

# Northern Piedmont Regional Hazard Mitigation Plan

FINAL - JUNE 2020





FEMA

October 1, 2020

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

We are pleased to inform you that the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan update is in compliance with the Federal hazard mitigation planning requirements resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR 201.6. Effective October 1, 2020, the plan is approved for a period of five (5) years, to September 30, 2025.

This plan approval extends to the following participating jurisdictions that provided copies of their resolutions adopting the plan:

- Town of Bermuda Run
- Town of Bethania
- Town of Boonville
- Village of Clemmons
- Town of Cooleemee
- Town of Danbury
- Davie County, Unincorporated
- Town of East Bend
- Town of Jonesville
- City of King
- Town of Lewisville
- Rockingham County, Unincorporated
- Town of Rural Hall
- Stokes County, Unincorporated
- Surry County, Unincorporated
- Village of Tobaccolville
- Town of Walkertown
- Town of Walnut Cove

The approved participating jurisdictions are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants in the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is

submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included in a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development. When you prepare a comprehensive plan update, it must be resubmitted through the State as a “plan update” and is subject to a formal review and approval process by our office. If the plan is not updated prior to the required five (5) year update, please ensure that the draft update is submitted at least six (6) months prior to expiration of this plan.

The State and the participants in the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or the participants in the Northern Regional Multi-Jurisdictional Hazard Mitigation Plan have any questions or need any additional information, please do not hesitate to contact Catherine Strickland, of the Hazard Mitigation Assistance Branch, at (770) 220-5328 or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza". The signature is written in a cursive style.

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV



FEMA

October 2, 2020

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan and all the participating communities that submitted their resolutions at the time of plan approval. We have recently received from your office the following resolution for inclusion within this plan and subsequently have approved the community under the approved Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan effective October 2, 2020:

- Forsyth County, Unincorporated

The approved participating community is hereby an eligible applicant through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)


National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

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If you or the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan have any further questions or need any additional information, please do not hesitate to contact Catherine Strickland, of the Hazard Mitigation Assistance Branch, at (770) 220-5328 or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza". The signature is written in a cursive, flowing style.

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV



FEMA

October 26, 2020

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan and all the participating communities that submitted their resolutions at the time of plan approval. We have recently received from your office the following resolution for inclusion within this plan and subsequently have approved the community under the approved Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan effective October 22, 2020:

- Yadkin County, Unincorporated
- Town of Yadkinville
- Town of Mocksville

The approved participating community is hereby an eligible applicant through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)


National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included within a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development. When the Plan is amended or revised, the amendments and revisions should be incorporated into the next plan update. If the Plan is not updated prior to the required five (5) year update, please ensure that the Draft update is submitted at least six (6) months prior to expiration of this plan approval.

If you or the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan have any further questions or need any additional information, please do not hesitate to contact Catherine Strickland, of the Hazard Mitigation Assistance Branch, at (770) 220-5328 or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza". The signature is written in a cursive style.

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV



**FEMA**

November 18, 2020

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan and all the participating communities that submitted their resolutions at the time of plan approval. We have recently received from your office the following resolutions for inclusion within this plan and subsequently have approved the communities under the approved Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan effective November 18, 2020:

- City of Winston-Salem
- Town of Kernersville

The approved participating communities are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.



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If you or the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan have any further questions or need any additional information, please do not hesitate to contact Catherine Strickland, of the Hazard Mitigation Assistance Branch, at (770) 220-5328 or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV



**FEMA**

January 7, 2021

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan and all the participating communities that submitted their resolutions at the time of plan approval. We have recently received from your office the following resolutions for inclusion within this plan and subsequently have approved the communities under the approved Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan effective January 4, 2021:

- Town of Dobson
- Town of Elkin
- Town of Pilot Mountain

The approved participating communities are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)


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We commend the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

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If you or the participants in Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan have any further questions or need any additional information, please do not hesitate to contact Celia A. Davis, of the Hazard Mitigation Assistance Branch, at (770) 220-5253, Dontrey L. Garnett, of the Hazard Mitigation Assistance Branch, at (770) 220-3145, or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza". The signature is written in a cursive style.

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV



**FEMA**

August 29, 2022

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management, NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Northern Piedmont Regional Hazard Mitigation Plan

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Hazard Mitigation Plan and all participating jurisdictions that originally submitted adoption resolutions. We have recently received and approved additional resolution(s) for inclusion.

Enclosed is the status of all participating jurisdictions. Approved jurisdictions are eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

Please note that all funding requests will be evaluated individually according to the program's specific eligibility requirements.

If you or any plan participant need assistance, please do not hesitate to contact Edwardine Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza".

Kristen M. Martinenza, P.E., CFM  
Branch Chief, Risk Analysis Branch  
FEMA Region 4

Enclosure

Enclosure: Plan Participant Status List

Attached is the list of participating jurisdictions in the referenced hazard mitigation plan.

Jurisdiction Name	Jurisdiction Status	Date Approved by FEMA
1) Bermuda Run town	Approved	10/1/20
2) Bethania town	Approved	10/1/20
3) Boonville town	Approved	10/1/20
4) Caswell County	Approved	4/15/22
5) Clemmons village	Approved	10/1/20
6) Cooleemee town	Approved	10/1/20
7) Danbury town	Approved	10/1/20
8) Davie County	Approved	10/1/20
9) Dobson town	Approved	1/4/21
10) East Bend town	Approved	10/1/20
11) Eden city	Approved	8/29/22
12) Elkin town	Approved	1/4/21
13) Forsyth County	Approved	10/2/20
14) Jonesville town	Approved	10/1/20
15) Kernersville town	Approved	11/18/20
16) King city	Approved	10/1/20
17) Lewisville town	Approved	10/1/20
18) Madison town	Approved	8/29/22
19) Mayodan town	Approved	8/29/22
20) Milton town	APA	
21) Mocksville town	Approved	10/22/20
22) Mount Airy city	APA	
23) Pilot Mountain town	Approved	1/4/21
24) Reidsville city	Approved	8/29/22
25) Rockingham County	Approved	10/1/20
26) Rural Hall town	Approved	10/1/20
27) Stokes County	Approved	10/1/20
28) Stoneville town	Approved	8/29/22
29) Surry County	Approved	10/1/20

Jurisdiction Name	Jurisdiction Status	Date Approved by FEMA
30) Tobaccolville village	Approved	10/1/20
31) Walkertown town	Approved	10/1/20
32) Walnut Cove town	Approved	10/1/20
33) Wentworth town	Approved	8/29/22
34) Winston-Salem city	Approved	11/18/20
35) Yadkin County	Approved	10/22/20
36) Yadkinville town	Approved	10/22/20
37) Yanceyville town	APA	



**FEMA**

October 26, 2022

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management, NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Northern Piedmont Regional Hazard Mitigation Plan

Dear Mr. McGugan:

This is a follow-up to our previous correspondence of October 1, 2020, in which we approved the Northern Piedmont Regional Hazard Mitigation Plan and all participating jurisdictions that originally submitted adoption resolutions. We have recently received and approved additional resolution(s) for inclusion.

Enclosed is the status of all participating jurisdictions. Approved jurisdictions are eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

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Please note that all funding requests will be evaluated individually according to the program's specific eligibility requirements.

If you or any plan participant need assistance, please do not hesitate to contact Edwardine Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza".

Kristen M. Martinenza, P.E., CFM  
Branch Chief, Risk Analysis Branch  
FEMA Region 4

Enclosure

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3) Boonville town	Approved	10/1/20
4) Caswell County	Approved	4/15/22
5) Clemmons village	Approved	10/1/20
6) Cooleemee town	Approved	10/1/20
7) Danbury town	Approved	10/1/20
8) Davie County	Approved	10/1/20
9) Dobson town	Approved	1/4/21
10) East Bend town	Approved	10/1/20
11) Eden city	Approved	8/29/22
12) Elkin town	Approved	1/4/21
13) Forsyth County	Approved	10/2/20
14) Jonesville town	Approved	10/1/20
15) Kernersville town	Approved	11/18/20
16) King city	Approved	10/1/20
17) Lewisville town	Approved	10/1/20
18) Madison town	Approved	8/29/22
19) Mayodan town	Approved	8/29/22
20) Milton town	Approved	10/26/22
21) Mocksville town	Approved	10/22/20
22) Mount Airy city	Approved	9/20/22
23) Pilot Mountain town	Approved	1/4/21
24) Reidsville city	Approved	8/29/22
25) Rockingham County	Approved	10/1/20
26) Rural Hall town	Approved	10/1/20
27) Stokes County	Approved	10/1/20
28) Stoneville town	Approved	8/29/22
29) Surry County	Approved	10/1/20



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30) Tobaccolville village	Approved	10/1/20
31) Walkertown town	Approved	10/1/20
32) Walnut Cove town	Approved	10/1/20
33) Wentworth town	Approved	8/29/22
34) Winston-Salem city	Approved	11/18/20
35) Yadkin County	Approved	10/22/20
36) Yadkinville town	Approved	10/22/20
37) Yanceyville town	Approved	9/20/22

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# SECTION 1

## INTRODUCTION

This section provides a general introduction to the Northern Piedmont Regional Hazard Mitigation Plan. It consists of the following five subsections:

- 1.1 Background
- 1.2 Purpose
- 1.3 Scope
- 1.4 Authority
- 1.5 Summary of Plan Contents

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### 1.1 BACKGROUND

Natural hazards, such as winter storms, floods, and tornadoes, are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. We must consider these hazards to be legitimate and significant threats to human life, safety, and property.

The Northern Piedmont Region is located in the north central part of North Carolina and includes Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties and the municipal governments within those counties. This area is vulnerable to a wide range of natural hazards such as winter storms, severe thunderstorms, and floods. It is also vulnerable to human-caused hazards, including chemical releases and hazardous material spills. These hazards threaten the life and safety of residents in the Northern Piedmont Region and have the potential to damage or destroy both public and private property, disrupt the local economy, and impact the overall quality of life of individuals who live, work, and vacation in the region.

While the threat from hazardous events may never be fully eliminated, there is much we can do to lessen their potential impact upon our communities and our citizens. By minimizing the impact of hazards upon our built environment, we can prevent such events from resulting in disasters. The concept and practice of reducing risks to people and property from known hazards is generally referred to as *hazard mitigation*.



#### FEMA Definition of Hazard Mitigation:

*"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."*

Hazard mitigation techniques include both structural measures (such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards) and non-structural measures (such as the adoption of sound land use policies and the creation of public awareness programs). It is widely accepted that the most effective mitigation measures are implemented at the

local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive mitigation approach addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, it is essential that projected patterns of future development are evaluated and considered in terms of how that growth will increase or decrease a community's overall hazard vulnerability.

A key component in the formulation of a comprehensive approach to hazard mitigation is to develop, adopt, and update a local hazard mitigation plan. A hazard mitigation plan establishes the broad community vision and guiding principles for reducing hazard risk, and further proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

The seven counties participating in the development of the Northern Piedmont Regional Hazard Mitigation Plan first joined together in 2014 to develop the initial version of this regional plan. Prior to that, each County was operating under individual County-level hazard mitigation plans. The plan development process for the 2020 update of the plan is detailed in Section 2: Planning Process.

This regional plan draws from each of the County plans to document the region's sustained efforts to incorporate hazard mitigation principles and practices into routine government activities and functions. At its core, the Plan recommends specific actions to minimize hazard vulnerability and protect residents from losses to those hazards that pose the greatest risk. These mitigation actions go beyond simply recommending structural solutions to reduce existing vulnerability, such as elevation, retrofitting, and acquisition projects. Local policies on community growth and development, incentives for natural resource protection, and public awareness and outreach activities are examples of other actions considered to reduce the region's vulnerability to identified hazards. The Plan remains a living document, with implementation and evaluation procedures established to help achieve meaningful objectives and successful outcomes over time.

### **1.1 The Disaster Mitigation Act and the Flood Insurance Reform Acts**

In an effort to reduce the Nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of DMA 2000 emphasizes the need for state, local and Tribal government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local or Tribal government applying for federal mitigation grant funds. These funds include the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program, both of which are administered by the Federal Emergency Management Agency (FEMA) under the Department of Homeland Security. Communities with an adopted and federally-approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes.

Major federal flood insurance legislation was passed in 2012 under the Biggert-Waters Flood Insurance Reform Act (P.L. 112-141) and the subsequent Homeowner Flood Insurance Affordability Act (HFIAA) in 2014 which revised Biggert-Waters. HFIAA established the requirement that a FEMA-approved Hazard Mitigation Plan is now required if communities wish to be eligible for any of the FEMA mitigation programs. These acts made several changes to the way the National Flood Insurance Program is to be run, including raises in rates to reflect true flood risk and changes in how Flood Insurance Rate Map (FIRM) updates impact policyholders. These acts further emphasize Congress' focus on mitigating vulnerable structures.

## SECTION 1: INTRODUCTION

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The Northern Piedmont Regional Hazard Mitigation Plan has been prepared in coordination with FEMA Region IV and the North Carolina Division of Emergency Management (NCEM) to ensure that the Plan meets all applicable FEMA and state requirements for hazard mitigation plans. A *Local Mitigation Plan Review Tool*, found in Appendix C, provides a summary of federal and state minimum standards and notes the location where each requirement is met within the Plan.

It is important to note that this plan was developed over a period of time that started in October of 2018 and was essentially completed with delivery of the draft plan to NCEM in October of 2019. Thus, the plan was not developed in accordance with updated FEMA Region IV Review Standards that were provided in February of 2020.

### 1.2 PURPOSE

The purpose of the Northern Piedmont Regional Hazard Mitigation Plan is to:

- Completely update the existing Northern Piedmont Regional Hazard Mitigation Plan to demonstrate progress and reflect current conditions;
- Increase public awareness and education;
- Maintain grant eligibility for participating jurisdictions;
- Update the plan in accordance with Community Rating System (CRS) requirements;
- Maintain compliance with state and federal legislative requirements for local hazard mitigation plans.

### 1.3 SCOPE

The focus of the Northern Piedmont Regional Hazard Mitigation Plan is on those hazards determined to be “high” or “moderate” risks to the Northern Piedmont Region, as determined through a detailed hazard risk assessment. Other hazards that pose a “low” or “negligible” risk will continue to be evaluated during future updates to the Plan, but they may not be fully addressed until they are determined to be of high or moderate risk. This enables the participating counties and municipalities to prioritize mitigation actions based on those hazards which are understood to present the greatest risk to lives and property.

The geographic scope (i.e., the planning area) for the Plan includes the counties of Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin as well as their incorporated jurisdictions. **Table 1.1** indicates the participating jurisdictions.

**TABLE 1.1: PARTICIPATING JURISDICTIONS IN THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

<b>Caswell County</b>	
Milton	Yanceyville
<b>Davie County</b>	
Bermuda Run	Mocksville
Cooleemee	
<b>Forsyth County</b>	
Bethania	Rural Hall

Clemmons	Tobaccoville
Kernersville	Walkertown
Lewisville	Winston-Salem
<b>Rockingham County</b>	
Eden	Reidsville
Madison	Stoneville
Mayodan	Wentworth
<b>Stokes County</b>	
Danbury	Walnut Cove
King	
<b>Surry County</b>	
Dobson	Mount Airy
Elkin	Pilot Mountain
<b>Yadkin County</b>	
Boonville	Jonesville
East Bend	Yadkinville

## 1.4 AUTHORITY

The Northern Piedmont Regional Hazard Mitigation Plan has been developed in accordance with current state and federal rules and regulations governing local mitigation plans and has been adopted by each participating county and local jurisdiction in accordance with standard local procedures. Copies of the adoption resolutions for each participating jurisdiction are provided in Appendix A. The Plan shall be routinely monitored and revised to maintain compliance with the following provisions, rules, and legislation:

- Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390);
- FEMA's Final Rule published in the Federal Register, at 44 CFR Part 201 (201.6 for local mitigation planning requirements);
- Flood Insurance Reform Act of 2004 (P.L. 108-264) and Biggert-Waters Flood Insurance Reform Act of 2012 (P.L. 112-141) and the Homeowner Flood Insurance Affordability Act of 2014.

## 1.5 SUMMARY OF PLAN CONTENTS

The contents of this Plan are designed and organized to be as reader-friendly and functional as possible. While significant background information is included on the processes used and studies completed (i.e., risk assessment, capability assessment), this information is separated from the more meaningful planning outcomes or actions (i.e., mitigation strategy, mitigation action plan).

Section 2, **Planning Process**, provides a complete narrative description of the process used to prepare the Plan. This includes the identification of participants on the planning team and describes how the public and other stakeholders were involved. It also includes a detailed summary for each of the key meetings held, along with any associated outcomes.

The **Community Profile**, located in Section 3, provides a general overview of the Northern Piedmont

## SECTION 1: INTRODUCTION

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region, including prevalent geographic, demographic, and economic characteristics. In addition, building characteristics and land use patterns are discussed. This baseline information provides a snapshot of the planning area and helps local officials recognize those social, environmental, and economic factors that ultimately play a role in determining the region's vulnerability to hazards.

The Risk Assessment is presented in three sections: Section 4, **Hazard Identification**; Section 5, **Hazard Profiles**; and Section 6, **Vulnerability Assessment**. Together, these sections serve to identify, analyze, and assess hazards that pose a threat to the Northern Piedmont Region. The risk assessment also attempts to define any hazard risks that may uniquely or exclusively affect specific areas of the Northern Piedmont Region.

The Risk Assessment begins by identifying hazards that threaten the region. Next, detailed profiles are established for each hazard, building on available historical data from past hazard occurrences, spatial extent, and probability of future occurrence. This section culminates in a hazard risk ranking based on conclusions regarding the frequency of occurrence, spatial extent, and potential impact highlighted in each of the hazard profiles. In the vulnerability assessment, NCEM's Risk Management section's loss estimation methodology is used to evaluate known hazard risks by their relative long-term cost in expected damages. In essence, the information generated through the risk assessment serves a critical function as the participating jurisdictions in the Northern Piedmont Region seek to determine the most appropriate mitigation actions to pursue and implement—enabling them to prioritize and focus their efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The **Capability Assessment**, found in Section 7, provides a comprehensive examination of the Northern Piedmont Region's capacity to implement meaningful mitigation strategies and identifies opportunities to increase and enhance that capacity. Specific capabilities addressed in this section include planning and regulatory capability, staff and organizational (administrative) capability, technical capability, fiscal capability, and political capability. Information was obtained through the use of a detailed survey questionnaire and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts and to identify those activities that should be built upon in establishing a successful and sustainable local hazard mitigation program.

The *Community Profile*, *Risk Assessment*, and *Capability Assessment* collectively serve as a basis for determining the goals for the Northern Piedmont Regional Hazard Mitigation Plan, each contributing to the development, adoption, and implementation of a meaningful and manageable *Mitigation Strategy* that is based on accurate background information.

The **Mitigation Strategy**, found in Section 8, consists of broad goal statements as well as an analysis of hazard mitigation techniques for the jurisdictions participating in the Northern Piedmont Regional Hazard Mitigation Plan to consider in reducing hazard vulnerabilities. The strategy provides the foundation for a detailed **Mitigation Action Plan**, found in Section 9, which links specific mitigation actions for each county and municipal department or agency to locally-assigned implementation mechanisms and target completion dates. Together, these sections are designed to make the Plan both strategic, through the identification of long-term goals, and functional, through the identification of immediate and short-term actions that will guide day-to-day decision-making and project implementation.

## SECTION 1: INTRODUCTION

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In addition to the identification and prioritization of possible mitigation projects, emphasis is placed on the use of program and policy alternatives to help make the Northern Piedmont Region less vulnerable to the damaging forces of hazards while improving the economic, social, and environmental health of the community. The concept of multi-objective planning was emphasized throughout the planning process, particularly in identifying ways to link, where possible, hazard mitigation policies and programs with complimentary community goals related to disaster recovery, housing, economic development, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety.

***Plan Maintenance***, found in Section 10, includes the measures that the jurisdictions participating in the Northern Piedmont Regional plan will take to ensure the Plan's continuous long-term implementation. The procedures also include the manner in which the Plan will be regularly evaluated and updated to remain a current and meaningful planning document.



# SECTION 2

## PLANNING PROCESS

This section describes the planning process undertaken to develop the 2020 update of the Northern Piedmont Regional Hazard Mitigation Plan. Information about the development of the 2014 (and first) version of this plan can be found in that plan. Copies of the 2014 plan can be obtained by contacting each County's Emergency Management office or NCEM's Hazard Mitigation Planning Section.

This section consists of the following nine subsections:

- 2.1 Overview of Hazard Mitigation Planning
- 2.2 History of Hazard Mitigation Planning in the Northern Piedmont Region
- 2.3 Updating the Plan in 2020
- 2.4 The Northern Piedmont Regional Hazard Mitigation Planning Team
- 2.5 Community Meetings and Workshops
- 2.6 Involving the Public
- 2.7 Involving the Stakeholders
- 2.8 Documentation of Plan Progress
- 2.9 City of Winston-Salem and Forsyth County CRS Planning Process Documentation

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#### 44 CFR Requirement

**44 CFR Part 201.6(c)(1):** The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.

### 2.1 OVERVIEW OF HAZARD MITIGATION PLANNING

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. This process culminates in a hazard mitigation plan that identifies specific mitigation actions, each designed to achieve both short-term planning objectives and a long-term community vision.

To ensure the functionality of a hazard mitigation plan, responsibility is assigned for each proposed mitigation action to a specific individual, department, or agency along with a schedule or target completion date for its implementation (see Section 10: *Plan Maintenance*). Plan maintenance procedures are established for the routine monitoring of implementation progress, as well as the evaluation and enhancement of the mitigation plan itself. These plan maintenance procedures ensure that the Plan remains a current, dynamic, and effective planning document over time that becomes integrated into the routine local decision-making process.

Communities that participate in hazard mitigation planning have the potential to accomplish many benefits, including:

- saving lives and property,

- saving money,
- speeding recovery following disasters,
- reducing future vulnerability through wise development and post-disaster recovery and reconstruction,
- expediting the receipt of pre-disaster and post-disaster grant funding, and
- demonstrating a firm commitment to improving community health and safety.

