interests have proven quite vulnerable to drought. Similarly, large, steep, wooded tracts with limited access, like Camp Powhatan, pose significant wildfire risks. The county is also prone to sinkholes and landslides, and has slight earthquake risks.

### 6.6.2 Mitigation

Pulaski County participates in the NFIP, regulating future floodplain development and offering residents the opportunity to purchase flood insurance. The Town of Dublin does not participate in NFIP. The county also benefits from the IFLOWs, a system of rain and stream gauges operated by the NWS. Pulaski County also continues to work with the Natural Resources Conservation Service to improve streambeds and stream banks in critical areas, such as along Falling Branch and Little Creek.

In terms of drought, Pulaski County continues to participate in the regional water supply planning effort, to help ensure reliability and maximum cost-effectiveness. Pulaski County collaborates with the Virginia Department of Forestry and the national forest service to do firefighter training and outreach to mitigate some wildfire impacts. Additionally, the County is working with VDOF to develop a county-wide community wildfire plan for numerous communities throughout the County.



### 6.6.3 Mitigation Opportunities

Pulaski County has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-10. Pulaski County Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Upgraded rescue and utility communication equipment	All natural and human-caused	High
Elevating homes	Flooding	High
Relocate ECC/Sheriff's Office	All natural and human-caused	High
Wildfire Mitigation -- Creating Defensible Space for High Risk Communities	Wildfire	medium
Ready Pulaski!	All natural and human-caused	medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium
Dredging of upper Claytor Lake	Flooding	Low

## 6.7 Town of Pulaski

### 6.7.1 Hazards and Risks

The Town of Pulaski's principal natural hazard is recurrent flooding in the downtown, along Dora Highway, and in Kersey's Bottom. According to the Army Corps of Engineers, the town has suffered at least eleven 100-year floods and one 500-year flood in the past 90 years or so. At least 200 structures are affected by flooding in the town.

### 6.7.2 Mitigation

The Town of Pulaski participates in the NFIP, regulating future floodplain development and offering residents the opportunity to purchase flood insurance. Moreover, the Town has set up a special committee, composed of private citizens, Town staff and elected officials, which drafted a Flood Mitigation Plan. The Town is also pursuing the Community Rating System to reduce flood insurance premiums in Town. The town also benefits from the IFLOWS of rain and stream gauges operated by the NWS.

In terms of drought, the Town of Pulaski is participating in the regional water supply planning effort, to help ensure reliability and maximum cost-effectiveness.

Several safety notification projects have been completed since the last plan update. The Town has produced a smartphone app "Active 911" allowing resources to be deployed based on what resources are available and where they are located at any given time in the county. Text 911



has also been implemented to allow the public to notify the 911 dispatch center to report 911 situations and provides for reporting in situations where a voice call cannot be made.

### 6.7.3 Mitigation Opportunities

The Town of Pulaski has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-11. Town of Pulaski Hazard Mitigation Opportunities**

Project	Hazard(s) Mitigated	Priority
Channel dredging, straightening	Flooding	High
Replace or rehabilitate railroad bridge (acting as dam)	Flooding	High
Acquisition of other Repetitive Loss properties	Flooding	High
Flood Warning & Evacuation	Flooding - Flood Prevention & Assistance	High
Flood Warning & Evacuation	Flooding - Flood Prevention & Assistance	High
Localized flood control projects to include but not limited to stormwater management improvements	Flooding	Medium
Flood education/ outreach	Flooding	Medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium

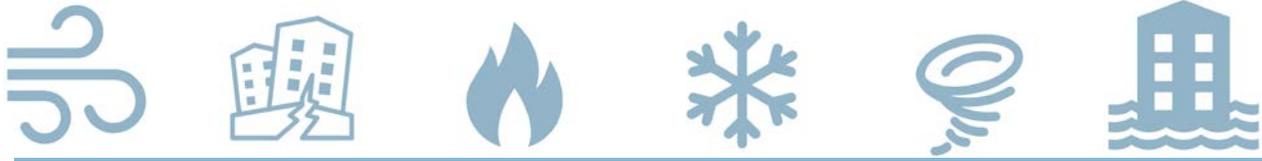
## 6.8 City of Radford

### 6.8.1 Hazards and Risks

The City of Radford's principal natural hazard is flooding along the New River and Connelly's Run. The city also has some vulnerability to drought and wildfire.

### 6.8.2 Mitigation

Fortunately, the City owns most of the floodplain along the New River and has turned much of it into public park space. This limits the amount of private property that could be damaged from floods. The City also adheres to the Radford Riverfront Plan, which emphasizes ecological protection, public access and limited commercial development. The Riverfront Tree Management Plan continues the theme of protecting the natural environment in the floodplain while encouraging outdoor recreation. The City participates in the NFIP and recently updated their floodplain ordinance, FIRMs and GIS data in cooperation with FEMA. This assists in regulating future floodplain development and the GIS provides citizens with the opportunity to visualize the flood hazards so that they can be more informed about purchasing flood insurance or of their risks. The City's emergency personnel are also participating in the formation of a regional swift water rescue team. The GIS department and engineering



department have also made improvements to the City's storm drainage basin maps which helps analyze runoff and flash floods.

In terms of drought, the City is participating in the regional water supply planning effort, to help ensure reliability and maximum cost-effectiveness. There are ongoing improvements to the water distribution system to make it as efficient as possible.

Code Red, a reverse E-911 and emergency notification systems, was also implemented to improve the City's response in the event of an emergency. The City has also completed mutual aid agreements for emergency response and maintains a current Emergency Operations Plan.

Removal of the railroad tie-pile along the New River was completed reducing the risk of wildfire and flooding debris.

### 6.8.3 Mitigation Opportunities

The City has identified several mitigation opportunities. Cost-effective projects are listed in the table below. These projects would only be possible with federal and/or state funding assistance.

**Table 6-12. City of Radford Hazard Mitigation Opportunities**

<b>Project</b>	<b>Hazard(s) Mitigated</b>	<b>Priority</b>
Intermediate Water System Improvement Project	Flooding, Drought	High
New stormwater drainage structures	Flooding	Medium
Improvements to Impervious Surface Maps	Flooding	Medium
Little River Dam Improvements	Flooding	Medium
Monitor and update applicable ordinances as needed to reflect any change in NFIP standards	Flooding	Medium
Storm Drainage Basin Map Improvements	Flooding	Medium
Regional stormwater detention project: Connelly's Run	Flooding	Low