Typically, communities that participate in mitigation planning are described as having the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that the investments made before a hazard event will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond solely reducing hazard vulnerability. Mitigation measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that any local mitigation planning process be integrated with other concurrent local planning efforts, and any proposed mitigation strategies must take into account other existing community goals or initiatives that will help complement or hinder their future implementation.

## 2.2 HISTORY OF HAZARD MITIGATION PLANNING IN THE NORTHERN PIEDMONT REGION

Prior to the development of the Northern Piedmont Regional Hazard Mitigation Plan in 2014, each of the seven counties and jurisdictions participating in this Plan had a previously adopted separate county-level hazard mitigation plans. The FEMA approval dates for each of these plans, along with a list of the participating municipalities for each plan, are listed below:

- *Caswell County Hazard Mitigation Plan* (December 2011)
  - Town of Milton
  - Town of Yanceyville
- *Davie County Multi-Jurisdictional Hazard Mitigation Plan* (February 2011)
  - Town of Bermuda Run
  - Town of Cooleemee
  - Town of Mocksville
- *Forsyth County Multi-Jurisdictional Hazard Mitigation Plan* (September 2010)
  - Town of Bethania
  - Village of Clemmons
  - Town of Kernersville
  - Town of Lewisville
  - Town of Rural Hall
  - Village of Tobaccoville
  - Town of Walkertown
  - City of Winston-Salem

- *Rockingham County Hazard Mitigation Plan* (June 2011)
  - City of Eden
  - Town of Madison
  - Town of Mayodan
  - City of Reidsville
  - Town of Stoneville
  - Town of Wentworth
- *Stokes County Hazard Mitigation Plan* (July 2011)
  - Town of Danbury
  - City of King
  - Town of Walnut Cove
- *Surry County Hazard Mitigation Plan* (March 2012)
  - Town of Dobson
  - Town of Elkin
  - City of Mount Airy
  - Town of Pilot Mountain
- *Yadkin County Multi-Jurisdictional Hazard Mitigation Plan* (November 2011)
  - Town of Boonville
  - Town of East Bend
  - Town of Jonesville
  - Town Yadkinville

Each of the county-levels plans was developed using the multi-jurisdictional planning process recommended by the Federal Emergency Management Agency (FEMA).

For this plan, all of the aforementioned jurisdictions have joined to form a regional plan. No new jurisdictions joined the process and all of the jurisdictions that participated in the 2014 planning effort have participated in the development of this update. The regional plan was developed in order to simplify planning efforts for the jurisdictions in the Northern Piedmont Region and allowed resources to be shared amongst the participating jurisdiction to ease the administrative duties of all of the participants by combining the seven existing County-level plans into one multi-jurisdictional plan. The 2014 plan was important and successful first start for regional hazard mitigation planning efforts and that success has carried over into the 2020 update of the plan.

### 2.3 UPDATING THE PLAN IN 2020

FEMA requires that hazard mitigation plans be updated every five years to remain eligible for federal mitigation and public assistance funding. To prepare the 2020 *Northern Piedmont Regional Hazard Mitigation Plan*, ESP Associates, Inc. was hired by North Carolina Emergency Management to provide professional mitigation planning services. Per the contractual scope of work, the consultant team followed the mitigation planning process recommended by FEMA (Publication Series 386 and Local Mitigation Plan Review Guide) and recommendations provided by North Carolina Emergency Management (NCEM) mitigation planning staff<sup>1</sup>. Additionally, for the 2020 update, FEMA Community Rating System (CRS) and Community Wildfire Protection Plan (CWPP) requirements were integrated into the plan update.

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<sup>1</sup> A copy of the negotiated contractual scope of work between NCEM and ESP is available through NCEM upon request.

Tables 2.1 and 2.2 below provide an overview of how the Community Rating System and Community Wildfire Protection Plan requirements were integrated into this plan update.

**TABLE 2.1 FEMA HAZARD MITIGATION PLANNING REQUIREMENTS AND THE CRS 10-STEP PLANNING PROCESS REFERENCE TABLE**

FEMA Disaster Mitigation Act Requirement	CRS Activity 510 Planning Requirement
<b>Phase I – Planning Process</b>	
§201.6(c)(1)	Step 1: Organize to Prepare the Plan
§201.6(b)(1)	Step 2: Involve the Public
§201.6(b)(2) & (3)	Step 3: Coordinate
<b>Phase II – Risk Assessment</b>	
§201.6(c)(2)(i)	Step 4: Assess the Hazard
§201.6(c)(2)(ii) & (iii)	Step 5: Assess the Problem
<b>Phase III – Mitigation Strategy</b>	
§201.6(c)(3)(i)	Step 6: Set Goals
§201.6(c)(3)(ii)	Step 7: Review Possible Activities
§201.6(c)(3)(iii)	Step 8: Draft an Action Plan
<b>Phase IV – Plan Maintenance</b>	
§201.6(c)(5)	Step 9: Adopt the Plan
§201.6(c)(4)	Step 10: Implement, Evaluate and Revise the Plan

**TABLE 2.2 COMMUNITY WILDFIRE PROTECTION PLAN PROCESS INTEGRATION REFERENCE TABLE**

CWPP Process	Hazard Mitigation Plan Integration Reference
Step 1: Convene Decisionmakers	Section 2: Planning Process
Step 2: Involve Federal Agencies	Section 2: Planning Process
Step 3: Engage Interested Parties	Section 2: Planning Process
Step 4: Establish a Community Base Map	Section 3: Community Profile
Step 5: Develop a Community Risk Assessment	Sections 4, 5 and 6: Hazard Identification, Hazard Profiles and Vulnerability Assessment Section 7: Capability Assessment
Step 6: Establish Community Hazard Reduction Priorities and Recommendations to Reduce Structural Ignitability	Section 8: Mitigation Strategy
Step 7: Develop an Action Plan and Assessment Strategy	Section 9: Mitigation Action Plans Section 10: Plan Maintenance
Step 8: Finalize the CWPP	Appendix A: Plan Adoption

*Source: Preparing a Community Wildfire Protection Plan – A Handbook for Wildland-Urban Interface Communities*

The Local Mitigation Plan Review Tool, found in Appendix C, provides a detailed summary of FEMA’s current minimum standards of acceptability for compliance with DMA 2000 and notes the location where each requirement is met within this Plan. These standards are based upon FEMA’s Final Rule as published in the Federal Register in Part 201 of the Code of Federal Regulations (CFR). The planning

team used FEMA’s Local Mitigation Plan Review Guide (October 2011) for reference as they completed the Plan.

The process used to prepare this Plan included twelve major steps that were completed over the course of approximately nine months beginning in October 2018. Each of these planning steps (illustrated in **Figure 2.1**) resulted in critical work products and outcomes that collectively make up the Plan. Specific plan sections are further described in Section 1: *Introduction*.

**FIGURE 2.1: MITIGATION PLANNING PROCESS FOR THE NORTHERN PIEDMONT REGION**



## 2.4 THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLANNING TEAM

In order to guide the development of this Plan and this subsequent update, the participating jurisdictions (Caswell County, Davie County, Forsyth County, Rockingham County, Stokes County, Surry County, and Yadkin County and participating municipal jurisdictions) created the Northern Piedmont Regional Hazard Mitigation Planning Team. The Regional Hazard Mitigation Planning Team represents a community-based planning team made up of representatives from various county departments, municipalities, and other key stakeholders identified to serve as critical partners in the planning process.

Beginning in October 2018, the Regional Hazard Mitigation Planning Team members engaged in regular discussions as well as local meetings and planning workshops to discuss and complete tasks associated with preparing the Plan. This working group coordinated on all aspects of plan preparation and

## SECTION 2: PLANNING PROCESS

provided valuable input to the process. In addition to regular meetings, committee members routinely communicated and were kept informed through an e-mail distribution list.

Specifically, the tasks assigned to the Regional Hazard Mitigation Planning Team members included:

- participate in Regional Hazard Mitigation Planning Team meetings and workshops,
- provide best available data as required to update the risk assessment portion of the Plan,
- provide information that will help update the Capability Assessment section of the plan and provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan,
- support the update of the Mitigation Strategy, including the review, update and adoption of regional goal statements,
- help update existing mitigation actions and design and propose any appropriate new mitigation actions for their department/agency for incorporation into the Mitigation Action Plan,
- review and provide timely comments on all study findings and draft plan deliverables,
- support the adoption of the *2020 Northern Piedmont Regional Hazard Mitigation Plan*.

**Table 2.3** lists the members of the Regional Hazard Mitigation Planning Team who were responsible for participating in the development of the Plan.

**TABLE 2.3: MEMBERS OF THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLANNING TEAM**

NAME	DEPARTMENT/AGENCY
Gentry, Brandon*	Stokes County EM
Vestal, Keith*	Yadkin County EM
Byrd, Brian*	Davie County EM
Lynch, Barry*	Caswell County EM
Brock, Michelle*	Winston-Salem/Forsyth County EM
Reece, Robert	Winston-Salem/Forsyth County EM
Shelton, John	Surry County EM
Waddell, Myron*	Surry County EM
Brooks, Jason*	Rockingham County EM
Marrone, Edwardine	FEMA
Collins, James	NCEM
Tatum, Tyres	NCEM
Jones, Jacazza	NCEM (Hazard Mitigation Planner)
Mello, John	NCEM (Hazard Mitigation Planner)
Wood, Joel	NCEM (Area Coordinator)
Cordell, Leigha	Winston-Salem/Forsyth County EM
Wade, Robert	Winston-Salem Fire Department
Bailiff, Bruce	Winston-Salem Code Enforcement
Aaron, Scott	Stokes County Fire Marshal/EM
Moore, Shirese	Winston-Salem Fire Department/FC IMT
Swift, Joshua	Forsyth Department of Public Health

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Dockery, Dan	Winston-Salem/Forsyth County Planning and Development
Bolden, Chris	Yadkin County Emergency Services
Hinkle, Drew	Yadkin County Assistant County Manager
Corder, Dan	Village of Tobaccoville, Village Administrator
Pardue, Dawn	Yadkinville Police
Crum, Amy	Winston-Salem/Forsyth County Planning
Tolbert, Stacy	Town of Lewisville, Planner
Snow, Scott	Town of Walkertown, Town Manager
Swain, Gayle	Forsyth County Department of Social Services
Vernon, August	Winston-Salem/Forsyth County OEM
Styers, Gary	Forsyth County Emergency Services
Tuttle, Brian	MapForsyth
Isom, Sarah	Forsyth Public Health
Osborne, Matthew	City of Winston-Salem, Erosion Control/Floodplain Program Manager
Griffin, James	Forsyth County ES Fire
Flythe, Jimmy	Duke Energy

\* Served as the County’s main Point of Contact

**Table 2.4** lists points of contact for several of the jurisdictions who elected to designate their respective county officials to represent their jurisdiction on the planning team, generally because they did not have the time or staff to be able to attend on their own. Although these members designated county officials to represent them at in-person meetings, each was still contacted throughout the planning process and participated by providing suggestions and comments on the Plan via email and phone conversations.

**TABLE 2.4: MEMBERS DESIGNATING REPRESENTATIVES TO NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLANNING TEAM**

NAME	DEPARTMENT/AGENCY
Caswell County	
Williams, Patricia	Protem, Milton
Collie, Brian	Town Manager, Yanceyville
Davie County	
Rollins, Harold	Mayor, Bermuda Run
Corriher, Steve	Mayor, Cooleemee
Marklin, Will	Mayor, Mocksville
Forsyth County	
Rockett, Brent S.	Mayor, Bethania
Wait, John	Mayor, Clemmons
Morgan, Dawn	Mayor, Kernersville
Williams, Larry	Mayor, Rural Hall
David, Kenneth	Mayor, Walkertown
Rockingham County	

NAME	DEPARTMENT/AGENCY
Hall, Neville	Mayor, Eden
Meyer, David	Mayor, Madison
Bullins, Jeffrey	Mayor, Mayodan
Donecker, Jay	Mayor, Reidsville
Craddock, James	Mayor, Stoneville
Paschal, Robert	Mayor, Wentworth
Stokes County	
Barsness, Mike	Town Administrator, Danbury
Dearmin, Homer	City Manager, King
Greenwood, Kim	Town Manager, Walnut Cove
Surry County	
Neely, Laura	Town Manager, Dobson
Cornelison, Brent	Town Manager, Elkin
Jones, Barbara	City Manager, Mount Airy
Boaz, Michael	Town Manager, Pilot Mountain
Yadkin County	
Benton, Vaughn	Mayor, Boonville
Hicks, Archie	Mayor, East Bend
Pardue, Michael	Town Manager, Jonesville

### 2.4.1 Multi-Jurisdictional Participation

The *Northern Piedmont Regional Hazard Mitigation Plan* includes seven counties and thirty incorporated municipalities. To satisfy multi-jurisdictional participation requirements, each county and its participating jurisdictions were required to perform the following tasks:

- Participate in mitigation planning workshops;
- Identify completed mitigation projects, if applicable; and
- Review and provide feedback on jurisdiction-specific information in the Capability Assessment and;
- Develop and adopt (and/or update) their local Mitigation Action Plan.

Each jurisdiction participated in the planning process and has developed a local Mitigation Action Plan unique to their jurisdiction. This provides the means for jurisdictions to monitor and update their Plan on a regular basis.

## 2.5 COMMUNITY MEETINGS AND WORKSHOPS

The preparation of this Plan required a series of meetings and workshops for facilitating discussion, gaining consensus and initiating data collection efforts with local government staff, community officials, and other identified stakeholders. More importantly, the meetings and workshops prompted continuous input and feedback from relevant participants throughout the drafting stages of the Plan.

The following is a summary of the key meetings and community workshops held during the



development of the plan update<sup>2</sup>. In many cases, routine discussions and additional meetings were held by local staff to accomplish planning tasks specific to their department or agency, such as the approval of specific mitigation actions for their department or agency to undertake and include in the Mitigation Action Plan.

### **Meeting Minutes from Internal Kickoff Conference Call/Skype Meeting with County Leads and NCEM Representatives**

**October 30, 2018**

#### **Phone Call/Skype Meeting**

Following issuance of a notice to proceed from NCEM, on October 19, 2018 ESP Associates reached out by email to County Emergency Management and Planning Department leads from the seven participating counties in the Northern Piedmont Region, the NCEM Area 9 Coordinator and the Central Branch Manager to introduce themselves, explain the plan update process in general and schedule a time to hold an informal internal kickoff conference call/Skype meeting.

On October 30, 2018, Nathan Slaughter, Hazard Mitigation Department Manager from ESP Associates, Inc. and Project Manager for the update of the Northern Piedmont Regional Hazard Mitigation Plan conducted a conference call/Skype meeting with the internal lead stakeholders previously mentioned above. He presented important project information about the plan update, gave a brief refresher on hazard mitigation and a reminder about the importance of the plan, provided a project overview to include key objectives, project tasks, schedule and staff, and then defined roles and responsibilities of the project consultant and the participating jurisdictions.

Following the presentation, he discussed with these stakeholders the need to set up a date, time and location for the official project kickoff meeting with the regional hazard mitigation planning committee. The lead internal stakeholders discussed potential meeting dates and locations and decided that January 9, 2019 would be the date of the meeting at a location to be determined later. The details of the official kickoff meeting were then determined through later conversations with Winston-Salem/Forsyth County Emergency Management staff.

**January 9, 2019**

#### **First Regional Hazard Mitigation Planning Team Meeting**

#### **Forsyth County Cooperative Extension Building, Winston-Salem, NC**

Nathan Slaughter, Department Manager from ESP Associates, Inc. and Project Manager for the update of the Northern Piedmont Regional Hazard Mitigation Plan, began the meeting by welcoming the attendees and giving a brief overview of the project and the purpose of the meeting.

Mr. Slaughter led the meeting of the Regional Hazard Mitigation Planning Team and began by having attendees introduce themselves. The 28 attendees included representatives from various departments and local jurisdictions within each of the seven counties participating in the plan update. Mr. Slaughter then provided an overview of the items to be discussed at the meeting and briefly reviewed the agenda and presentation slide handouts. He then defined mitigation and gave a review of the Disaster Mitigation Act of 2000 and NC Senate Bill 300.

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<sup>2</sup> Copies of meeting agendas, sign-in sheets, minutes, and handout materials for all meetings and workshops can be found in Appendix D.

## SECTION 2: PLANNING PROCESS

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To continue, Mr. Slaughter provided detailed information about the project. He mentioned that the project is funded by a FEMA HMGP grant, and that NCEM was managing the planning effort and had assigned ESP Associates, Inc. to manage the update, thus ensuring that Mr. Slaughter would remain the Project Manager, as he was for the first plan. For this update, there was no local match requirement.

Mr. Slaughter then explained some of the basic concepts of mitigation. He explained how we should think about mitigation: we want to mitigate hazard impacts of existing development in the community (houses, businesses, critical facilities, etc.), and ensure that future development is conducted in a way that doesn't increase vulnerability. This can be achieved by having good plans, policies, and procedures in place.

Following the overview, Mr. Slaughter led the group in an "icebreaker" exercise to refamiliarize meeting participants to various mitigation techniques. He briefly recapped the six different categories of mitigation techniques: emergency services, prevention, natural resource protection, structural projects, public education and awareness, and property protection. Each attendee was then given \$20 in mock currency and asked to "spend" their mitigation money as they personally deemed appropriate among the six mitigation categories. Money was "spent" by placing it in cups labeled with each of the mitigation techniques. Upon completion of the exercise, Jamie DeRose, Lead Planner from ESP, tabulated and shared the results with the group. The most mock money was spent on prevention, followed by public education and awareness. These results were compared against those from the previous plan development's ice breaker exercise. This helped demonstrate how priorities in mitigation actions have changed since the previous update.

After the icebreaker exercise, Mr. Slaughter reviewed the key objectives of the project, which are to:

- Coordinate between the seven participating counties to update the regional plan
- Update the plan to demonstrate progress and reflect current conditions
- Complete the update before the existing plan expires on September 2, 2020
- Increase public awareness and education
- Maintain grant eligibility for participating jurisdictions
- Update the plan in accordance with Community Rating System (CRS) requirements, and
- Maintain compliance with State and Federal requirements

Next, he explained new elements to this update, which include the NCEM's RMT, Activity 510 compliance for CRS communities, Risk MAP, Community Wildfire Protection Plans, the NC Resilience Assessment, and EMAP compliance.

Mr. Slaughter reviewed the list of participating jurisdictions with the group, which all agreed to participate again. He also explained the planning process and specific tasks to be accomplished for the project, which include the planning process, risk assessment, capability assessment, mitigation strategy, mitigation action plan, and plain maintenance procedures. For the risk assessment portion of the process, Mr. Slaughter asked each county to designate a point of contact to coordinate the gathering of GIS data required for the analysis. He also reviewed the list of identified hazards and the committee agreed to maintain the previous list of hazards for the three counties.

The project schedule was presented and Mr. Slaughter noted that the twelve-month schedule provided ample time to produce a quality plan and meet state and federal deadlines.

Mr. Slaughter discussed what data would need to be collected to complete the project. This includes GIS Data, Capability Assessment Revisions, a Public Participation Survey, and updates to existing Mitigation Actions.

Mr. Slaughter then reviewed the roles and responsibilities of ESP Associates, Inc, the County leads, and the participating jurisdictions. The presentation concluded with a discussion of the next steps to be taken in the project development. He encouraged meeting participants to distribute the Public Participation Survey and shared the public web link. The next HMPT meeting was scheduled for some time in Spring of 2019 to discuss the findings of the risk and capability assessments and to begin updating existing mitigation actions and identify new goals.

**May 30, 2019**

**Mitigation Strategy Meeting**

**Forsyth County Cooperative Extension Building, Winston-Salem, NC**

Nathan Slaughter, Project Manager from ESP Associates, began the meeting by welcoming the attendees and reviewing the meeting handouts, which included an agenda, existing plan goals for the regional plan, instructions for identifying new mitigation goals, and a hard copy of the meeting presentation. Mr. Slaughter asked meeting attendees to introduce themselves and gave a refresher on mitigation, why we plan, and the key objectives of the project. He reviewed the participating jurisdictions, project tasks and project schedule. He stated that a draft of the updated Regional Hazard Mitigation Plan would be presented in September.

Jamie DeRose, Lead Planner from ESP Associates, then presented the findings of the risk assessment. She shared the list of all hazards that are addressed in the previous regional plan, and reviewed the list of hazards addressed in the North Carolina State Hazard Mitigation Plan. To maintain consistency between the two, the hazards addressed in the State Plan will be the same hazards assessed in the Regional Plan. She discussed a couple of caveats for the risk assessment and indicated that best available data was used. While that information is helpful, events are often under-reported, so it is important to keep the end goal in sight. The purpose of the risk assessment was shared: to compare hazards and determine which should be the focus of the mitigation actions. Finally, she mentioned to the stakeholders that it ultimately is their risk assessment, so their recommendations for adjustment are welcomed and encouraged.

Ms. DeRose stated that since the last plan was updated, there had been two Presidential disaster declarations that have impacted the areas surrounding the region (Tornado & Severe Storms, 2018 and Tropical Storm Michael, 2018), which helped emphasize the need to continue updating the mitigation plan.

The following Hazard Profiles and summaries of each hazard were then shared:

- DROUGHT: There were 14 regional drought events between 2005 and 2018, and future occurrences are likely.
- EXCESSIVE HEAT: The average maximum temperatures from the past 48 months were shared with results from a weather station in Danbury, Stokes County. Future occurrences are likely.

- **HURRICANE AND COASTAL HAZARDS:** 31 storm tracks have come within 75 miles of the region since 1850. 13 of those were classified as a hurricane or tropical storm. 2 of the hurricanes occurred within the past 5 years. Future occurrences are likely.
- **TORNADOES/THUNDERSTORMS:** 67 recorded tornadoes impacted the region since 1950, one of which took place in 2018. Future occurrences are likely. 1,649 severe thunderstorms occurred since 1970, and future occurrences are highly likely. 647 recorded hailstorm events occurred since 1970, and future occurrences are likely. Finally, 42 lightning events were recorded since 1970. Future occurrences are highly likely.
- **SEVERE WINTER WEATHER:** 292 winter weather events that resulted in over \$16 million in property damage have been recorded since 1990. Future occurrences are highly likely.
- **EARTHQUAKE:** No significant earthquake events have taken place in the region, but future occurrences are possible.
- **GEOLOGICAL:** Landslides, sinkholes, and erosion occurrences were assessed, but no severe historical occurrences have been recorded in the region. However, future occurrences are possible.
- **DAM FAILURE:** Of the 960 dams in the region, 142 are considered high hazard dams. One serious breach from 1912 has been reported, and future occurrences are possible.
- **FLOODING:** 265 flood events have occurred since 1990, resulting in over \$13 million in property damage. There have also been 557 reported NFIP losses since 1978 and approximately \$5.8 million in claims. There are 51 repetitive loss properties in the region, and future occurrences are highly likely.
- **WILDFIRE:** The Wildfire Ignition Density and Wildfire Urban Interface Risk Index for the region were shared. Future occurrences are likely.
- **INFECTIOUS DISEASE:** Historical occurrences in the region includes vector-borne diseases and influenza. A wide-spread infectious disease occurrence is unlikely.
- **HAZARDOUS SUBSTANCES:** 29 serious HAZMAT events have been reported through the PHMSA. There are 49 TRI Facilities in the region. Future occurrences are possible.
- **RADIOLOGICAL EMERGENCY:** Although there have been no historical occurrences of a radiological emergency, two nuclear power plants are within 50 miles of the region. Future occurrences are unlikely.
- **TERRORISM:** Highly populated areas in the region may be more vulnerable to the terrorism hazard, but no historical terror attacks have occurred. Future occurrences are unlikely.
- **CYBER:** No historical occurrences were evident. Future occurrences are unlikely.
- **ELECTROMAGNETIC PULSE (EMP):** No historical occurrences were evident. Future occurrences are unlikely.
- **FRACKING:** The Fracking hazard was addressed in the previous update, but has not caused any historical occurrences in recent history. Future occurrences are unlikely.

In concluding the review of Hazard Profiles, Ms. DeRose stated if anyone had additional information for the hazard profiles, or disagreed with any of the data presented, they had the opportunity to voice their opinions. The Committee agreed to remove the Fracking hazard from the assessment, due to it not being a risk to the region. Members also agreed to change the future probability of Infectious Disease and Cyber to “possible,” rather than “unlikely” because they are higher risks to the region.

## SECTION 2: PLANNING PROCESS

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The results of the hazard identification process were used to generate a Priority Risk Index (PRI), which categorizes and prioritizes potential hazards as high, moderate or low risk based on probability, impact, spatial extent, warning time, and duration. The highest PRI was assigned to Tornadoes/Thunderstorms, followed by Flooding and Severe Winter Weather. The committee reviewed most recent hazard profile data and voted to remove Fracking, lower Earthquakes, and move Cyber and Infectious Disease into the “Moderate” range.

Ms. DeRose then displayed maps that presented each county’s social vulnerability, as documented by the Center for Disease Control. The maps present how socially vulnerable areas in each county are as compared to the rest of North Carolina. Many indicators were used to determine the social vulnerability, and the factors were grouped into four themes that were based on census-tract levels.

After a brief break, Mr. Slaughter then presented the Capability Assessment Findings. ESP Associates used a scoring system that was used to rank the participating jurisdictions in terms of capability in four major areas (Planning and Regulatory; Administrative and Technical; Fiscal; Political). Important capability indicators include National Flood Insurance Program (NFIP) participation, Building Code Effective Grading Schedule (BCEGS) score, Community Rating System (CRS) participation, and the Local Capability Assessment Survey conducted by ESP Associates.

Mr. Slaughter reviewed the Relevant Plans and Ordinances, Relevant Staff/Personnel Resources, and Relevant Fiscal Resources. All of these categories were used to rate the overall capability of the participating counties and jurisdictions. Most jurisdictions are in the moderate to high range for Planning and Regulatory Capability and in the low to moderate range for Fiscal Capability. There is variation between the jurisdictions for Administrative and Technical Capability, mainly with respect to availability of planners and grant writers. Based upon the scoring methodology, it was determined that the majority of the participating jurisdictions have moderate capabilities to implement hazard mitigation programs and activities.

Mr. Slaughter then transitioned to the Mitigation Strategy portion of the presentation. He began by reviewing some of the major concepts of mitigation and then gave the results of the icebreaker exercise from the first Regional Hazard Mitigation Planning Committee meeting, where attendees were given “money” to spend on various hazard mitigation techniques. The results were as follows:

- Prevention \$124
- Public Education and Awareness \$104
- Emergency Services \$99
- Structural Projects \$67
- Natural Resources Protection \$65
- Property Protection \$43

Mr. Slaughter gave an overview of the process for updating the Mitigation Strategy and presented the existing mitigation goals for the regional plan. He asked the Regional Hazard Mitigation Planning Committee to review the goals to determine whether or not they still reflect current vulnerabilities and current mitigation priorities. The committee members agreed that goals were still consistent and up to date.

## SECTION 2: PLANNING PROCESS

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Mr. Slaughter then indicated that each participating jurisdiction would need to provide a status update for their existing mitigation actions (completed, deleted, or deferred) by July 1, 2019. Mr. Slaughter also discussed the Mitigation Action Worksheets to be completed for any new mitigation actions and requested that all worksheets be returned by July 1, 2019. Mr. Slaughter then presented sample mitigation actions for the committee members to consider to include in their plan update.

Mr. Slaughter then discussed the results of the public participation survey that was posted on several of the participating counties' and jurisdictions' websites. As of the meeting date, 116 responses had been received. Based on the preliminary results, respondents felt that severe thunderstorms and severe winter weather posed the greatest threats to their neighborhood. Most did not live in a floodplain or have flood insurance, but 67.3% of all respondents did not know who to contact regarding reducing their risks to hazards.

Finally, Mr. Slaughter discussed the next steps in the planning process. These included returning mitigation action updates and delivery of a draft plan in September of 2019. He thanked the group for taking the time to attend and the meeting was adjourned.



## 2.6 INVOLVING THE PUBLIC

### 44 CFR Requirement

**44 CFR Part 201.6(b)(1):** The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

An important component of the mitigation planning process involved public participation. Individual citizen and community-based input provides the entire planning team with a greater understanding of

local concerns and increases the likelihood of successfully implementing mitigation actions by developing community “buy-in” from those directly affected by the decisions of public officials. As citizens become more involved in decisions that affect their safety, they are more likely to gain a greater appreciation of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community’s overall mitigation strategy aimed at making a home, neighborhood, school, business or entire city safer from the potential effects of hazards.

Public involvement in the development of the *Northern Piedmont Regional Hazard Mitigation Plan* was sought using three methods: (1) physical public meetings, (2) public survey instruments were made available in hard copy and online; and (3) copies of the draft Plan deliverables were made available for public review on county and municipal websites and at government offices. Thus, the public was provided two opportunities to be involved in the development of the regional plan at two distinct periods during the planning process: (1) during the drafting stage of the Plan; and (2) upon completion of a final draft Plan, but prior to official plan approval and adoption. In addition, a public participation survey (discussed in greater detail in Section 2.6.1) was made available during the planning process at various locations throughout Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin Counties and on county and municipal websites. Documentation of these efforts is provided in Appendix D.

In addition to the two opportunities for public comments previously discussed, each of the participating jurisdictions will hold public meetings before the final plan is officially adopted by the local governing bodies. These meetings will occur at different times once FEMA has granted conditional approval of the Plan. Adoption resolutions will be included in Appendix A.

### **January 9, 2019**

#### **Public Meeting #1– Belews Creek Fire/Rescue Station, Belews Creek, NC**

Nathan Slaughter, Department Manager from ESP Associates, Inc. and Project Manager for the update of the Northern Piedmont Regional Hazard Mitigation Plan, began the meeting by giving a brief overview of the project and the purpose of the meeting.

He explained that the project is funded by a FEMA PDM grant and is conducted to comply with the Disaster Mitigation Act of 2000 and NC Senate Bill 300. He then discussed the region’s high, moderate, and low risk hazards that the Regional Hazard Mitigation Planning Team had elected.

Next, Mr. Slaughter identified the six hazard mitigation planning techniques: prevention, property protection, natural resource protection, structural projects, emergency services, and public education and awareness. He followed by providing the list of all participating counties and their respective jurisdictions.

Mr. Slaughter then showed an example of the previous Mitigation Action Plan and asked the following questions:

- Where are trouble spots in your neighborhood?
- How can mitigation be improved in your community?
- Which mitigation techniques need improvement?

The meeting concluded after the attendees gave their personal opinions and filled out the public survey.

The final opportunity for public input on the plan came at each participating jurisdictions' County or City Council meeting where the plan was presented for formal adoption. Each of those meetings are open to the public and therefore provided the public an opportunity to provide any final input or comments on the plan.

### 2.6.1 Public Participation Survey

The Regional Hazard Mitigation Team was successful in getting citizens to provide input to the mitigation planning process through the use of the *Public Participation Survey*. The *Public Participation Survey* was designed to capture data and information from residents of the Northern Piedmont Region that might not be able to attend public meetings or participate through other means in the mitigation planning process.

Copies of the *Public Participation Survey* were distributed to the Regional Hazard Mitigation Team to be made available for residents to complete at local public offices. A link to an electronic version of the survey was also posted on each county's and municipal websites. A total of 116 survey responses were received, which provided valuable input for the Regional Hazard Mitigation Team to consider in the development of the plan update. Selected survey results are presented below.

- Approximately 41 percent of survey respondents had been impacted by a disaster, mainly tornadoes, hurricanes, severe storms/wind, and winter storms.
- Respondents ranked Severe Thunderstorm/High Wind as the highest threat to their neighborhood (41 percent), followed by Severe Winter/Ice Storm (21 percent).
- Approximately 50 percent of respondents have taken actions to make their homes more resistant to hazards and 81 percent are interested in making their homes more resistant to hazards.
- 67 percent of respondents do not know what office to contact regarding reducing their risks to hazards.
- Emergency Services and Natural Resource Protection were ranked as the most important activities for communities to pursue in reducing risks.

A copy of the survey is provided in Appendix B and a detailed summary of the survey results are provided in Appendix D.

## 2.7 INVOLVING THE STAKEHOLDERS

### 44 CFR Requirement

**44 CFR Part 201.6(b)(2):** The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other non-profit interests to be involved in the planning process.

At the beginning of the planning process for the development of this plan, the project consultant worked with each of the County Emergency Management leads to initiate outreach to stakeholders to be involved in the planning process. The project consultant sent out a list of recommended stakeholders provided from FEMA Publication 386-1 titled **Getting Started: Building**



**Support for Mitigation Planning**, which demonstrated the wide range of stakeholders that were considered to participate in the development of this plan. Each of the County Emergency Management leads used that list for reference as they invited stakeholders from their counties to participate in the planning process.

In addition to participation from a wide variety of County-level departments, additional stakeholders that were involved in the process of developing this plan included: North Carolina Division of Emergency Management (NCEM), Duke Energy and MapForsyth.

The Regional Hazard Mitigation Committee encouraged more open and widespread participation in the mitigation planning process. The region also went above and beyond in its local outreach efforts through the design and distribution of the *Public Participation Survey*. This opportunity was provided for local officials, residents, businesses, academia, and other private interests in the Northern Piedmont Region to be involved and offer input throughout the local mitigation planning process.

Additionally, outreach was made to the surrounding jurisdictions to offer them an opportunity to provide information relevant for the plan update and to invite them to participate in the planning process and review drafts of the plan. Copies of the outreach made to them can be found in **Appendix D**.

## 2.8 DOCUMENTATION OF PLAN PROGRESS

Progress in hazard mitigation planning for the participating jurisdictions in the Northern Piedmont Region is documented in this plan update. Since hazard mitigation planning efforts officially began in the participating counties with the development of the initial Hazard Mitigation Plans in the late 1990s and early 2000s, many mitigation actions have been completed and implemented in the participating jurisdictions. These actions will help reduce the overall risk to natural hazards for the people and property in the Northern Piedmont Region. The actions that have been completed are documented in the Mitigation Action Plan found in Section 9.

Further documentation of plan implementation progress can be found in the Capability Assessment. Community capability continues to improve for each participating jurisdiction with the implementation of new plans, policies and programs that help to promote hazard mitigation at the local level. The current state of local capabilities for the participating jurisdictions is captured in Section 7: *Capability Assessment*. The participating jurisdictions continue to demonstrate their commitment to hazard mitigation and hazard mitigation planning and have proven this by reconvening the Regional Hazard Mitigation Committee to update the Plan and by continuing to involve the public in the hazard mitigation planning process.

## 2.8 CITY OF WINSTON-SALEM AND FORSYTH COUNTY CRS PLANNING PROCESS DOCUMENTATION

As participants in the NFIP's CRS program, the City of Winston-Salem and Forsyth County have taken additional steps during the 2020 update of this plan to meet the CRS requirements of Activity 510: Floodplain Management Planning and attempt to maximize the number of points the City and County receive for this activity for this plan. Specific to the planning process, the City and County ensured that the following activities took place:

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- Assigned City of Winston-Salem and Forsyth County staff to serve on the Regional Hazard Mitigation Planning Committee. The staff members assigned to the committee actively participated in the plan update process and represent a wide range of staff expertise in the areas of mitigation techniques. The City of Winston-Salem and Forsyth County staff and their associated area of expertise are listed in Table 2.3.

**TABLE 2.3: WINSTON-SALEM AND FORSYTH COUNTY STAFF MEMBERS OF THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLANNING TEAM AND THEIR AREA OF EXPERTISE**

NAME	DEPARTMENT / AGENCY / TITLE	MITIGATION TECHNIQUE					
		PREVENTION MEASURES	PROPERTY PROTECTION	NATURAL RESOURCE PROTECTION	EMERGENCY SERVICES	STRUCTURAL PROJECTS	PUBLIC INFORMATION
Brock, Michelle	Winston-Salem Forsyth County EM	X	X	X	X	X	X
Reece, Robert	Winston-Salem Forsyth County EM	X	X	X	X	X	X
Cordell, Leah	Winston-Salem Forsyth County EM	X	X	X	X	X	X
Wade, Robert	Winston-Salem Fire Department				X		
Baliff, Bruce	Winston-Salem Code Enforcement	X	X			X	X
Moore, Shirese	Winston-Salem Fire Department/ FC IMT				X		X
Dockery, Dan	Winston-Salem/Forsyth County Planning and Development	X					
Crum, Amy	Winston-Salem/Forsyth County Planning	X					
Vernon, August	Winston-Salem Forsyth County EM				X		
Swain, Gayle	Forsyth County Department of Social Services						X
Styers, Gary	Winston-Salem Forsyth County EM				X		
Isom, Sarah	Forsyth County Public Health				X		X

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NAME	DEPARTMENT / AGENCY / TITLE	MITIGATION TECHNIQUE					
		PREVENTION MEASURES	PROPERTY PROTECTION	NATURAL RESOURCE PROTECTION	EMERGENCY SERVICES	STRUCTURAL PROJECTS	PUBLIC INFORMATION
Osborne, Matthew	City of Winston-Salem, Erosion Control and Floodplain Program Manager	X	X	X		X	X
Griffin, James	Forsyth County Emergency Services				X		

- Ensured that the first public meeting held during the plan update process was conducted within the first two months of the planning process. As previously documented, the first meeting in the plan update process was held on January 9. The first public meeting was held in the evening of January 9 following the official Kickoff Meeting with the Regional Hazard Mitigation Planning Committee and at the same time as the beginning of the plan update process.
- Invited multiple outside stakeholders to participate in the plan update process. An email was sent to the following stakeholders to invited them to attend the planning meetings. The email invitation is included in Appendix D.
  - MapForsyth
  - Duke Energy
- The City of Winston-Salem and Forsyth County initially wanted to hold one final public meeting at least two weeks before submittal of the final plan to their governing bodies for adoption. However, this effort was not able to take place as the City and County were dealing with the COVID-19 pandemic during this time and public meetings were not possible.

# SECTION 3

## COMMUNITY PROFILE

This section of the plan provides a general overview of the Northern Piedmont Region. It consists of the following four subsections:

- 3.1 Geography and the Environment
- 3.2 Population and Demographics
- 3.3 Housing, Infrastructure, and Land Use
- 3.4 Employment and Industry

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### 3.1 GEOGRAPHY AND THE ENVIRONMENT

The Northern Piedmont Region is located in the northern central portion of North Carolina. All of the counties are part of the Piedmont Triad Regional Council. For the purposes of this plan, the Northern Piedmont Region includes the counties of Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin. An orientation map is provided as **Figure 3.1**.

The Northern Piedmont Region is located in the northern central portion of North Carolina. This area is located between the Appalachian Mountains and Atlantic Ocean in the Piedmont (or foothills) of North Carolina. The City of Winston-Salem is the largest city in the region. This area has rolling hills and multiple high peaks and is known for several small mountain ranges, the Brushy Mountains, the Blue Ridge Mountains, and the Appalachian Mountains. A few of the counties in this region are also part of the Yadkin Valley American Viticultural Area (AVA). An AVA is a designated wine and grape growing region within the United States.

The total area of each of the participating counties is presented in **Table 3.1**.

**TABLE 3.1: TOTAL AREA OF PARTICIPATING COUNTIES**

County	Land Area (sq. mi.)	Water Area (sq. mi.)	Total Area (sq. mi.)
<b>Caswell County</b>	425	3	428
<b>Davie County</b>	264	3	267
<b>Forsyth County</b>	408	5	412
<b>Rockingham County</b>	566	7	573
<b>Stokes County</b>	449	7	456
<b>Surry County</b>	532	4	536
<b>Yadkin County</b>	335	3	338

The Northern Piedmont Region enjoys a moderate climate that is characterized by mild winters and hot summers. In general, the spring months are marked by predictable temperatures ranging in the 70s. From March through May, temperatures in the lower elevations have an average high of 79°F and an average low of 35°F.

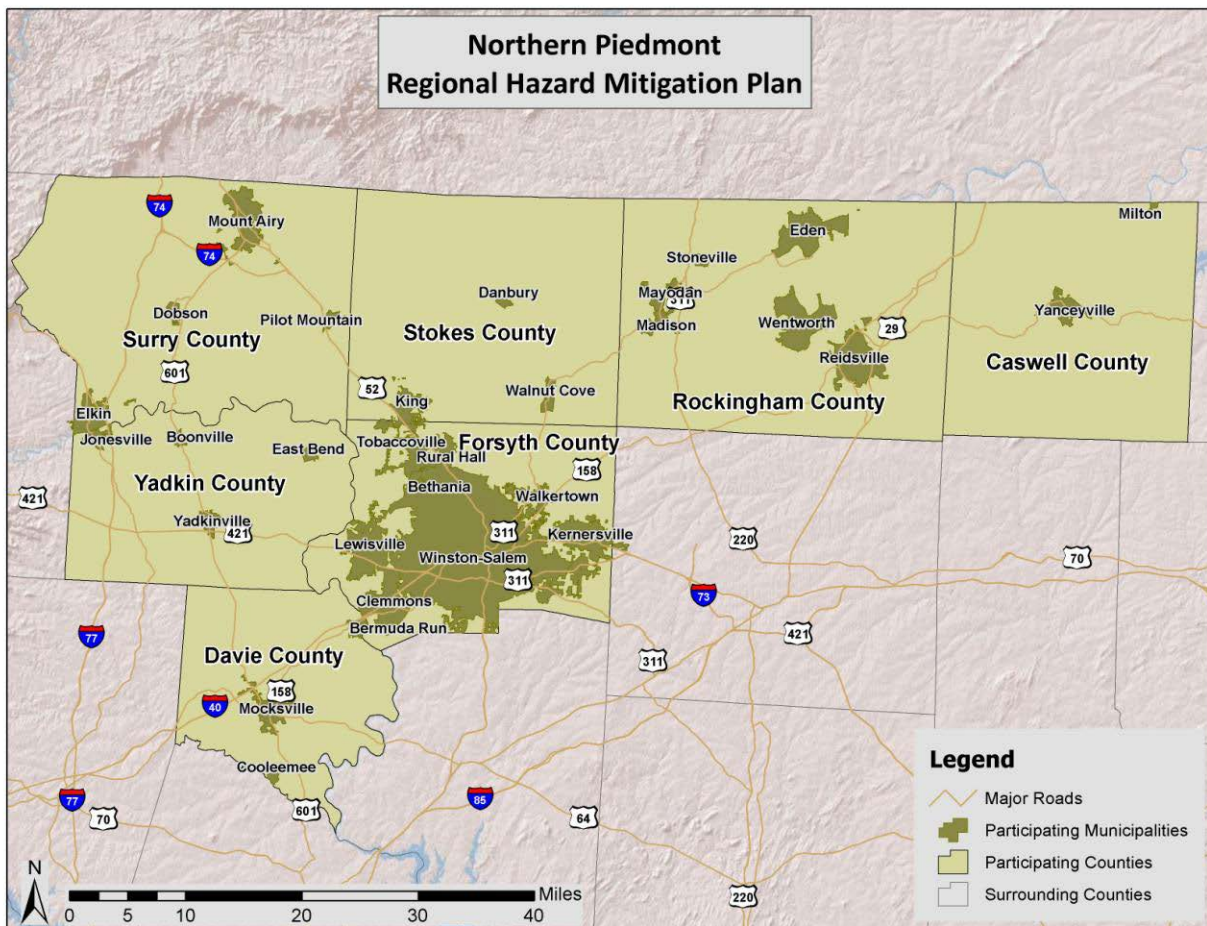
## SECTION 3: COMMUNITY PROFILE

In the summer, afternoon showers and thunderstorms are common and average temperatures increase with afternoon highs often reaching the upper 80s-90s June through August.

September through mid-November is typified by clear skies and cooler weather that alternates between warm days and cool nights. Daytime highs are usually in the 70s and 80s during September but fall to the 50s and 60s by early November. Precipitation is consistent throughout the year for every month ranging from three to four inches of rain each month.

Winter in the Northern Piedmont Region is generally moderate but extremes do occur, especially at higher elevations. About half of the days from mid-November through February have high temperatures around 50°F. Winter lows are usually at or below freezing but temperatures can drop to the 20s. Snow is most common during January and February. Snows of one inch or more occurs a few times per year in the lower counties; however, in the more northern counties, snow falls are between 2-3 inches approximately four times a year.

**FIGURE 3.1: NORTHERN PIEDMONT REGION ORIENTATION MAP**



### 3.2 POPULATION AND DEMOGRAPHICS

Rockingham County is the largest participating county by area but Forsyth County is the largest county by population, due to the metropolitan City of Winston-Salem. Between 2010 and 2018, only two

counties experienced growth; Davie, and Forsyth. All other jurisdictions experienced population decline. Most of the municipalities that underwent population decline had small populations ranging from several hundred to a few thousand people, with the exception of the City of Eden which has over 15,000 people. Forsyth County had the highest county growth rate at 8.1 percent. Population counts from the U.S. Census Bureau for 2000, 2010, and estimations for 2018 for each of the participating counties are presented in **Table 3.2**.

**TABLE 3.2: POPULATION COUNTS FOR PARTICIPATING JURISDICTIONS**

Jurisdiction	1990 Census Population	2000 Census Population	2010 Census Population	2018 Population Estimates	% Change 2010-2018
<b>Caswell County</b>	20,693	23,501	23,719	22,698	-4.4%
<b>Davie County</b>	27,859	34,835	41,240	43,733	3.7%
<b>Forsyth County</b>	265,878	306,067	350,670	379,099	8.1%
<b>Rockingham County</b>	86,064	91,928	93,643	90,690	-3.2%
<b>Stokes County</b>	37,223	44,711	47,401	45,467	-4.1%
<b>Surry County</b>	61,704	71,219	73,673	71,948	-2.4%
<b>Yadkin County</b>	30,488	36,348	38,406	37,543	-2.3%

Source: US Census Bureau, NC Office of State Budget and Management

Based on the 2010 Census and 2018 estimates, the median age of residents of the participating counties ranges from 43 to 45 years, with the exception of Forsyth County where the median age is 38 years. The racial characteristics of the participating counties are presented in **Table 3.3**. Generally, whites make up the majority of the population in the region accounting for over 77 percent of the population in all counties. Conversely, the counties with a smaller population of white people, Caswell and Forsyth Counties, have the largest minority populations.

**TABLE 3.3: DEMOGRAPHICS OF PARTICIPATING COUNTIES**

Jurisdiction	White, Percent (2017)	Black or African American, Percent (2017)	American Indian or Alaska Native, Percent (2017)	Asian, Percent (2017)	Native Hawaiian or Other Pacific Islander, Percent (2017)	Persons of Hispanic Origin, Percent (2017) *	Two or More Races, Percent (2017)
<b>Caswell County</b>	64.3%	32.7%	0.7%	0.5%	N/A	4.0%	1.8%
<b>Davie County</b>	90.0%	6.5%	0.7%	0.9%	N/A	6.9%	1.8%
<b>Forsyth County</b>	66.9%	27.4%	0.8%	2.5%	0.1%	13.0%	2.2%
<b>Rockingham County</b>	77.7%	19.0%	0.6%	0.6%	0.1%	6.2%	2.0%
<b>Stokes County</b>	93.7%	4.1%	0.5%	0.4%	N/A	3.0%	1.2%
<b>Surry County</b>	93.2%	4.1%	0.6%	0.7%	0.1%	10.6%	1.2%
<b>Yadkin County</b>	94.1%	3.4%	0.7%	0.4%	0.1%	11.4%	1.3%

\*Hispanics may be of any race, so also are included in applicable race categories

Source: US Census Bureau

### 3.3 HOUSING, INFRASTRUCTURE, AND LAND USE

#### 3.3.1 Housing

According to the U.S. Census Bureau's 2018 estimates, there were 314,949 housing units in the Northern Piedmont Region, the majority of which are single family homes or mobile homes. Housing information for the seven participating counties is presented in **Table 3.4**. As shown in the table, all of the counties have a low percentage of seasonal housing units.

**TABLE 3.4: HOUSING CHARACTERISTICS OF PARTICIPATING COUNTIES**

Jurisdiction	Housing Units (2010)	Housing Units (2018)	Seasonal Units, Percent (2017)	Median Home Value (2013-2017)
Caswell County	10,619	10,846	2.7%	\$104,700
Davie County	18,238	18,897	0.8%	\$170,000
Forsyth County	156,872	166,917	0.4%	\$151,400
Rockingham County	43,696	44,301	1.1%	\$109,600
Stokes County	21,924	22,313	1.9%	\$123,908
Surry County	33,667	34,264	1.6%	\$120,900
Yadkin County	15,821	17,411	0.8%	\$127,300

#### 3.3.2 Infrastructure

##### Transportation

There are several interstates that cross the Northern Piedmont Region. Interstate 77 runs across the region from north to south and interstates 40 and 85 run east to west across the area. Construction of two new interstates, I-73 and I-74, is underway and largely completed in many areas. This seven county Region has numerous US highways that run through the area including 64, 21, 421, 601, 52, 311, 29, 158, 220, and 311. North Carolina state highways also cross the region and provide routes of transportation. The Blue Ridge Parkway also provides a route through North Carolina and runs through Surry County.

The Northern Piedmont Region is served by the Piedmont Triad International Airport and Charlotte-Douglas International Airport which are located in Greensboro and Charlotte respectively. No large airports are located in the region but rather at least nine small private and public airports. The Piedmont Triad International Airport has six airlines that service it with flights daily. The airport is located in Guilford County which is east of Forsyth County and south of Rockingham County. The Charlotte Douglas International Airport offers non-stop commercial flights on nine airlines to numerous destinations across the eastern US and Midwest as well as to several international destinations. Additional general aviation and other public-use airports servicing the Northern Piedmont Region include Caswell Airport in Yanceyville, Twin Lakes Airport in Mocksville, Smith Reynolds Airport in Winston-Salem, Rockingham County NC Shiloh Airport in Reidsville, Meadow Brook Field in Walnut

Cove, Mount Airy/Surry County Airport in Mount Airy, and Lone Hickory Airport in Yadkinville.

**Utilities**

Electrical power in the Northern Piedmont Region is provided by Duke Energy and several electricity cooperatives. Duke Energy provides service to all seven counties. Surry and Yadkin Counties are also served by Surry-Yadkin Electric Corporation.

Water and sewer service is provided by many of the towns or counties in the Northern Piedmont Region. However, private and/or shared wells and septic systems are common as well.

**Community Facilities**

There are a number of public buildings and community facilities located throughout the Northern Piedmont Region. According to the data collected for the vulnerability assessment (Section 6.4.1), there are 285 fire stations, 49 police stations, 465 medical care facilities and 194 public schools located within the study area.

Eighteen hospitals are located in the Northern Piedmont Region<sup>1</sup>. There are two hospitals, Wake Forest Baptist Hospital and Novant Health Forsyth Medical Center, with over 800 beds with beds dedicated to rehabilitation and psychology as well as general beds. Both hospitals have numerous operating rooms, 50 and 39 respectively. There are also 16 smaller hospitals located throughout the region.

Hanging Rock State Park is located in Stokes County and is almost 7,000 acres in size. In addition to this park are the state parks around the Dan and Mayo Rivers. Lake Reidsville provides recreation as well along with the previously mention Blue Ridge Parkway. All of these facilities offer recreational opportunities to area residents and visitors each year.

**3.3.3 Land Use**

Land uses vary greatly throughout the region. The Winston-Salem metropolitan statistical area, consisting of Forsyth, Davidson (not participating in this plan), Davie, Stokes, and Yadkin counties, is highly urbanized. However, many areas of the Northern Piedmont Region are undeveloped or sparsely developed. As shown in **Figure 3.1** above, there are several small incorporated municipalities located throughout the study area, and these are other areas where the region’s population is also concentrated. The Winston-Salem metro area and the smaller incorporated areas are also where many businesses, commercial uses, and institutional uses are located. Land uses in the balance of the study area generally consist of rural residential development, agricultural uses, recreational areas, and forestland.

While population growth and development in the region remains relatively slow, except for more rapidly-growing areas in Forsyth and Davie Counties, growth that is occurring is well-managed by the participating jurisdictions. The Capability Assessment found in Section 7 provides an overview of the land use tools that are in place in each jurisdiction. Local land use (and associated regulations) is further discussed in the Capability Assessment as well. Local land use is further discussed in *Section 7: Capability Assessment*.

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<sup>1</sup> Licensed Hospitals in North Carolina, 9/2018 <http://www.ncdhhs.gov/dhsr/data/hllist.pdf>



### 3.4 EMPLOYMENT AND INDUSTRY

The early modern economy of the Northern Piedmont Region was built around the tobacco and textiles industries. Like many other Piedmont Triad communities, the jurisdictions in the Northern Piedmont Region have focused recent economic development efforts on a diverse range of economic sectors to include medical, technological and manufacturing companies just to name a few. Wine-making has become part of the economy in the region as well.

According to the North Carolina Department of Commerce, Labor and Economic Analysis Division (NCDCLEAD), in 2018, Caswell County had a Labor force of 9,943 workers. In 2018, the top five employers in Caswell County were Caswell County Schools, Caswell County, the Department of Public Safety, W.S. Construction, and Carolina QSC Management. The average unemployment rate was 4.3 percent compared to the State rate of 3.7.

Davie County had a labor force of 20,816 workers. As of 2018, the top five employers in Davie County were Ashley Furniture Industries, Davie County Schools, CPP Global, Congruity HR, and Davie County. The average unemployment rate was 3 percent compared to the State rate of 3.7.

Forsyth's County labor force consists of 189,035 workers. As of 2018, the top five employers in Forsyth County were Wake Forest University Baptist Medi., Winston Salem Forsyth County Schools, Forsyth Memorial Hospital, Novant Health, and Wake Forest University. The average unemployment rate was 3.4 percent compared to the State rate of 3.7.

NCDC LEAD reported a labor force of 40,944 workers in Rockingham County in 2018. The top five employers in Rockingham County were Rockingham County School System, Wal-Mart Associates, Unifi Manufacturing, Rockingham County Finance Office, and Rex Hospital. The average unemployment rate was 4 percent compared to the State rate of 3.7.

Stokes County had a 2018 labor force of 22,123 workers. The top five employers in Stokes County in 2018 were Stokes County School System, Wieland Copper Products, Stokes County, Wal-Mart Associates, and Defender Services INC. The average unemployment rate was 3.3 percent compared to the State rate of 3.7.

Surry County had a labor force of 34,407 workers. In 2018, according to NCDCLEAD, The top five employers in Surry County were Pike Electric, Surry County Schools, Wal-Mart Associates, Arevo Group INC, and the Northern Hospital of Surry County. The average unemployment rate was 3.4 percent compared to the State rate of 3.7.

Yadkin County had a labor force of 18,127 workers in 2018. The top five employers in Yadkin County were Unifi Manufacturing, Yadkin County Board of Education, Lydall Thermal/Acoustical, PVH Corp, and Yadkin County. The average unemployment rate was 3.1 percent compared to the State rate of 3.7.

# SECTION 4

## HAZARD IDENTIFICATION

This section describes how the regional planning committee identified the hazards to be included in this plan. It consists of the following five subsections:

- 4.1 Overview
- 4.2 Disaster Declarations
- 4.3 Summary of Hazard Impacts Since Previous Plan
- 4.4 Hazard Evaluation
- 4.5 Hazard Identification Results

### 44 CFR Requirement

**44 CFR Part 201.6(c)(2)(i):** The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

## 4.1 OVERVIEW

The Northern Piedmont Region is vulnerable to a wide range of natural and human-caused hazards that threaten life and property. Current FEMA regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of human-caused hazards (i.e., technological hazards, terrorism, etc.) is encouraged, though not required, for plan approval. The Northern Piedmont Region has included a comprehensive assessment of both types of hazards.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, the participating counties in the Northern Piedmont Region have identified a number of hazards that are to be addressed in its Regional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from the Northern Piedmont Regional Hazard Mitigation Planning Committee members, research of past disaster declarations in the participating counties<sup>1</sup>, and review of the North Carolina State Hazard Mitigation Plan (2018). To maintain consistency, the Northern Piedmont Planning Committee voted to assess the same hazards that were identified in the most recent update of the North Carolina State Hazard Mitigation Plan. A list of all previous hazards covered in the 2014 Northern Piedmont Regional Hazard Mitigation Plan is viewable in **Table 4.1**, along with a summary of the hazards assessed in this update. Readily available information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

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<sup>1</sup> A complete list of disaster declarations for the Northern Piedmont Region can be found below in Section 4.3.

**TABLE 4.1: 2020 NORTHERN PIEDMONT HAZARDS UPDATE**

2014 Northern Piedmont Identified Hazards		2020 Northern Piedmont Identified Hazards		Sub hazards covered in 2020 Plan and Explanations
<b>Atmospheric Hazards</b>	Drought	Drought	<b>Natural Hazards</b>	Agricultural Drought, Hydrological Drought
	Hailstorm			Assessed under "Tornadoes/Thunderstorms"
	Heat Wave	Excessive Heat		
	Hurricane and Tropical Storm	Hurricane and Coastal Hazards		Storm Surge associated with Hurricanes and Nor'easters, High Wind associated with Hurricanes and Nor'easters, Torrential Rain, Tornadoes Associates with Hurricanes, Severe Winter Weather associated with Nor'easters
	Lightning			Assessed under "Tornadoes/Thunderstorms"
	Tornado	Tornadoes/Thunderstorms		Hailstorm, Torrential Rain associated with Severe Thunderstorms, Thunderstorm Wind, Lightning, Waterspout, High Wind
	Severe Thunderstorm			Assessed under "Tornadoes/Thunderstorms"
	Winter Storm and Freeze	Severe Winter Weather		Freezing Rain, Snowstorms, Blizzards, Wind Chill, Extreme Cold
<b>Hydrologic Hazards</b>	Dam and Levee Failure	Dam Failures	<b>Other Hazards</b>	
	Erosion			Assessed under "Geological"
	Flood	Flooding		
<b>Geologic Hazards</b>	Earthquake	Earthquakes		
	Landslide	Geological		Landslides, Sinkholes, Erosion
<b>Other Hazards</b>	Wildfire	Wildfires	<b>Other Hazards</b>	
		Infectious Disease		
<b>Other Hazards</b>	Hazardous Materials Incident	Hazardous Substances	<b>Technological Hazards</b>	Hazardous Materials, Hazardous Chemicals, Oil Spill
	Nuclear Accident	Radiological Emergency – Fixed Nuclear Facilities		
		Terrorism		Chemical, Biological, Radiological, Nuclear, Explosive
		Cyber		
		Electromagnetic Pulse		

## 4.2 DISASTER DECLARATIONS

Disaster declarations provide initial insight into the hazards that may impact the Northern Piedmont Regional planning area. Since 1979, 15 presidential disaster declarations have been reported in the Northern Piedmont Region.

**TABLE 4.2: NORTHERN PIEDMONT REGION DISASTER DECLARATIONS**

Year	Disaster Number	Description	Caswell County	Davie County	Forsyth County	Rockingham County	Stokes County	Surry County	Yadkin County
1979	605	Severe Storms & Flooding						X	
1989	827	Tornadoes		X	X				
1989	844	Hurricane Hugo		X	X		X	X	X
1996	1087	Blizzard of '96	X	X	X	X	X	X	X
1996	1103	Winter Storm	X	X	X	X	X	X	X
1996	1134	Hurricane Fran	X			X			
1998	1211	Severe Storms, Tornadoes & Flooding				X			
1999	1292	Hurricane Floyd	X		X	X	X		
2000	1312	Severe Winter Storm	X			X			
2002	1448	Severe Ice Storm		X	X				
2003	1457	Ice Storm	X		X	X	X		
2004	1153	Hurricane Ivan	X		X	X	X		
2014	4167	Severe Winter Storm	X	X					
2018	4364	Tornado & Severe Storms				X			
2018	4412	Tropical Storm Michael	X	X	X	X	X	X	X

## 4.3 SUMMARY OF HAZARD IMPACTS SINCE PREVIOUS PLAN

Since the approval date of the previous Northern Piedmont Regional Hazard Mitigation Plan (9/2/2015), there have been 522 hazard events recorded for the region in the National Centers for Environmental Information Storm Events Database. It is important to take note of those hazard events and consider them in the *Hazard Identification* section to help ensure that the appropriate hazards are being

considered in the risk assessment sections and in the Mitigation Strategy. **Table 4.3** documents the hazard events recorded. Details for some of these events are discussed in further detail in the *Hazard Profiles* section.

**TABLE 4.3: SUMMARY OF HAZARD EVENTS SINCE PREVIOUS PLAN**

Hazard Type*	Number of Reported Events						
	Caswell County	Davie County	Forsyth County	Rockingham County	Stokes County	Surry County	Yadkin County
Flood	2	0	0	16	2	6	2
Hail	19	4	11	22	14	13	8
Lightning	0	0	0	0	2	0	2
Thunderstorm Wind	55	13	58	71	63	35	44
Tornado	1	1	0	2	1	0	1
Winter Storm	7	4	10	8	9	9	7
<b>Total Number of Reported Events</b>	<b>84</b>	<b>22</b>	<b>79</b>	<b>119</b>	<b>91</b>	<b>63</b>	<b>64</b>

\* The hazard type names that NCEI uses are different than the names of hazards used in this plan; however, one can still get an understanding of the types of hazards that impact the region as the hazard types are similar in name.

Appendix G includes more detailed information about all previous historical hazard occurrence events as reported to the National Centers for Environmental Information. Some more detailed information about previous historical hazards events can be found in Section 5: Hazard Profiles under each separate hazard profile.

## 4.4 HAZARD EVALUATION

**TABLE 4.4: DOCUMENTATION OF THE HAZARD EVALUATION PROCESS**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
<b>ATMOSPHERIC HAZARDS</b>			
Avalanche	NO	• Review of FEMA’s Multi-Hazard Identification and	• The United States avalanche hazard is limited to mountainous western states

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Risk Assessment <ul style="list-style-type: none"> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of US Forest Service National Avalanche Center website</li> </ul>	including Alaska as well as some areas of low risk in New England. <ul style="list-style-type: none"> <li>• Avalanche hazard was removed from the North Carolina State Hazard Mitigation Plan after determining the mountain elevation in Western North Carolina did not have enough snow not to produce this hazard.</li> <li>• Avalanche is not included in the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• There is no risk of avalanche events in North Carolina.</li> </ul>
Drought	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of the North Carolina Drought Monitor website</li> </ul>	<ul style="list-style-type: none"> <li>• Drought is a normal part of virtually all climatic regimes, including areas with high and low average rainfall.</li> <li>• Droughts are discussed in the NC State Hazard Mitigation Plan.</li> <li>• The NC State Hazard Mitigation Plan lists drought as a top 5 hazard for the Mountain 2 Region, which includes Surry and Yadkin Counties; Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties; and Piedmont 4 Region, which includes Davie County.</li> <li>• Drought is included in the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• There are reports of drought conditions in each of the last 14 years in the Northern Piedmont Region, according to the North Carolina Drought Monitor.</li> </ul>
Hailstorm	YES (Assessed under Tornadoes/ Thunderstorms)	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> </ul>	<ul style="list-style-type: none"> <li>• Although hailstorms occur primarily in the Midwestern states, they do occur in every state on the mainland U.S. Most inland regions experience hailstorms at least two or more days each year.</li> <li>• Hailstorm events are discussed in the state plan under the severe thunderstorm hazard.</li> <li>• Hail is addressed under the severe thunderstorm hazard in the previous Northern Piedmont Regional Hazard</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			<p>Mitigation Plan Given the frequency of the event, individual analysis is warranted.</p> <ul style="list-style-type: none"> <li>• NCEI reports 670 hailstorm events (0.45-inch size hail to 3.0 inches) for the Northern Piedmont Region since 1955. For these events, there was over \$1.1 million (2019 dollars) in property damages reported.</li> </ul>
Heat Wave	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the North Carolina State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> </ul>	<ul style="list-style-type: none"> <li>• Many areas of the United States are susceptible to heat waves, including North Carolina.</li> <li>• The NC State Hazard Mitigation Plan does not include Heat Wave as a top 5 hazard for the Mountain 2 Region, which includes Surry and Yadkin Counties; Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties; and Piedmont 4 Region, which includes Davie County.</li> <li>• The NC State Hazard Mitigation Plan reports the Piedmont Region as having moderate vulnerability to heat wave compared to the state.</li> <li>• Heat wave is included in the previous Northern Piedmont hazard mitigation plan in tandem with the drought hazard.</li> </ul>
Hurricane and Tropical Storm	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Analysis of NOAA historical tropical cyclone tracks and National Hurricane Center Website</li> <li>• Review of NOAA NCEI Storm Events Database</li> </ul>	<ul style="list-style-type: none"> <li>• The Atlantic and Gulf regions are most prone to landfall by hurricanes and tropical storms.</li> <li>• Hurricane and tropical storm events are discussed in the state plan and are listed as a top 5 hazard in the Mountain 2 Region, which includes Surry and Yadkin Counties, and as the top hazard in the Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties, and Piedmont 4 Region, which includes Davie County.</li> <li>• Hurricane and tropical storm was addressed in the previous Northern Piedmont plan.</li> <li>• NOAA historical records indicate 29 hurricanes or tropical storms have come</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		<ul style="list-style-type: none"> <li>• Review of historical presidential disaster declarations</li> <li>• FEMA Hazus-MH storm return periods</li> </ul>	<p>within 75 miles of the Northern Piedmont Region since 1859.</p> <ul style="list-style-type: none"> <li>• NCEI reports 13 hurricane or tropical storm events since 1996 for the Northern Piedmont Region.</li> <li>• 6 out of 15 disaster declarations in the Northern Piedmont Region are directly related to hurricane and tropical storm events.</li> </ul>
Lightning	YES (Assessed under Tornadoes/ Thunderstorms)	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> <li>• Review of Vaisala’s NLDN Lightning Flash Density Map</li> </ul>	<ul style="list-style-type: none"> <li>• The central region of the Florida has the highest density of lightning strikes in the mainland U.S.; however, lightning events are experienced in nearly every region.</li> <li>• Lightning events are discussed in the state plan as part of the severe thunderstorm hazard.</li> <li>• Although lightning is addressed under the severe thunderstorm hazard in the previous regional hazard mitigation plan, given the damage and reported death and injuries, individual analysis is warranted.</li> <li>• NCEI reports 43 lightning events for the Northern Piedmont Region since 1994. These events have resulted in 10 recorded injuries and over \$6 million (2019 dollars) in property damage.</li> <li>• According to Vaisala’s U.S. National Lightning Detection Network, the Northern Piedmont Region is located in an area that experienced an average of 3 to 4 lightning flashes per square kilometer per year between 1997 and 2010.</li> </ul>
Nor’Easter	NO	<ul style="list-style-type: none"> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> </ul>	<ul style="list-style-type: none"> <li>• Nor’easters are discussed in the state plan. The Mountain Region, which includes Surry and Yadkin Counties, and the Piedmont Region, which includes Caswell, Davie, Forsyth, Rockingham, and Stokes Counties, have relatively low vulnerability compared to the state.</li> <li>• Nor’easter was not included the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• NCEI does not report any nor’easter activity for the Northern Piedmont Region.</li> </ul>



**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			However, nor'easters may have affected the region as severe winter storms. In this case, the activity would be reported under winter storm events.
Tornadoes/ Thunderstorm	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> <li>• Review of historical presidential disaster declarations.</li> </ul>	<ul style="list-style-type: none"> <li>• From 1953 to 1993, North Carolina averaged 10 to 25 tornadoes per year.</li> <li>• Tornado events are discussed in the NC State Hazard Mitigation Plan. The Piedmont Region, which includes Caswell, Davie, Forsyth, Rockingham, and Stokes Counties, is one of the regions with the highest vulnerability in the state.</li> <li>• Tornado events were addressed in the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• NCEIC reports 65 tornado events in Northern Piedmont Region counties since 1952. These events have resulted in 2 deaths, 115 injuries, and over \$259 million (2019 dollars) in property damage with the most severe being an F3.</li> <li>• 3 of the region’s 15 disaster declarations were directly related to tornado events.</li> </ul>
Severe Thunderstorm	YES (Assessed under Tornadoes/ Thunderstorms)	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> <li>• Review of historical presidential disaster declarations.</li> </ul>	<ul style="list-style-type: none"> <li>• Over 100,000 thunderstorms are estimated to occur each year on the U.S. mainland, and they are experienced in nearly every region.</li> <li>• Severe thunderstorm events are discussed in the NC State Hazard Mitigation Plan and are identified as a top 5 hazard for the Mountain 2 Region, which includes Surry and Yadkin Counties; Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties; and Piedmont 4 Region, which includes Davie County.</li> <li>• Severe storm events were addressed in the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• NCEI reports 1,714 thunderstorm/high wind events in the Northern Piedmont Region counties since 1958. These events have resulted in 1 death, 14 injuries, and \$11 million in property damage.</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			<ul style="list-style-type: none"> <li>• 4 of the region’s 15 disaster declarations were directly related to severe storm events.</li> </ul>
Severe Winter Weather	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> <li>• Review of historical presidential disaster declarations.</li> </ul>	<ul style="list-style-type: none"> <li>• Winter storms affect every state in the continental U.S. and Alaska.</li> <li>• Severe winter storms, including snow storms and ice storms, are discussed in the state plan. They are listed as a top 5 hazard in the Mountain 2 Region, which includes Surry and Yadkin Counties; Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties; and Piedmont 4 Region, which includes Davie County.</li> <li>• Winter storm events were addressed in the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• NCEI reports that the Northern Piedmont counties have been affected by 136 winter storm events since 1993. These events resulted in \$650 thousand in damages. 2 deaths and 10 additional injuries were reported with these events, but they may have occurred outside of the study region.</li> <li>• 6 of the region’s 15 disaster declarations were directly related to winter storm events.</li> </ul>
<b>GEOLOGIC HAZARDS</b>			
Earthquake	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of the National Geophysical Data Center</li> <li>• USGS Earthquake Hazards Program website</li> </ul>	<ul style="list-style-type: none"> <li>• Although the zone of greatest seismic activity in the United States is along the Pacific Coast, eastern regions have experienced significant earthquakes.</li> <li>• Earthquake events are discussed in the state plan and two of the participating Northern Piedmont counties (Surry and Yadkin) are in the region with the highest vulnerability to an earthquake event in the state.</li> <li>• Earthquakes have occurred in and around the State of North Carolina in the past. The state is affected by the Charleston and the New Madrid (near Missouri) Fault lines which have generated a magnitude 8.0 earthquake in the last 200 years.</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			<ul style="list-style-type: none"> <li>• The previous regional hazard mitigation plan addresses earthquake.</li> <li>• 48 events are known to have occurred in the region according to the National Geophysical Data Center. The greatest MMI reported was a 6.</li> <li>• According to USGS seismic hazard maps, the peak ground acceleration (PGA) with a 10% probability of exceedance in 50 years for the Northern Piedmont Region is approximately 2 to 4%g. FEMA recommends that earthquakes be further evaluated for mitigation purposes in areas with a PGA of 3%g or more.</li> </ul>
Expansive Soils	NO	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of USDA Soil Conservation Service’s Soil Survey</li> </ul>	<ul style="list-style-type: none"> <li>• The effects of expansive soils are most prevalent in parts of the Southern, Central, and Western U.S.</li> <li>• Expansive soils are identified in the state plan and are not included as a top 5 hazard in the Mountain 2 Region, which includes Surry and Yadkin Counties, or Piedmont 3 Region, which includes Caswell, Forsyth, Rockingham, and Stokes Counties. Expansive soils are identified as a top 5 hazard in the Piedmont 4 Region, which only includes Davie County.</li> <li>• The previous Northern Piedmont Regional Hazard Mitigation Plan did not identify expansive soils.</li> <li>• According to FEMA and USDA sources, the Northern Piedmont Region is located in an area that has “little or no” clay swelling potential.</li> </ul>
Geological (Landslides, Sinkholes, Erosion)	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of USGS</li> </ul>	<ul style="list-style-type: none"> <li>• Landslides occur in every state in the U.S, and they are most common in the coastal ranges of California, the Colorado Plateau, the Rocky Mountains, and the Appalachian Mountains.</li> <li>• Landslide/debris flow events are discussed in the state plan and are listed as a top 5 hazard for the Mountain 2 Region, which includes Surry and Yadkin Counties. Additionally, the Mountain Region has the</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Landslide Incidence and Susceptibility Hazard Map <ul style="list-style-type: none"> <li>• Review of the North Carolina Geological Survey database of historic landslides</li> </ul>	highest vulnerability compared to the rest of the state. <ul style="list-style-type: none"> <li>• The previous Northern Piedmont Hazard Mitigation Plan addresses landslides.</li> <li>• USGS landslide hazard maps indicate “high susceptibility” and “moderate susceptibility” is found throughout the Northern Piedmont Region. Additionally, there is “moderate incidence” (more than 1.5-15% of the area is involved in landsliding) in portions of all the Northern Piedmont counties except Davie County.</li> <li>• Data provided by NCGS do not indicate any recorded landslide events in the Northern Piedmont Region but data is still being collected and compiled.</li> </ul>
Land Subsidence	NO	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Land subsidence affects at least 45 states, including North Carolina. However, because of the broad range of causes and impacts, there has been limited national focus on this hazard.</li> <li>• The state plan delineates certain areas that are susceptible to land subsidence hazards in North Carolina; however, the Mountain Region, which includes Surry and Yadkin Counties, has zero vulnerability and the Piedmont Region, which includes Caswell, Davie, Forsyth, Rockingham, and Stokes Counties, has relatively low vulnerability compared to the state.</li> <li>• The previous Northern Piedmont Regional Hazard Mitigation Plan does not identify land subsidence as a potential hazard.</li> </ul>
Tsunami	NO	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard</li> </ul>	<ul style="list-style-type: none"> <li>• No record exists of a catastrophic Atlantic basin tsunami impacting the mid-Atlantic coast of the United States.</li> <li>• Tsunami inundation zone maps are not available for communities located along the U.S. East Coast.</li> <li>• Tsunamis are discussed in the state plan and described as a “greater” hazard for the state. However, the Mountain Region, which includes Surry and Yadkin Counties,</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Mitigation Plan <ul style="list-style-type: none"> <li>• Review of FEMA “How-to” mitigation planning guidance (Publication 386-2, “Understanding Your Risks – Identifying Hazards and Estimating Losses).</li> </ul>	and the Piedmont Region, which includes Caswell, Davie, Forsyth, Rockingham, and Stokes Counties, scored a zero for tsunami hazard risk. <ul style="list-style-type: none"> <li>• Tsunami was not addressed as a hazard in the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• FEMA mitigation planning guidance suggests that locations along the U.S. East Coast have a relatively low tsunami risk and need not conduct a tsunami risk assessment at this time.</li> </ul>
Volcano	NO	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of USGS Volcano Hazards Program website</li> </ul>	<ul style="list-style-type: none"> <li>• More than 65 potentially active volcanoes exist in the United States and most are located in Alaska. The Western states and Hawaii are also potentially affected by volcanic hazards.</li> <li>• There are no active volcanoes in North Carolina.</li> <li>• There has not been a volcanic eruption in North Carolina in over 1 million years.</li> <li>• No volcanoes are located near the Northern Piedmont Region.</li> </ul>
<b>HYDROLOGIC HAZARDS</b>			
Dam Failure	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of North Carolina Dam Safety Program’s NC Dam Inventory as of 11/20/19</li> </ul>	<ul style="list-style-type: none"> <li>• Dam failure is identified as a hazard in the State Plan.</li> <li>• The previous Northern Piedmont Regional Hazard Mitigation Plan identified dam failure as a hazard.</li> <li>• Per the NC Dam Inventory, there are 145 high hazard dams in the planning region. (High hazard is defined as “where failure will likely cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.”)</li> </ul>
Erosion	YES (Referenced in Geological Hazards)	<ul style="list-style-type: none"> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal erosion is discussed in the state plan but only for coastal areas (there is no discussion of riverine erosion). The Northern Piedmont is not located in a coastal area.</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Regional Hazard Mitigation Plan	<ul style="list-style-type: none"> <li>• Riverine erosion is discussed in the previous Northern Piedmont Regional Hazard Mitigation Plan.</li> <li>• Although erosion was not previously identified as a top hazard, it remains a natural, dynamic, and continuous process in the Northern Piedmont Region that warrants inclusion as a potential hazard.</li> </ul>
Flooding	YES	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of NOAA NCEI Storm Events Database</li> <li>• Review of historical disaster declarations</li> <li>• Review of FEMA DFIRM data</li> <li>• Review of FEMA’s NFIP Community Status Book and Community Rating System (CRS)</li> </ul>	<ul style="list-style-type: none"> <li>• Floods occur in all 50 states and in the U.S. territories.</li> <li>• The flood hazard is thoroughly discussed in the state plan. The Northern Piedmont Region was found to have relatively moderate vulnerability compared to the state.</li> <li>• The previous regional hazard mitigation plan addresses flood as a hazard.</li> <li>• NCEI reports that the Northern Piedmont Region counties have been affected by 87 flood events since 1993. These events resulted in an estimated \$1.7 million in property damages.</li> <li>• 3 of the 15 Presidential Disaster Declarations were flood-related and an additional 6 were hurricane or tropical storm-related which caused flooding issues.</li> <li>• 6.5% of the Northern Piedmont Region is located in an identified floodplain (100- or 500-year).</li> <li>• 31 of the 37 jurisdictions in the Northern Piedmont Region participate in the NFIP, and 2 jurisdictions currently participate in the CRS.</li> </ul>
Storm Surge	NO	<ul style="list-style-type: none"> <li>• Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard</li> </ul>	<ul style="list-style-type: none"> <li>• Given the inland location of the Northern Piedmont Region, storm surge would not affect the area.</li> <li>• Storm surge is discussed in the state plan under the hurricane hazard. The Mountain Region, which includes Surry and Yadkin Counties, and the Piedmont Region, which includes Caswell, Davie, Forsyth, Rockingham, and Stokes Counties, has zero vulnerability to storm surge.</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Mitigation Plan <ul style="list-style-type: none"> <li>Review of NOAA NCEI Storm Events Database</li> </ul>	<ul style="list-style-type: none"> <li>The previous regional hazard mitigation plan does not include storm surge as a potential hazard.</li> <li>No historical events were reported by NCEI for the Northern Piedmont Region.</li> </ul>
<b>OTHER HAZARDS</b>			
Wildfires	YES	<ul style="list-style-type: none"> <li>Review of FEMA’s Multi-Hazard Identification and Risk Assessment</li> <li>Review of the NC State Hazard Mitigation Plan</li> <li>Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>Review of Southern Wildfire Risk Assessment (SWRA) Data</li> <li>Review of the NC Division of Forest Resources website</li> </ul>	<ul style="list-style-type: none"> <li>Wildfires occur in virtually all parts of the United States. Wildfire hazard risks will increase as low-density development along the urban/wildland interface increases.</li> <li>Wildfires are identified as a hazard in the State Hazard Mitigation Plan.</li> <li>The previous regional hazard mitigation plan addressed wildfire.</li> <li>A review of SWRA data indicates that there are some areas of elevated concern in the Northern Piedmont Region.</li> <li>According to the North Carolina Division of Forest Resources, the Northern Piedmont Region experiences an average of 343 fires each year which burn a combined average of 767 acres.</li> </ul>
Hazardous Substances	YES	<ul style="list-style-type: none"> <li>Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> </ul>	<ul style="list-style-type: none"> <li>The previous regional hazard mitigation plan identifies hazardous substances as a potential concern.</li> <li>This update assesses hazardous materials, hazardous chemicals, and oil spills under this hazard.</li> </ul>
Infectious Disease	YES	<ul style="list-style-type: none"> <li>Review of the NC State Hazard Mitigation Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Including infectious disease to be consistent with the State Plan.</li> </ul>
Fracking	NO	<ul style="list-style-type: none"> <li>Discussion with the Regional Hazard Mitigation Planning Team.</li> </ul>	<ul style="list-style-type: none"> <li>Removing fracking from this plan update because it has been identified by the Regional Hazard Mitigation Planning Team to no longer be a hazard of concern in the region.</li> </ul>
<b>TECHNOLOGICAL HAZARDS</b>			
Terrorism	YES	<ul style="list-style-type: none"> <li>Review of the NC State Hazard Mitigation Plan</li> <li>Review of the previous Regional hazard mitigation plan</li> <li>Review of local official knowledge</li> </ul>	<ul style="list-style-type: none"> <li>The previous regional hazard mitigation plan included terrorism as a hazard.</li> </ul>

**SECTION 4: HAZARD IDENTIFICATION**

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
Radiological Emergency – Fixed Nuclear Facilities	YES	<ul style="list-style-type: none"> <li>• Review of the NC State Hazard Mitigation Plan</li> <li>• Review of the previous Northern Piedmont Regional Hazard Mitigation Plan</li> <li>• Review of IAEA list of fixed nuclear power stations in the United States</li> <li>• Discussion with local officials about location of nuclear power stations</li> </ul>	<ul style="list-style-type: none"> <li>• The McGuire Nuclear Power Station is located on Lake Norman within 50 miles of the region.</li> <li>• Nuclear Accident was identified has a hazard in the previous regional hazard mitigation plan.</li> <li>• Nuclear events can sometimes be caused by natural hazards and deserve some attention in this plan due to some areas of the region being located in the 50-mile evacuation zone for the McGuire Nuclear Power Station</li> </ul>
Cyber	YES	<ul style="list-style-type: none"> <li>• Review of NC State Hazard Mitigation Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Changing future conditions encourage the assessment of the possibility of a cyber-attack with the increase in global technology</li> </ul>
Electromagnetic Pulse	YES	<ul style="list-style-type: none"> <li>• Review of NC State Hazard Mitigation Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Changing future conditions encourage the assessment of the possibility of an electromagnetic pulse with the increase in global technology</li> </ul>



## 4.5 HAZARD IDENTIFICATION RESULTS

**Table 4.5** provides a summary of the hazard identification and evaluation process noting which of the 27 initially identified hazards are considered significant enough for further evaluation through this Plan’s risk assessment (marked with a “☑”).

**TABLE 4.5: SUMMARY RESULTS OF THE HAZARD IDENTIFICATION AND EVALUATION PROCESS**

NATURAL HAZARDS	TECHNOLOGICAL HAZARDS
<input type="checkbox"/> Avalanche	<input checked="" type="checkbox"/> Radiological Emergency – Fixed Nuclear Facilities
<input checked="" type="checkbox"/> Drought	<input checked="" type="checkbox"/> Terrorism
<input checked="" type="checkbox"/> Hailstorm**	<input checked="" type="checkbox"/> Cyber
<input checked="" type="checkbox"/> Excessive Heat	<input checked="" type="checkbox"/> Electromagnetic Pulse
<input checked="" type="checkbox"/> Hurricane and Coastal Hazards	OTHER HAZARDS
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Hazardous Substances
<input checked="" type="checkbox"/> Lightning**	<input checked="" type="checkbox"/> Wildfires
<input type="checkbox"/> Nor’easter	<input checked="" type="checkbox"/> Infectious Disease
<input checked="" type="checkbox"/> Tornadoes/Thunderstorms	<input type="checkbox"/> Fracking
<input checked="" type="checkbox"/> Severe Winter Weather	
<input checked="" type="checkbox"/> Earthquakes	
<input checked="" type="checkbox"/> Dam Failures	
<input checked="" type="checkbox"/> Geological	
<input type="checkbox"/> Expansive Soils	
<input type="checkbox"/> Land Subsidence	
<input type="checkbox"/> Tsunami	
<input type="checkbox"/> Volcano	
<input type="checkbox"/> Storm Surge	
<input type="checkbox"/> Erosion	

☑ = Hazard considered significant enough for further evaluation in the Northern Piedmont Region hazard risk assessment.

\*\* = Hazard is assessed as a sub hazard under the Tornadoes/Thunderstorms hazard.

# SECTION 5

## HAZARD PROFILES

This section includes detailed hazard profiles for each of the hazards identified in the previous section (*Hazard Identification*) as significant enough for further evaluation in the Northern Piedmont Regional Hazard Mitigation Plan. It contains the following subsections:

- 5.1 Overview
- 5.2 Study Area
- 5.3 Drought
- 5.4 Excessive Heat
- 5.5 Hurricane and Coastal Hazards
- 5.6 Tornadoes/Thunderstorms
- 5.7 Severe Winter Weather
- 5.8 Earthquakes
- 5.9 Geological Hazards
- 5.10 Dam Failure
- 5.11 Flooding
- 5.12 Wildfires
- 5.13 Infectious Disease
- 5.14 Hazardous Substances
- 5.15 Radiological Emergency – Fixed Nuclear Facilities
- 5.16 Terrorism
- 5.17 Cyber
- 5.18 Electromagnetic Pulse
- 5.19 Conclusions on Hazard Risk
- 5.20 Final Determinations

### 44 CFR Requirement

**44 CFR Part 201.6(c)(2)(i):** The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazards events and on the probability of future hazard events.

## 5.1 OVERVIEW

This section includes detailed hazard profiles for each of the hazards identified in the previous section (*Hazard Identification*) as significant enough for further evaluation in the Northern Piedmont Region hazard risk assessment by creating a hazard profile. Each hazard profile includes a general description of the hazard, its location and extent, notable historical occurrences, and the probability of future occurrences. Each profile also includes specific items noted by members of the Northern Piedmont Regional Hazard Mitigation Planning Team as it relates to unique historical or anecdotal hazard information for the counties in the Northern Piedmont Region, or a participating municipality within them.

After reviewing the list of assessed hazards from the previous update, the Northern Piedmont Regional Planning Team moved to amend the hazards in order to be consistent with the State of North Carolina Hazard Mitigation Plan. This required some of the hazard names to change and additional hazards were included in the assessment.

The following hazards were identified:

- **Natural**
  - Drought
  - Excessive Heat
  - Hurricane and Coastal Hazards
  - Tornadoes/Thunderstorms (including hailstorms and lightning)
  - Severe Winter Weather
  - Earthquakes
  - Geological Hazards (including landslides, sinkholes, and erosion)
  - Dam Failure
  - Flooding
- **Other**
  - Wildfires
  - Infectious Disease
- **Technological**
  - Hazardous Substances
  - Radiological Emergency – Fixed Nuclear Facilities
  - Terrorism
  - Cyber
  - Electromagnetic Pulse

## 5.2 STUDY AREA

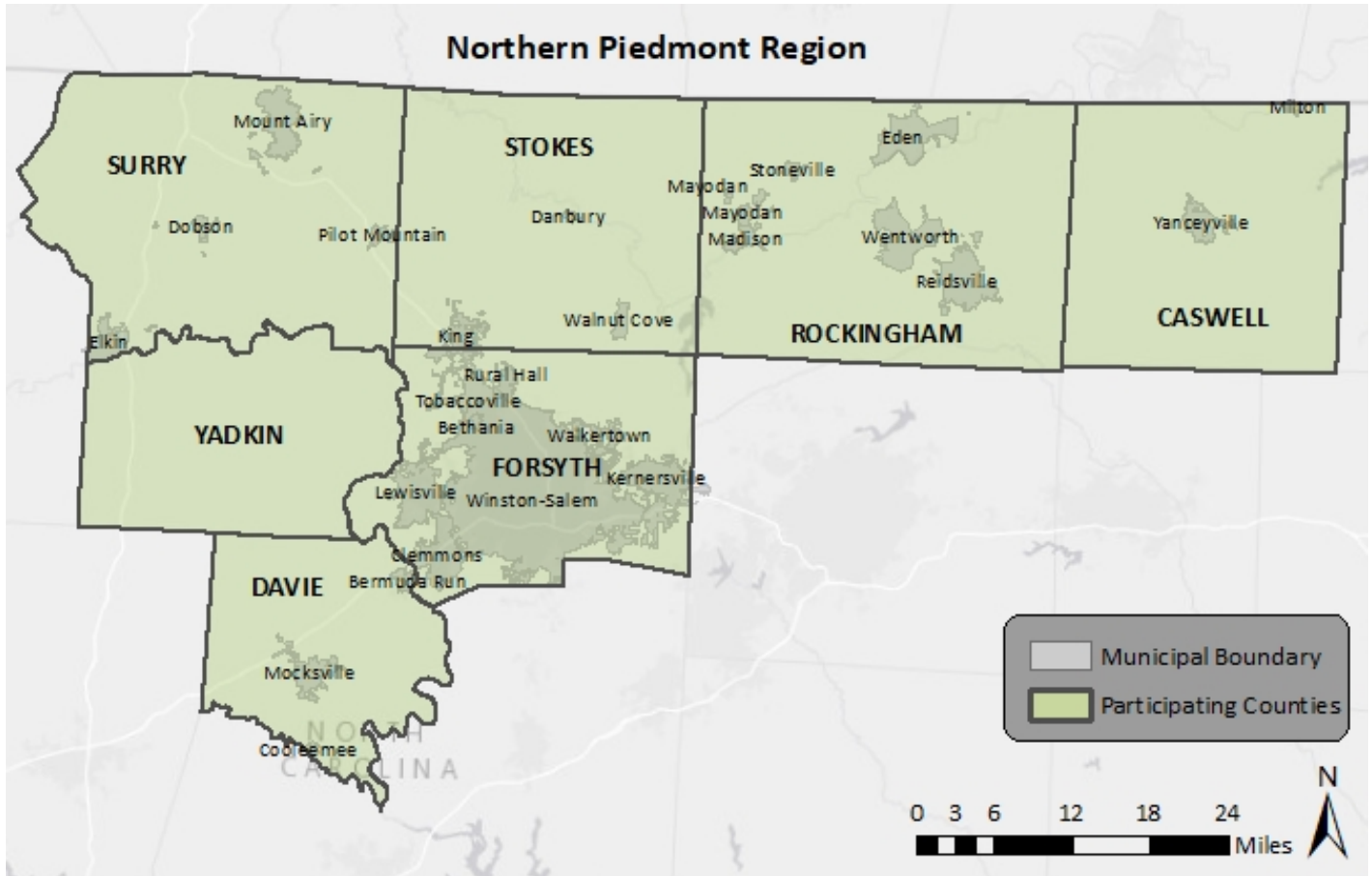
The Northern Piedmont Region includes seven counties: Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin. **Table 5.1** provides a summary table of the participating jurisdictions within each county. In addition, **Figure 5.1** provides a base map, for reference, of the Northern Piedmont Region.

**TABLE 5.1: PARTICIPATING JURISDICTIONS IN THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

<b>Caswell County</b>	
Milton	Yanceyville
<b>Davie County</b>	
Bermuda Run	Mocksville
Cooleemee	
<b>Forsyth County</b>	
Bethania	Rural Hall
Clemmons	Tobaccoville
Kernersville	Walkertown
Lewisville	Winston-Salem
<b>Rockingham County</b>	
Eden	Reidsville
Madison	Stoneville
Mayodan	Wentworth
<b>Stokes County</b>	

Danbury	Walnut Cove
King	
<b>Surry County</b>	
Dobson	Mount Airy
Elkin	Pilot Mountain
<b>Yadkin County</b>	
Boonville	Jonesville
East Bend	Yadkinville

**FIGURE 5.1: NORTHERN PIEDMONT REGION BASE MAP**



**Table 5.2** lists each significant hazard for the Northern Piedmont Region and identifies whether or not it has been determined to be a specific hazard of concern for the twenty-nine municipal jurisdictions and each of the three county’s unincorporated areas. This is based on the best available data and information from the Northern Piedmont Regional Hazard Mitigation Council. (● = hazard of concern)

**TABLE 5.2 SUMMARY OF IDENTIFIED HAZARD EVENTS**

Jurisdiction	NATURAL								OTHER		TECHNOLOGICAL					
	Drought	Excessive Heat	Hurricane and Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Geological	Dam Failure	Flooding	Wildfires	Infectious Disease	Hazardous Substances	Radiological Emergency	Terrorism	Cyber	Electromagnetic Pulse
<b>Caswell County</b>																
Milton	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Yanceyville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Davie County</b>																
Bermuda Run	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cooleemee	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mocksville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Forsyth County</b>																
Bethania	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Clemmons	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Kernersville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Lewisville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Rural Hall	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tobaccoville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Walkertown	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Winston-Salem	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Rockingham County</b>																
Eden	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Madison	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mayodan	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Reidsville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stoneville	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Wentworth	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Unincorporated Area	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Stokes County</b>																
Danbury	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

**SECTION 5: HAZARD PROFILES**

Jurisdiction	NATURAL									OTHER		TECHNOLOGICAL				
	Drought	Excessive Heat	Hurricane and Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Geological	Dam Failure	Flooding	Wildfires	Infectious Disease	Hazardous Substances	Radiological Emergency	Terrorism	Cyber	Electromagnetic Pulse
King	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Walnut Cove	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Unincorporated Area	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Surry County</b>																
Dobson	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Elkin	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mount Airy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Pilot Mountain	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Unincorporated Area	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Yadkin County</b>																
Boonville	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
East Bend	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Jonesville	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Yadkinville	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

# Natural Hazards

## 5.3 DROUGHT

### 5.3.1 Background and Description

Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. High temperatures, high winds, and low humidity can exacerbate drought conditions. In addition, human actions and demands for water resources can hasten drought-related impacts. Drought may also lead to more severe wildfires.

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. **Table 5.3** presents definitions for these types of drought.

**TABLE 5.3 DROUGHT CLASSIFICATION DEFINITIONS**

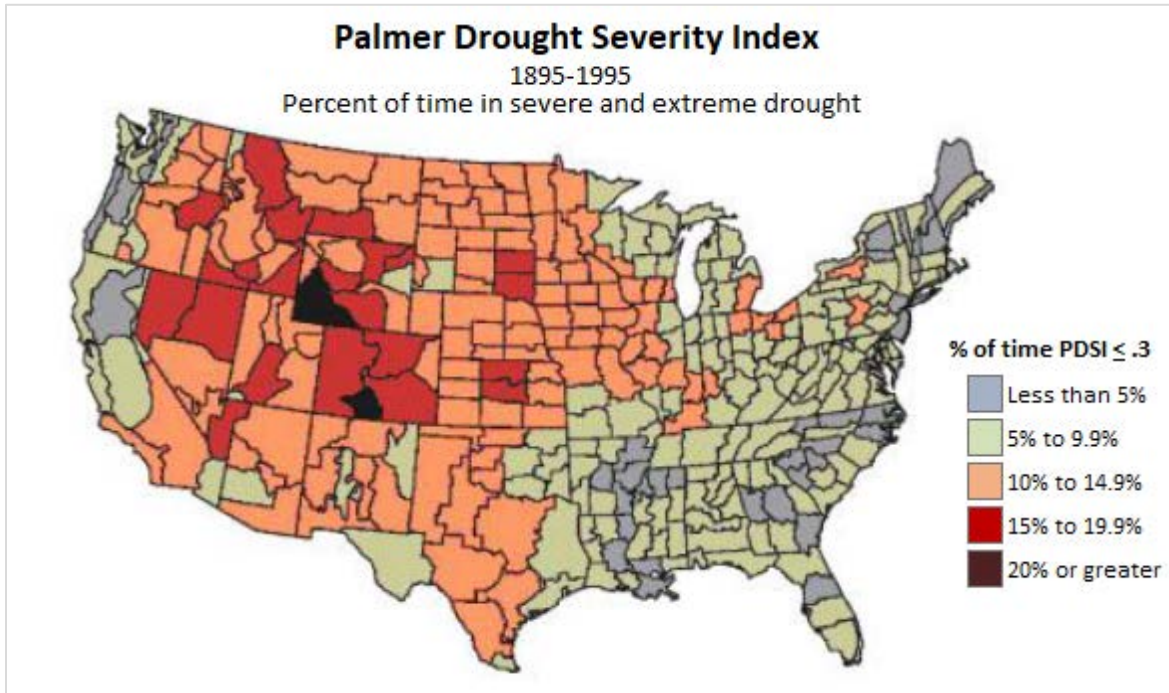
<b>Meteorological Drought</b>	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
<b>Hydrologic Drought</b>	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
<b>Agricultural Drought</b>	Soil moisture deficiencies relative to water demands of plant life, usually crops.
<b>Socioeconomic Drought</b>	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

*Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA*

Droughts are slow-onset hazards, but, over time, can have very damaging affects to crops, municipal water supplies, recreational uses, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impact can be significant.

The Palmer Drought Severity Index (PDSI) is based on observed drought conditions and range from -0.5 (incipient dry spell) to -4.0 (extreme drought). Evident in **Figure 5.2**, the Palmer Drought Severity Index Summary Map for the United States, drought affects most areas of the United States, but is less severe in the Eastern United States.

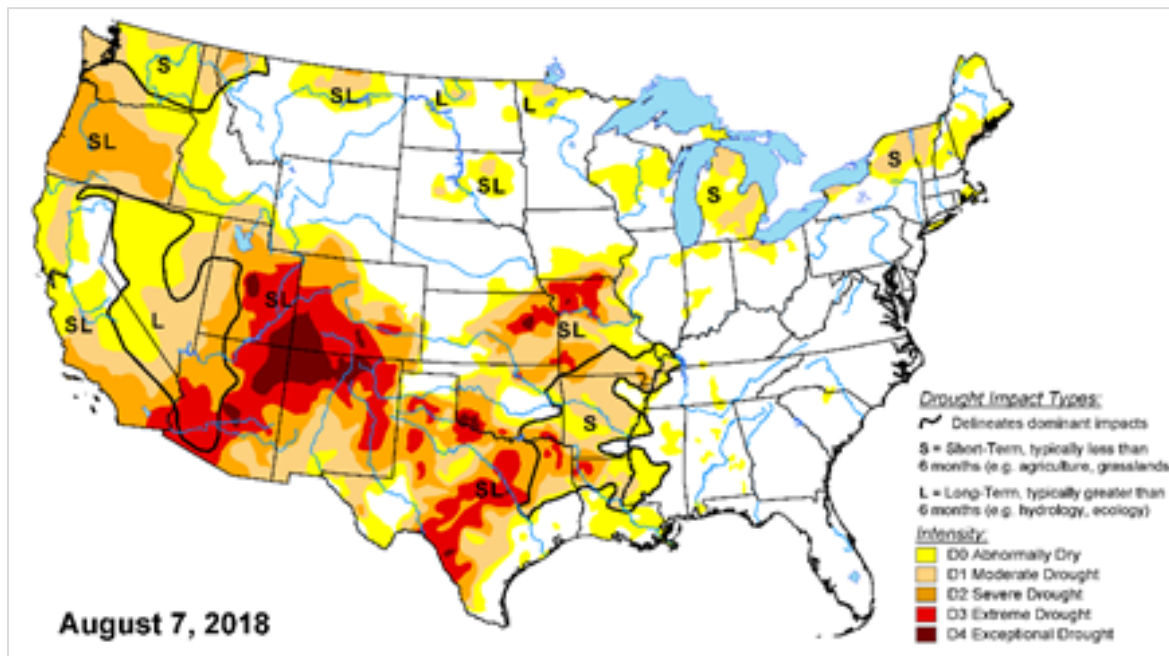
**FIGURE 5.2: PALMER DROUGHT SEVERITY INDEX SUMMARY MAP**



Source: National Drought Mitigation Center

The figure above is the most updated version of the Palmer Drought Severity Index; however, the US Drought Monitor is updated on a weekly basis. An archived map from the summer of 2018 can be seen below in **Figure 5.3** to reflect more current drought conditions in the US.

**FIGURE 5.3: US DROUGHT MONITOR**





### 5.3.2 Location and Spatial Extent

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. According to the Palmer Drought Severity Index (**Figure 5.2**), west-central North Carolina has a relatively low risk for drought hazard. However, local areas may experience much more severe and/or frequent drought events than what is represented on the Palmer Drought Severity Index map. Furthermore, it is assumed that the Northern Piedmont Region would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment.

### 5.3.3 Historical Occurrences

Data from the North Carolina Drought Management Advisory Council and National Centers for Environmental Information (NCEI) were used to ascertain historical drought events in the Northern Piedmont Region. The North Carolina Drought Management Advisory Council reports data on North Carolina drought conditions from 2000 to 2018 through the North Carolina Drought Monitor. It classifies drought conditions by county on a scale of D0 to D4:

Scale	Description	Impacts
D0	Abnormally Dry	<ul style="list-style-type: none"> <li>- Short-term dryness slowing planting, growth of crops</li> <li>- Some lingering water deficits</li> <li>- Pastures or crops not fully recovered</li> </ul>
D1	Moderate Drought	<ul style="list-style-type: none"> <li>- Some damage to crops, pastures</li> <li>- Some water shortages developing</li> <li>- Voluntary water-use restrictions requested</li> </ul>
D2	Severe Drought	<ul style="list-style-type: none"> <li>- Crop or pasture loss likely</li> <li>- Water shortages common</li> <li>- Water restrictions imposed</li> </ul>
D3	Extreme Drought	<ul style="list-style-type: none"> <li>- Major crop/pasture losses</li> <li>- Widespread water shortages or restrictions</li> </ul>
D4	Exceptional Drought	<ul style="list-style-type: none"> <li>- Exceptional and widespread crop/pasture losses</li> <li>- Shortages of water creating water emergencies</li> </ul>

According to the North Carolina Drought Monitor, all of the counties in the Northern Piedmont Region has had drought occurrences in each of the last twenty years (2000-2019) (**Table 5.4**). It should be noted that the North Carolina Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional, but a majority of the county may actually be in a less severe condition.

**TABLE 5.4: SUMMARY OF DROUGHT OCCURRENCES**

Location	Number Years with Drought Occurrences	Number Years with Exceptional Drought Occurrences
Caswell County	20	2
Davie County	19	2
Forsyth County	19	2
Rockingham County	20	1
Stokes County	19	1
Surry County	19	1

Location	Number Years with Drought Occurrences	Number Years with Exceptional Drought Occurrences
Yadkin County	19	2

Source: North Carolina Drought Monitor (through August 2019)

### 5.3.4 Probability of Future Occurrences

Based on historical occurrence information, it is assumed that all of the Northern Piedmont Region has a probability level of likely (10 to 100 percent annual probability) for future drought events. This hazard may vary slightly by location but each area has an equal probability of experiencing a drought. While reports indicate that there is a much lower probability for extreme, long-lasting drought conditions, NOAA also predicts that central North Carolina to have areas of persistent drought and further drought development<sup>1</sup>.

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<sup>1</sup> U.S. Seasonal Drought Outlook. National Weather Service Climate Prediction Center. [http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/sdo\\_summary.php](http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php)

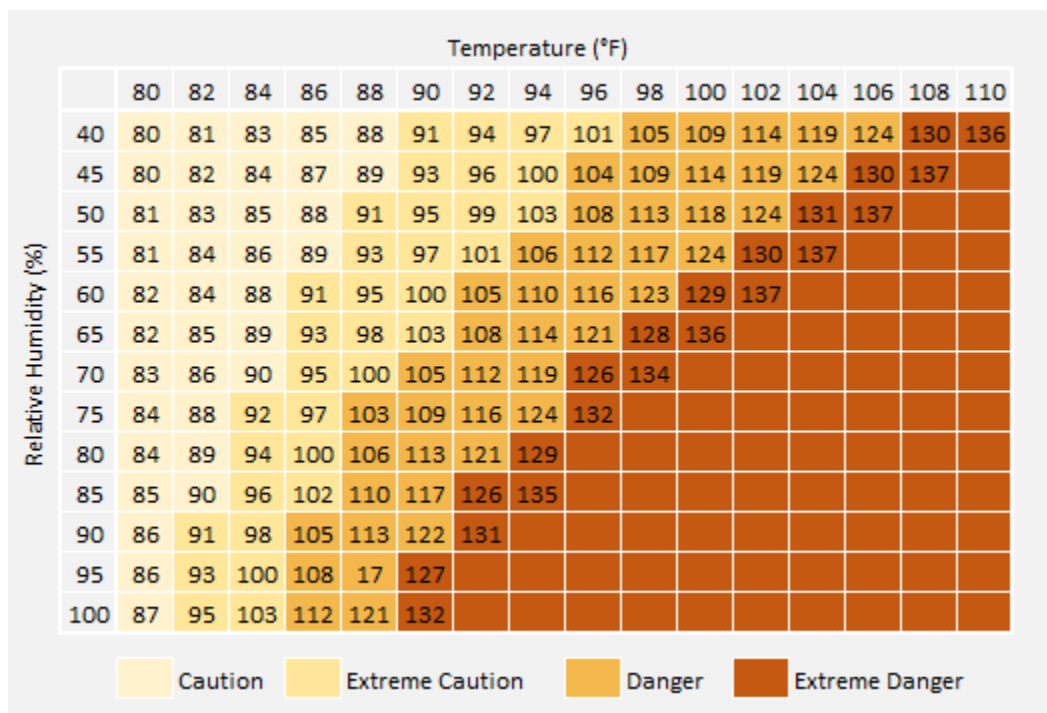
## 5.4 EXCESSIVE HEAT

### 5.4.1 Background and Description

Excessive heat, like drought, poses little risk to property. However, excessive heat can have devastating effects on health. Excessive heat can often be referred to as “extreme heat” or a “heat wave.” According to the National Weather Service, there is no universal definition for a heat wave, but the standard U.S. definition is any event lasting at least three days where temperatures reach ninety degrees Fahrenheit or higher. However, it may also be defined as an event at least three days long where temperatures are ten degrees greater than the normal temperature for the affected area. Heat waves are typically accompanied by humidity but may also be very dry. These conditions can pose serious health threats causing an average of 1,500 deaths each summer in the United States<sup>2</sup>.

According to the National Oceanic and Atmospheric Administration, heat is the number one weather-related killer among natural hazards, followed by frigid winter temperatures<sup>3</sup>. The National Weather Service devised the Heat Index as a mechanism to better inform the public of heat dangers. The Heat Index Chart, shown in **Figure 5.4**, uses air temperature and humidity to determine the heat index or apparent temperature. **Table 5.5** shows the dangers associated with different heat index temperatures. Some populations, such as the elderly and young, are more susceptible to heat danger than other segments of the population.

**FIGURE 5.4: NWS HEAT INDEX CHART**



Source: NOAA, National Weather Service

<sup>2</sup> <http://www.noaawatch.gov/themes/heat.php>

<sup>3</sup> <https://www.NCEI.noaa.gov/sotc/drought/201802#det-pdi>

**TABLE 5.5: HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE**

Heat Index Temperature (Fahrenheit)	Description of Risks
80° - 90°	Fatigue possible with prolonged exposure and/or physical activity
90° - 105°	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105° - 130°	Sunstroke, heat cramps, and heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity
130° or higher	Heatstroke or sunstroke is highly likely with continued exposure

Source: National Weather Service, NOAA

In addition, NOAA has seventeen metropolitan areas participating in the Heat Health Watch/Warning System in order to better inform and warn the public of heat dangers. A Heat Health Watch is issued when conditions are favorable for an excessive heat event in the next 12 to 48 hours. A Heat Warning is issued when an excessive heat event is expected in the next 36 hours. Furthermore, a warning is issued when the conditions are occurring, imminent, or have a high likelihood of occurrence. Urban areas participate in the Heat Health Watch/Warning System because urban areas are at greater risk to heat affects. Stagnant atmospheric conditions trap pollutants, thus adding unhealthy air to excessively hot temperatures. In addition, the “urban heat island effect” can produce significantly higher nighttime temperatures because asphalt and concrete (which store heat longer) gradually release heat at night.

## 5.4.2 Location and Spatial Extent

Excessive heat typically impacts a large area and cannot be confined to any geographic or political boundaries. The entire Northern Piedmont Region is susceptible to extreme heat conditions.

## 5.4.3 Historical Occurrences

Data from the National Centers for Environmental Information was used to determine historical excessive heat and heat wave events in the Northern Piedmont Region. Only four events were recorded (2 for Davie County and 1 each for Forsyth and Yadkin Counties).

In addition, information from the State Climate Office of North Carolina was reviewed to obtain historical temperatures in the region. Temperature information was reported since 1890. The recorded maximum for each county can be found below in **Table 5.6**.

**TABLE 5.6: HIGHEST RECORDED TEMPERATURE**

Location	Date	Temperature (°F)
Caswell County	7/8/1977	104
Davie County	8/10/2007	103
Forsyth County	6/26/1952	104
Rockingham County	7/14/1954	108
Stokes County	8/21/1983	103
Surry County	7/14/1954	105
Yadkin County	7/7/1977	105
<b>Northern Piedmont Regional Maximum</b>	--	108

*Source: State Climate Office of North Carolina*

The State Climate Office also reports average maximum temperatures in various locations in the region. The most centralized location is in Danbury (Stokes County). **Table 5.7** shows the average maximum temperatures from 1971 to 2000 at the Danbury observation station which can be used as a general comparison for the region.

**TABLE 5.7: AVERAGE MAXIMUM TEMPERATURE IN DANBURY, STOKES COUNTY**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Avg. Max (°F)	47.7	51.8	60.1	70.2	77.0	84.2	88.2	86.9	80.9	71.4	61.5	51.6

*Source: State Climate Office of North Carolina*

### **5.4.4 Probability of Future Occurrences**

Based on historical occurrence information, it is assumed that all of the Northern Piedmont Region has a probability level of possible (1 to 10 percent annual probability) for future extreme heat events to impact the region.

## 5.5 HURRICANE AND COASTAL HAZARDS

### 5.5.1 Background and Description

Hurricanes and coastal hazards are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a “safety-valve,” limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth, and the absence of wind shear in the lowest 50,000 feet of the atmosphere. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six.

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Scale (**Table 5.8**), which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.






**TABLE 5.8: SAFFIR-SIMPSON SCALE**

Category	Maximum Sustained Wind Speed (MPH)	Minimum Surface Pressure (Millibars)
1	74-95	Greater than 980
2	96-110	979-965
3	111-129	964-945
4	130-156	944-920
5	157 +	Less than 920

Source: National Hurricane Center (2018)

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds and barometric pressure, which are combined to estimate potential damage. Categories 3, 4, and 5 are classified as “major” hurricanes and, while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States. **Table 5.9** describes the damage that could be expected for each category of hurricane. Damage during hurricanes may also result from spawned tornadoes, storm surge, and inland flooding associated with heavy rainfall that usually accompanies these storms.

**TABLE 5.9: HURRICANE DAMAGE CLASSIFICATIONS**

Category	Damage Level	Description of Damages	Photo Example
1	MINIMAL	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage.	
2	MODERATE	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings.	
3	EXTENSIVE	Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.	
4	EXTREME	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.	
5	CATASTROPHIC	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required.	

Source: National Hurricane Center; Federal Emergency Management Agency

### 5.5.2 Location and Spatial Extent

Hurricanes, coastal hazards, and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect the Northern Piedmont Region. All areas in the Northern Piedmont Region are equally susceptible to hurricane and coastal hazards.

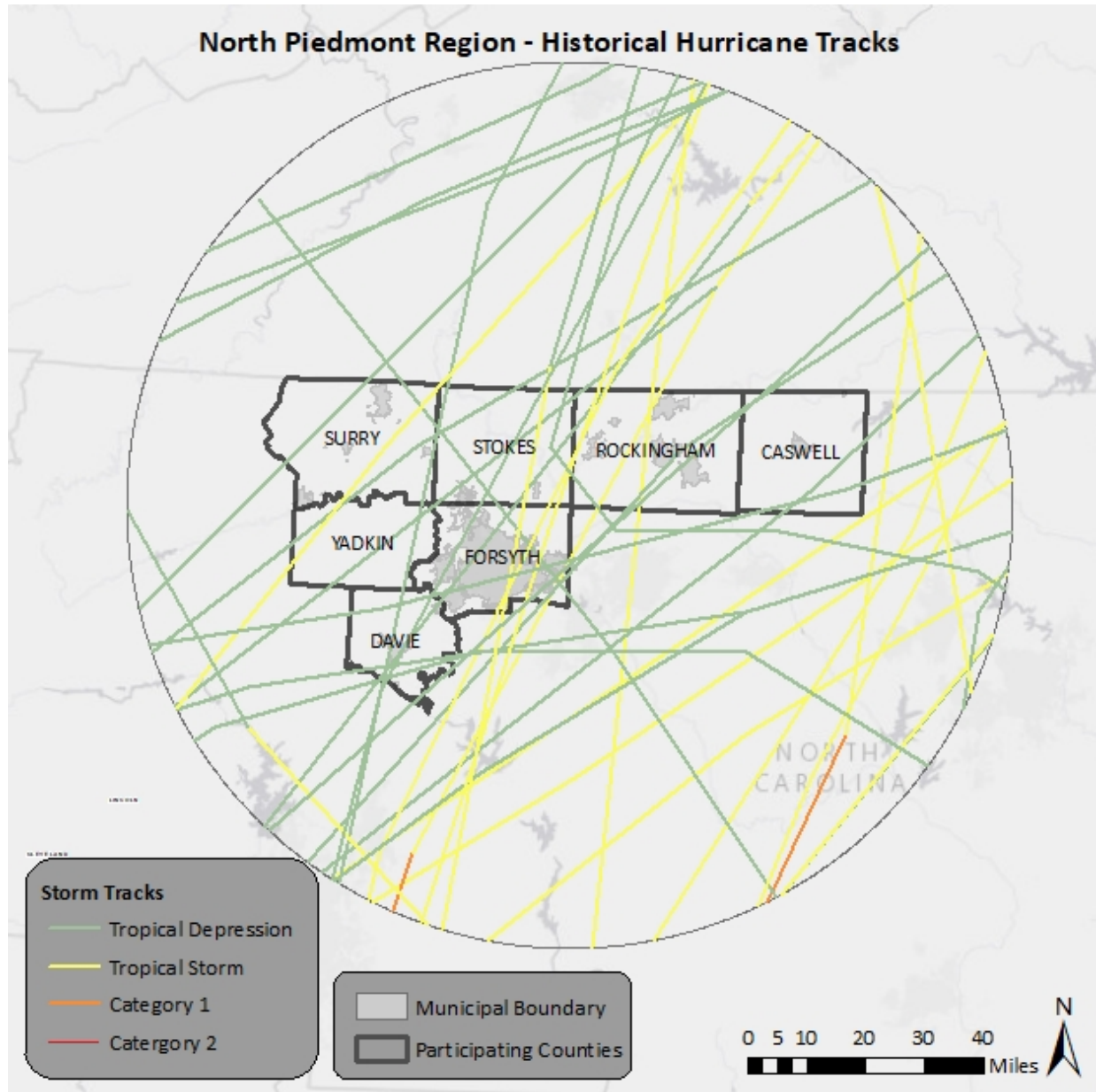
### 5.5.3 Historical Occurrences

According to the National Hurricane Center's historical storm track records, 29 hurricane or tropical storm tracks have passed within 75 miles of the Northern Piedmont Region since 1859<sup>4</sup>. This includes 11 tropical storms and 18 tropical depressions.

Of the recorded storm events, thirteen have traversed directly through the Northern Piedmont Region as shown in **Figure 5.5**. Furthermore, **Table 5.10** provides for each event the date of occurrence, name (if applicable), maximum wind speed (as recorded within 75 miles of the Northern Piedmont Region) and Category of the storm based on the Saffir-Simpson Scale.

<sup>4</sup> These storm track statistics do not include extra-tropical storms. Though these related hazard events are less severe in intensity, they may cause significant local impact in terms of rainfall and high winds.

**FIGURE 5.5: HISTORICAL HURRICANE STORM TRACKS WITHIN 75 MILES OF THE NORTHERN PIEDMONT REGION**



Source: National Oceanic and Atmospheric Administration; National Hurricane Center

**TABLE 5.10: HISTORICAL STORM TRACKS WITHIN 75 MILES OF THE NORTHERN PIEDMONT REGION (1850-2018)**

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
9/9/1854	NOT NAMED	44	Tropical Storm (TS)
9/17/1859	NOT NAMED	35	Tropical Storm (TS)
10/4/1877	NOT NAMED	44	Tropical Storm (TS)
1878	NOT NAMED	--	Tropical Depression (TD)
10/13/1885	NOT NAMED	35	Tropical Storm (TS)



**SECTION 5: HAZARD PROFILES**

Date of Occurrence	Storm Name	Maximum Wind Speed (knots)	Storm Category
6/22/1886	NOT NAMED	31	Tropical Depression (TD)
1886	NOT NAMED	--	Tropical Depression (TD)
10/20/1887	NOT NAMED	31	Tropical Depression (TD)
9/10/1888	NOT NAMED	31	Tropical Depression (TD)
9/24/1889	NOT NAMED	35	Tropical Storm (TS)
1891	NOT NAMED	35	Tropical Storm (TS)
10/4/1893	NOT NAMED	35	Tropical Storm (TS)
1896	NOT NAMED	--	Tropical Depression (TD)
7/13/1901	NOT NAMED	31	Tropical Depression (TD)
10/12/1902	NOT NAMED	31	Tropical Depression (TD)
9/17/1859	NOT NAMED	35	Tropical Storm
9/13/1878	NOT NAMED	44	Tropical Storm
10/13/1885	NOT NAMED	35	Tropical Storm
6/22/1886	NOT NAMED	31	Tropical Depression
9/10/1888	NOT NAMED	31	Tropical Depression
9/24/1889	NOT NAMED	35	Tropical Storm
8/29/1893	NOT NAMED	53	Tropical Storm
9/30/1896	NOT NAMED	62	Tropical Storm
10/12/1902	NOT NAMED	31	Tropical Depression
10/11/1905	NOT NAMED	22	Tropical Depression
8/31/1911	NOT NAMED	22	Tropical Depression
8/4/1915	NOT NAMED	35	Tropical Storm
9/23/1920	NOT NAMED	26	Tropical Depression
8/11/1928	NOT NAMED	26	Tropical Depression
8/15/1940	NOT NAMED	31	Tropical Depression
9/18/1945	NOT NAMED	31	Tropical Depression
8/31/1952	ABLE	35	Tropical Storm
8/18/1955	DIANE	53	Tropical Storm
8/31/1964	CLEO	22	Tropical Depression
6/9/1968	ABBY	22	Tropical Depression
9/16/1976	SUBTROP 3	18	Tropical Depression
9/5/1979	DAVID	35	Tropical Storm
7/25/1985	BOB	26	Tropical Depression
8/18/1985	DANNY	22	Tropical Depression
9/6/1996	FRAN	35	Tropical Storm
9/5/1999	DENNIS	26	Tropical Depression
7/3/2003	BILL	18	Tropical Depression
9/18/2003	ISABEL		Tropical Storm
9/18/2004	IVAN	18	Tropical Depression
7/8/2005	CINDY	18	Tropical Depression
8/27/2011	IRENE	44	Tropical Storm
9/02/2016	HERMINE		Tropical Storm
10/11/2018	MICHAEL	40	Tropical Storm

Source: National Hurricane Center, NCEI

The National Centers for Environmental Information reported four events associated with a hurricane or tropical storm in the Northern Piedmont Region between 1950 and 2018. These storms were all classified as hurricanes as they made landfall, but weakened to tropical storms by the time they reached the Northern Piedmont Region. The storms resulted in over \$800 thousand dollars of property damage within the region and numerous trees and power lines were reported down across the region. Federal records also indicate that six disaster declarations were made in 1989 (Hurricane Hugo), 1996 (Hurricane Fran), 1999 (Hurricane Floyd), 2004 (Hurricane Ivan), 2005 (Hurricane Katrina), and 2016 Hurricane Matthew for the region<sup>5</sup>.

Flooding is generally the greatest hazard of concern with hurricane and tropical storm events in the Northern Piedmont Region. However, winds can also be a concern in terms of damage to utilities, buildings, and trees. Some anecdotal information is available for the major storms that have impacted that area as found below:

**Hurricane Isabel – September 18, 2003**

As Hurricane Isabel weakened to a tropical storm, winds were sustained during the mid-afternoon and early evening at up to 45 to 55 mph with gusts near 65 mph. This produced widespread wind damage with numerous trees and power lines downed.

**Hurricane Irene – August 27, 2011**

The center of Irene made landfall along the Virginia coast but strong winds extended well west into the North Carolina Piedmont generating gusts to at least 40 mph and bringing down some trees and large tree branches. Danville ASOS (KDAN) just over the border from Caswell County had a wind gust to 44 mph around 12 pm.

**Tropical Storm Hermine – September 2, 2016**

Tropical Storm Hermine tracked along the Southeast United States coastline and across coastal portions of the Carolina's. Tropical Storm Hermine produced heavy rain across portions of central North Carolina. However, due to dry antecedent conditions, no flooding occurred despite rainfall amounts of up to 3 to 5 inches across southeastern portions of central North Carolina. Given the rain and gusty winds associated with Hermine there were numerous reports of trees down and wind damage and resultant power outages in Forsyth county.

**Tropical Storm Michael – October 10, 2018**

Tropical Storm Michael moved through North Carolina on Thursday, October 11th. Michael brought heavy rain and strong damaging winds to central North Carolina. While heavy rainfall of 3 to 6 inches produced minor flash flooding across the area, it was high wind gusts of 40 to 60 mph that caused the biggest problems, knocking down score of trees, leading to blocked roadways and thousands without power.

### **5.5.4 Probability of Future Occurrences**

Given the inland location of the region, it is more likely to be affected by remnants of hurricane and tropical storm systems (as opposed to a major hurricane) which may result in flooding or high winds. The probability of being impacted is less than coastal areas, but still remains a real threat to the Northern Piedmont Region due to induced events like flooding and landsliding. Based on historical evidence, the

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<sup>5</sup> Not all of the participating counties were declared disaster areas for these storms. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

probability level of future occurrence is possible (between 1 and 10 percent annual probability). Given the regional nature of the hazard, all areas are equally exposed to this hazard. However, when the region is impacted, the damage could be catastrophic, threatening lives and property throughout the planning area.

## 5.6 TORNADOES/THUNDERSTORMS

For the purposes of maintaining consistency with the State of North Carolina Hazard Mitigation Plan, this section will assess tornadoes and thunderstorms, which also include high winds, hailstorms and lightning.

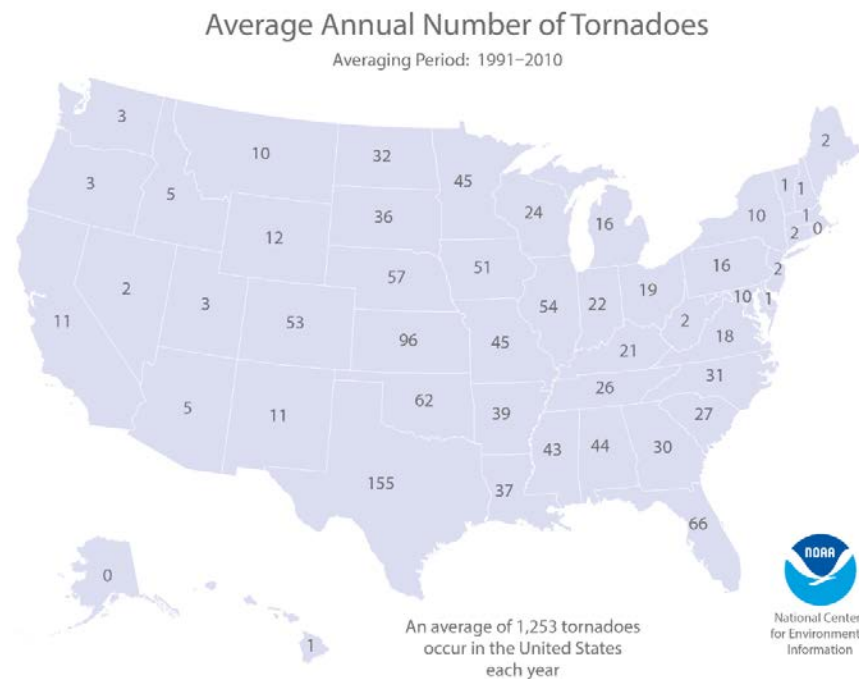
### 5.6.1 Background and Description

#### Tornadoes

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles.

Each year, an average of over 1,200 tornadoes is reported nationwide, resulting in an average of 56 deaths and 1,500 injuries<sup>6</sup>. According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas, and Florida respectively. Although the Great Plains region of the Central United States does favor the development of the largest and most dangerous tornadoes (earning the designation of “tornado alley”), Florida experiences the greatest number of tornadoes per square mile of all U.S. states (SPC, 2002). **Figure 5.6** shows tornado activity in the United States based on the number of recorded tornadoes per 10,000 square miles.

### FIGURE 5.6: TORNADO ACTIVITY IN THE UNITED STATES



<sup>6</sup> NOAA, 2013.

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long.

The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings (particularly mobile homes). Tornadic magnitude is reported according to the Fujita and Enhanced Fujita Scales. Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (**Table 5.11**). Tornado magnitudes that were determined in 2005 and later were determined using the Enhanced Fujita Scale (**Table 5.12**).

**TABLE 5.11: THE FUJITA SCALE (EFFECTIVE PRIOR TO 2005)**

F-Scale Number	Intensity Phrase	Wind Speed	Type of Damage Done
<b>F0</b>	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
<b>F1</b>	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
<b>F2</b>	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
<b>F3</b>	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
<b>F4</b>	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
<b>F5</b>	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.
<b>F6</b>	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: National Weather Service

**TABLE 5.12 THE ENHANCED FUJITA SCALE (EFFECTIVE 2005 AND LATER)**

EF-Scale Number	Intensity Phrase	3 Second Gust (MPH)	Type of Damage Done
0	Gale	65-85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
1	Moderate	86-110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
2	Significant	111-135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
3	Severe	136-165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
4	Devastating	166-200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
5	Incredible	Over 200	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.

Source: National Weather Service

**Thunderstorms**

Thunderstorms can produce a variety of accompanying hazards including wind, hailstorms, and lightning<sup>7</sup>, which are all discussed here. Although thunderstorms generally affect a small area, they are very dangerous and may cause substantial property damage.

Three conditions need to occur for a thunderstorm to form. First, it needs moisture to form clouds and rain. Second, it needs unstable air, such as warm air that can rise rapidly (this often referred to as the “engine” of the storm). Third, thunderstorms need lift, which comes in the form of cold or warm fronts, sea breezes, mountains, or the sun’s heat. When these conditions occur simultaneously, air masses of varying temperatures meet, and a thunderstorm is formed. These storm events can occur singularly, in lines, or in clusters. Furthermore, they can move through an area very quickly or linger for several hours.

According to the National Weather Service, more than 100,000 thunderstorms occur each year, though only about 10 percent of these storms are classified as “severe.” A severe thunderstorm occurs when the storm produces at least one of these three elements: 1) hail of three-quarters of an inch, 2) a tornado, or 3) winds of at least 58 miles per hour.

Thunderstorm events have the capability of producing straight-line winds that can cause severe destruction to communities and threaten the safety of a population. Such wind events, sometimes separate from a thunderstorm event, are common throughout the Northern Piedmont Region.

<sup>7</sup> Lightning and hail hazards are discussed as separate hazards in this section.

Therefore, high winds are also reported in this section.

High winds can form due to pressure of the Northeast coast that combines with strong pressure moving through the Ohio Valley. This creates a tight pressure gradient across the region, resulting in high winds which increase with elevation. It is common for gusts of 30 to 60 miles per hour during the winter months.

Downbursts are also possible with thunderstorm events. Such events are an excessive burst of wind in excess of 125 miles per hour. They are often confused with tornadoes. Downbursts are caused by down drafts from the base of a convective thunderstorm cloud. It occurs when rain-cooled air within the cloud becomes heavier than its surroundings. Thus, air rushes towards the ground in a destructive yet isolated manner. There are two types of downbursts. Downbursts less than 2.5 miles wide, duration less than 5 minutes, and winds up to 168 miles per hour are called “microbursts.” Larger events greater than 2.5 miles at the surface and longer than 5 minutes with winds up to 130 miles per hour are referred to as “macrobursts.”

**Hailstorms**

Hailstorms are a potentially damaging outgrowth of severe thunderstorms (thunderstorms are discussed separately in Section 5.8). Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until they develop to a sufficient weight and fall as precipitation. Hail typically takes the form of spheres or irregularly-shaped masses greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth’s surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size. **Table 5.13** shows the TORRO Hailstorm Intensity Scale which is a way of measuring hail severity.

**TABLE 5.13: TORRO HAILSTORM INTENSITY SCALE**

	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m <sup>2</sup>	mm to inch conversion (inches)	Typical Damage Impacts
<b>H0</b>	Hard Hail	5	0-20	0 – 0.2	No damage
<b>H1</b>	Potentially Damaging	5-15	>20	0.2 – 0.6	Slight general damage to plants, crops
<b>H2</b>	Significant	10-20	>100	0.4 – 0.8	Significant damage to fruit, crops, vegetation
<b>H3</b>	Severe	20-30	>300	0.8 – 1.2	Severe damage to crops, damage to glass and plastic structures, paint and wood scored
<b>H4</b>	Severe	25-40	>500	1.0 – 1.6	Widespread glass damage, vehicle bodywork damage
<b>H5</b>	Destructive	30-50	>800	1.2 – 2.0	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
<b>H6</b>	Destructive	40-60		1.6 – 2.4	Bodywork of grounded aircraft dented, brick walls pitted
<b>H7</b>	Destructive	50-75		2.0 – 3.0	Severe roof damage, risk of serious injuries
<b>H8</b>	Destructive	60-90		1.6 – 3.5	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
<b>H9</b>	Super Hailstorms	75-100		3.0 – 3.9	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m <sup>2</sup>	mm to inch conversion (inches)	Typical Damage Impacts
<b>H10</b>	Super Hailstorms	>100			Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: <http://www.torro.org.uk/site/hscale.php>

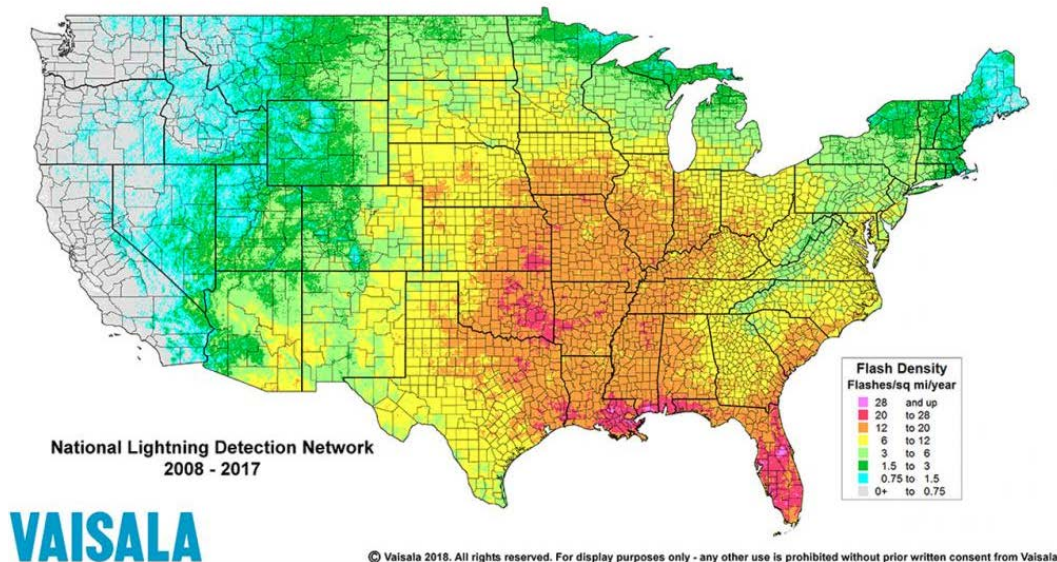
### Lightning

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a “bolt” when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes the thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall.

Lightning strikes occur in very small, localized areas. For example, they may strike a building, electrical transformer, or even a person. According to FEMA, lightning injures an average of 300 people and kills 80 people each year in the United States. Direct lightning strikes also have the ability to cause significant damage to buildings, critical facilities, and infrastructure largely by igniting a fire. Lightning is also responsible for igniting wildfires that can result in widespread damages to property.

Figure 5.7 shows a lightning flash density map for the years 2008-2017 based upon data provided by Vaisala’s U.S. National Lightning Detection Network (NLDN®).

**FIGURE 5.7: LIGHTNING FLASH DENSITY IN THE UNITED STATES**



Source: Vaisala U.S. National Lightning Detection Network



## 5.6.2 Location and Spatial Extent

### Tornadoes

Tornadoes occur throughout the state of North Carolina, and thus in the Northern Piedmont Region. Tornadoes typically impact a relatively small area, but damage may be extensive. Event locations are completely random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that the Northern Piedmont Region is uniformly exposed to this hazard.

### Thunderstorms

A thunderstorm/wind event is an atmospheric hazard, and thus has no geographic boundaries. It is typically a widespread event that can occur in all regions of the United States. However, thunderstorms are most common in the central and southern states because atmospheric conditions in those regions are favorable for generating these powerful storms. Also, the Northern Piedmont Region typically experiences several straight-line wind events each year. These wind events can and have caused significant damage. It is assumed that the Northern Piedmont Region has uniform exposure to a thunderstorm/wind event and the spatial extent of an impact could be large.

### Hailstorms

Hailstorms frequently accompany thunderstorms, so their locations and spatial extents coincide. It is assumed that the Northern Piedmont Region is uniformly exposed to severe thunderstorms; therefore, all areas of the region are equally exposed to hail which may be produced by such storms.

### Lightning

Lightning occurs randomly, therefore it is impossible to predict where and with what frequency it will strike. It is assumed that all of the Northern Piedmont Region is uniformly exposed to lightning.

## 5.6.3. Historical Occurrences

### Tornadoes

Tornadoes are a somewhat rare occurrence; however, they have and do occur in the Northern Piedmont Region. Tornadoes resulted in one disaster declaration in the Northern Piedmont Region in 1989<sup>8</sup>. According to the National Centers for Environmental Information, there have been a total of 46 recorded tornado events in the Northern Piedmont Region since 1950 (**Table 5.14**), resulting in over \$258 million (2019 dollars) in property damages<sup>9</sup>. In addition, 2 deaths and 115 injuries were reported. The magnitude of these tornadoes ranges from F0 to F4 in intensity, although an F5 event is possible. It is important to note that only tornadoes that have been reported are factored into this risk assessment. It is likely that a high number of occurrences have gone unreported over the past 69 years.

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<sup>8</sup> A complete listing of historical disaster declarations can be found in Section 4: *Hazard Profiles*.

<sup>9</sup> These tornado events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional tornadoes have occurred in the Northern Piedmont Region. As additional local data becomes available, this hazard profile will be amended.

TABLE 5.14: SUMMARY OF TORNADO OCCURRENCES

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
<b>Caswell County</b>	<b>7</b>	<b>0/3</b>	<b>\$5,423,540</b>
Milton	1	0/0	\$98,400
Yanceyville	1	0/0	\$3,140
Unincorporated Areas	5	0/3	\$5,322,000
<b>Davie County</b>	<b>7</b>	<b>0/1</b>	<b>\$402,050</b>
Bermuda Run	0	0/0	-
Cooleemee	1	0/0	-
Mocksville	1	0/0	\$17,850
Unincorporated Areas	5	0/1	\$384,200
<b>Forsyth County</b>	<b>16</b>	<b>0/58</b>	<b>\$151,861,580</b>
Bethania	0	0/0	-
Clemmons	2	0/5	\$78,500,000
Kernersville	0	0/0	-
Lewisville	1	0/0	-
Rural Hall	0	0/0	-
Tobaccoville	0	0/0	-
Walkertown	0	0/0	-
Winston-Salem	0	0/0	-
Unincorporated Area	13	0/53	\$73,361,580
<b>Rockingham County</b>	<b>10</b>	<b>2/34</b>	<b>\$61,984,900</b>
Eden	1	0/0	\$4,200,000
Madison	0	0/0	-
Mayodan	2	2/27	\$54,500,000
Reidsville	0	0/0	-
Stoneville	0	0/0	-
Wentworth	0	0/0	-
Unincorporated Area	7	0/7	\$4,284,900
<b>Stokes County</b>	<b>9</b>	<b>0/15</b>	<b>\$23,352,475</b>
Danbury	0	0/0	-
King	3	0/0	\$21,931,300
Walnut Cove	0	0/0	-
Unincorporated Area	6	0/0	\$1,421,175
<b>Surry County</b>	<b>7</b>	<b>0/3</b>	<b>\$4,389,650</b>
Dobson	0	0/0	-
Elkin	0	0/0	-
Mount Airy	1	0/0	\$231,000
Pilot Mountain	0	0/0	-
Unincorporated Area	6	0/3	\$4,158,650
<b>Yadkin County</b>	<b>9</b>	<b>0/1</b>	<b>\$11,259,750</b>
Boonville	0	0/0	-
East Bend	0	0/0	-
Jonesville	0	0/0	-

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
Yadkinville	2	0/0	-
Unincorporated Area	0	0/0	\$11,259,750
<b>Northern Piedmont Regional Total</b>	<b>46</b>	<b>2/115</b>	<b>\$258,673,945</b>

Source: National Centers for Environmental Information

### Thunderstorms

Severe storms have not resulted in any disaster declarations in the Northern Piedmont Region in and of themselves; however, several declared disaster events such as the tornadoes of 1989 were likely accompanied by severe storms<sup>10</sup>. According to NCEI, there have been 1,714 reported thunderstorm and high wind events since 1950 in the Northern Piedmont<sup>11</sup>. These events caused over \$13 million dollars (2019 dollars) in damages. There were reports of one death and fourteen injuries. **Table 5.15** summarizes this information.

**TABLE 5.15: SUMMARY OF THUNDERSTORM / HIGH WIND OCCURRENCES**

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
<b>Caswell County</b>	<b>197</b>	<b>0/0</b>	<b>\$1,790,044</b>
Milton	12	0/0	\$26,729
Yanceyville	23	0/0	\$233,190
Unincorporated Areas	162	0/0	\$1,530,125
<b>Davie County</b>	<b>121</b>	<b>0/0</b>	<b>\$215,190</b>
Bermuda Run	-	0/0	-
Cooleemee	7	0/0	-
Mocksville	39	0/0	\$77,990
Unincorporated Areas	75	0/0	\$137,200
<b>Forsyth County</b>	<b>254</b>	<b>1/3</b>	<b>\$1,132,000</b>
Bethania	4	0/0	\$565,300
Clemmons	15	0/1	\$38,200
Kernersville	17	0/0	\$20,215
Lewisville	31	0/0	\$60,775
Rural Hall	8	0/0	\$255
Tobaccoville	8	0/0	\$37,400
Walkertown	12	0/0	\$10,800
Winston-Salem	36	1/1	\$43,200
Unincorporated Area	123	1/3	\$355,855
<b>Rockingham County</b>	<b>360</b>	<b>0/0</b>	<b>\$3,874,037</b>
Eden	29	0/0	\$186,792
Madison	23	0/0	\$181,117

<sup>10</sup> Not all of the participating counties were declared disaster areas for these events. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Identification*.

<sup>11</sup> These thunderstorm events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional thunderstorm events have occurred in the Northern Piedmont Region. As additional local data becomes available, this hazard profile will be amended.

**SECTION 5: HAZARD PROFILES**

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
Mayodan	12	0/0	\$39,137
Reidsville	39	0/0	\$77,560
Stoneville	32	0/0	\$81,868
Wentworth	22	0/0	\$51,468
Unincorporated Area	203	0/0	\$3,246,065
<b>Stokes County</b>	<b>276</b>	<b>0/0</b>	<b>\$1,280,055</b>
Danbury	36	0/0	\$65,957
King	26	0/0	\$234,075
Walnut Cove	30	0/0	\$114,333
Unincorporated Area	210	0/0	\$865,690
<b>Surry County</b>	<b>342</b>	<b>0/11</b>	<b>\$3,133,938</b>
Dobson	36	0/0	\$88,334
Elkin	28	0/2	\$353,672
Mount Airy	6	0/0	\$297,946
Pilot Mountain	23	0/0	\$253,526
Unincorporated Area	249	0/9	\$2,140,460
<b>Yadkin County</b>	<b>164</b>	<b>0/0</b>	<b>\$1,678,162</b>
Boonville	8	0/0	\$38,334
East Bend	13	0/0	\$67,082
Jonesville	12	0/0	\$38,246
Yadkinville	33	0/0	\$316,365
Unincorporated Area	98	0/0	\$1,218,135
<b>Northern Piedmont Regional Total</b>	<b>1,714</b>	<b>1/14</b>	<b>\$13,103,426</b>

Source: National Centers for Environmental Information

**Hailstorms**

According to the National Centers for Environmental Information, 670 recorded hailstorm events have affected the Northern Piedmont Region since 1950<sup>12</sup>. **Table 5.16** is a summary of the hail events in the Northern Piedmont Region. In all, hail occurrences resulted in over \$1,182,000 (2019 dollars) in property damages, most of which were reported in Surry County. Hail ranged in diameter from 0.75 inches to 4.5 inches. It should be noted that hail is notorious for causing substantial damage to cars, roofs, and other areas of the built environment that may not be reported to the National Centers for Environmental Information. Furthermore, high losses in Surry County indicate that neighboring counties may also be subject to additional, unreported losses. Therefore, it is likely that damages are greater than the reported value. Additionally, a single storm event may have affected multiple counties.

<sup>12</sup> These hail events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional hail events have affected the Northern Piedmont Region. In addition to NCEI, the North Carolina Department of Insurance office was contacted for information. As additional local data becomes available, this hazard profile will be amended.

TABLE 5.16: SUMMARY OF HAIL OCCURRENCES

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
<b>Caswell County</b>	<b>70</b>	<b>0/0</b>	<b>\$9,090</b>
Milton	4	0/0	-
Yanceyville	13	0/0	-
Unincorporated Areas	53	0/0	\$9,090
<b>Davie County</b>	<b>71</b>	<b>0/0</b>	<b>\$0</b>
Bermuda Run	-	0/0	-
Cooleemee	5	0/0	-
Mocksville	30	0/0	-
Unincorporated Areas	36	0/0	-
<b>Forsyth County</b>	<b>100</b>	<b>0/0</b>	<b>\$0</b>
Bethania	-	0/0	-
Clemmons	9	0/0	-
Kernersville	9	0/0	-
Lewisville	9	0/0	-
Rural Hall	5	0/0	-
Tobaccoville	2	0/0	-
Walkertown	4	0/0	-
Winston-Salem	24	0/0	-
Unincorporated Area	38	0/0	-
<b>Rockingham County</b>	<b>149</b>	<b>0/0</b>	<b>\$230,300</b>
Eden	22	0/0	\$89,000
Madison	11	0/0	-
Mayodan	6	0/0	-
Reidsville	26	0/0	\$117,750
Stoneville	6	0/0	-
Wentworth	7	0/0	\$23,550
Unincorporated Area	71	0/0	-
<b>Stokes County</b>	<b>87</b>	<b>0/0</b>	<b>\$5,580</b>
Danbury	12	0/0	\$3,100
King	10	0/0	-
Walnut Cove	9	0/0	\$2,480
Unincorporated Area	56	0/0	\$0
<b>Surry County</b>	<b>129</b>	<b>0/0</b>	<b>\$767,230</b>
Dobson	11	0/0	-
Elkin	8	0/0	-
Mount Airy	1	0/0	\$50,400
Pilot Mountain	9	0/0	-
Unincorporated Area	100	0/0	\$716,830
<b>Yadkin County</b>	<b>64</b>	<b>0/0</b>	<b>\$170,610</b>
Boonville	8	0/0	-
East Bend	10	0/0	\$3,720
Jonesville	2	0/0	-

**SECTION 5: HAZARD PROFILES**

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
Yadkinville	10	0/0	-
Unincorporated Area	34	0/0	<b>\$166,890</b>
<b>Northern Piedmont Regional Total</b>	<b>670</b>	<b>0/0</b>	<b>\$1,182,810</b>

Source: National Centers for Environmental Information

**Lightning**

According to the National Centers for Environmental Information, there have been a total of 43 recorded lightning events in the Northern Piedmont Region since 1994<sup>13</sup>. These events resulted in over \$6 million (2019 dollars) in damages, as listed in summary **Table 5.17**. Furthermore, lightning caused ten injuries throughout the Northern Piedmont Region.

It is certain that more than 43 events have impacted the Region. Many of the reported events are those that caused damage. Therefore, it should be expected that damages are likely much higher for this hazard than what is reported.

**TABLE 5.17: SUMMARY OF LIGHTNING OCCURRENCES**

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
<b>Caswell County</b>	<b>4</b>	<b>0/0</b>	<b>\$209,020</b>
Milton	0	0/0	-
Yanceyville	0	0/0	-
Unincorporated Areas	4	0/0	\$209,020
<b>Davie County</b>	<b>2</b>	<b>0/1</b>	<b>\$98,400</b>
Bermuda Run	0	0/0	-
Cooleemee	0	0/0	-
Mocksville	2	0/1	\$98,400
Unincorporated Areas	0	0/0	-
<b>Forsyth County</b>	<b>3</b>	<b>0/0</b>	<b>\$284,600</b>
Bethania	0	0/0	-
Clemmons	0	0/0	-
Kernersville	2	0/0	\$229,000
Lewisville	1	0/0	\$55,600
Rural Hall	0	0/0	-
Tobaccoville	0	0/0	-
Walkertown	0	0/0	-
Winston-Salem	0	0/0	-
Unincorporated Area	0	0/0	-
<b>Rockingham County</b>	<b>10</b>	<b>0/5</b>	<b>\$4,039,740</b>
Eden	3	0/0	\$3,248,000

<sup>13</sup> These lightning events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is certain that additional lightning events have occurred in the Northern Piedmont Region. The State Fire Marshall’s office was also contacted for additional information but none could be provided. As additional local data becomes available, this hazard profile will be amended.

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
Madison	1	0/0	\$800
Mayodan	0	0/0	-
Reidsville	0	0/0	-
Stoneville	2	0/0	\$8,740
Wentworth	2	0/5	\$699,000
Unincorporated Area	2	0/0	\$83,200
<b>Stokes County</b>	<b>5</b>	<b>0/1</b>	<b>\$102,540</b>
Danbury	1	0/0	\$0
King	1	0/0	\$540
Walnut Cove	1	0/0	\$25,000
Unincorporated Area	2	0/1	\$77,000
<b>Surry County</b>	<b>14</b>	<b>0/3</b>	<b>\$1,146,173</b>
Dobson	0	0/0	-
Elkin	0	0/0	-
Mount Airy	5	0/1	\$781,180
Pilot Mountain	1	0/0	\$12,700
Unincorporated Area	8	0/2	\$352,293
<b>Yadkin County</b>	<b>5</b>	<b>0/0</b>	<b>\$173,140</b>
Boonville	3	0/0	\$34,340
East Bend	0	0/0	-
Jonesville	1	0/0	\$30,800
Yadkinville	0	0/0	-
Unincorporated Area	1	0/0	\$108,000
<b>Northern Piedmont Regional Total</b>	<b>43</b>	<b>0/10</b>	<b>\$6,053,613</b>

Source: National Centers for Environmental Information

## 5.6.4 Probability of Future Occurrences

### Tornadoes

According to historical information, tornado events are not an annual occurrence for the region. However, in recent years, the southeastern United States, including North Carolina, has experienced a number of tornado events. While the majority of the reported tornado events are small in terms of size, intensity, and duration, they do pose a significant threat should the Northern Piedmont Region experience a direct tornado strike. The probability of future tornado occurrences affecting the Northern Piedmont Region is likely (10 to 100 percent annual probability).

### Thunderstorms

Given the high number of previous events, it is certain that wind events, including straight-line wind and thunderstorm wind, will occur in the future. This results in a probability level of highly likely (100 percent annual probability) for future wind events for the entire planning area.

### Hailstorms

Based on historical occurrence information, it is assumed that the probability of future hail occurrences is likely (10 to 100 percent annual probability). Since hail is an atmospheric hazard (coinciding with thunderstorms), it is assumed that the entire Northern Piedmont Region has equal exposure to this

hazard. It can be expected that future hail events will continue to cause minor damage to property and vehicles throughout the region.

**Lightning**

Since there were a moderate number of historical lightning events reported throughout the Northern Piedmont Region via NCEI data, it is considered a fairly regular occurrence that often accompanies thunderstorms. In fact, lightning events will assuredly happen on an annual basis, though not all events will cause damage. According to Vaisala’s U.S. National Lightning Detection Network (NLDN), the Northern Piedmont Region is located in an area of the country that experienced an average of 4 to 5 lightning flashes per square kilometer per year between 2010 and 2018. Therefore, the probability of future events is highly likely (100 percent annual probability). It can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the region.



## 5.7 SEVERE WINTER WEATHER

### 5.7.1 Background and Description

A winter storm can range from a moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Events may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Occasionally, heavy snow might also cause significant property damages, such as roof collapses on older buildings.

All winter storm events have the potential to present dangerous conditions to the affected area. Larger snowfalls pose a greater risk, reducing visibility due to blowing snow and making driving conditions treacherous. A heavy snow event is defined by the National Weather Service as an accumulation of 4 or more inches in 12 hours or less. A blizzard is the most severe form of winter storm. It combines low temperatures, heavy snow, and winds of 35 miles per hour or more, which reduces visibility to a quarter mile or less for at least 3 hours. Winter storms are often accompanied by sleet, freezing rain, or an ice storm. Such freeze events are particularly hazardous as they create treacherous surfaces.

Ice storms are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold, stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case, the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Freezing rain, conversely, usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces. All of the winter storm elements – snow, low temperatures, sleet, ice, etcetera – have the potential to cause significant hazard to a community. Even small accumulations can down power lines and trees limbs and create hazardous driving conditions. Furthermore, communication and power may be disrupted for days.

### 5.7.2 Location and Spatial Extent

Nearly the entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. The Northern Piedmont Region is accustomed to severe winter weather conditions and often receives winter weather during the winter months. Given the atmospheric nature of the hazard, the entire region has uniform exposure to a winter storm.

### 5.7.3 Historical Occurrences

Winter weather has resulted in six disaster declarations in the Northern Piedmont Region. This includes the Blizzard of 1996, one subsequent 1996 winter storm, the 2000 winter storm, 2002 & 2003 ice storms, and a severe winter storm in 2014<sup>14</sup>. According to the National Centers for Environmental Information,

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<sup>14</sup> All of the participating counties were declared disaster areas for these events. A complete listing of historical disaster declarations, including the affected counties, can be found in Section 4: *Hazard Profiles*.

there have been a total of 136 recorded winter storm events in the Northern Piedmont Region since 1993 (Table 5.18)<sup>15</sup>. These events resulted in over \$767,000 (2019 dollars) in damages.

**TABLE 5.18: SUMMARY OF WINTER STORM EVENTS**

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
Caswell County	17	0/0	\$0
Davie County	10	0/0	\$0
Forsyth County	39	0/0	\$59,000
Rockingham County	19	0/0	\$236,000
Stokes County	19	0/0	\$236,000
Surry County	17	0/0	\$236,000
Yadkin County	15	0/0	\$0
<b>Northern Piedmont Regional Total</b>	<b>136</b>	<b>0/0</b>	<b>\$767,000</b>

Source: National Centers for Environmental Information

There have been several severe winter weather events in the Northern Piedmont Region. The text below describes three of the major events and associated impacts on the Region. Similar impacts can be expected with severe winter weather.

#### 1996 Winter Storm

Heavy snow developed across northwest North Carolina during the late evening hours on the 11th and spread eastward. The snow mixed with sleet and freezing rain in Rockingham and Caswell Counties. Snow accumulations were generally from 4 to 6 inches in the mountains, around 4 inches in Surry, Stokes, and Yadkin Counties and from 1 to 4 inches in Rockingham, Davie, and Caswell Counties. Hazardous road conditions resulted in numerous traffic accidents and at least one known building collapse.

#### 2002 Ice Storm – December 4-5, 2002

An ice storm produced up to an inch of freezing rain in central North Carolina impacting 40 counties. A total of 24 people were killed, and as many as 1.8 million people were left without electricity. Additionally, property damage was estimated at almost \$100 million. New records were also set for traffic accidents and school closing durations. The scale of destruction was comparable to that of hurricanes that have impacted the state, such as Hurricane Fran in 1996. The storm cost the state \$97.2 million in response and recovery.

#### 2018 Winter Storm

This storm developed shortly after midnight on December 9, 2018 and continued into the afternoon. Snowfall was moderate to heavy and both sleet and rain were incorporated. The heavy snow caused numerous vehicle accidents and downed trees that fell on to roads and power lines, and it also caused one indirect fatality in Yadkin County. Average snowfall accumulations ranged from ten to twenty inches over the Northern Piedmont Region.

<sup>15</sup> These ice and winter storm events are only inclusive of those reported by the National Centers for Environmental Information (NCEI). It is likely that additional winter storm conditions have affected the Northern Piedmont Region. In addition, the 136 are reported by county, so many of these storms likely affected all of the counties.

Winter storms throughout the planning area have several negative externalities including hypothermia for those individuals having to remain outdoors for a certain length of time and likely increased impact for the need of medical services, cost of snow and debris cleanup, business and government service interruption, traffic accidents, and power outages. Furthermore, citizens may resort to using inappropriate heating devices that could lead to fire or an accumulation of toxic fumes.

#### **5.7.4 Probability of Future Occurrences**

Winter storm events will remain a regular occurrence in the Northern Piedmont Region due to its location in the western part of the state. According to historical information the Northern Piedmont Region often experiences several winter storm events each year. Therefore, the annual probability is likely (10 to 100 percent).

## 5.8 EARTHQUAKES

### 5.8.1 Background and Description

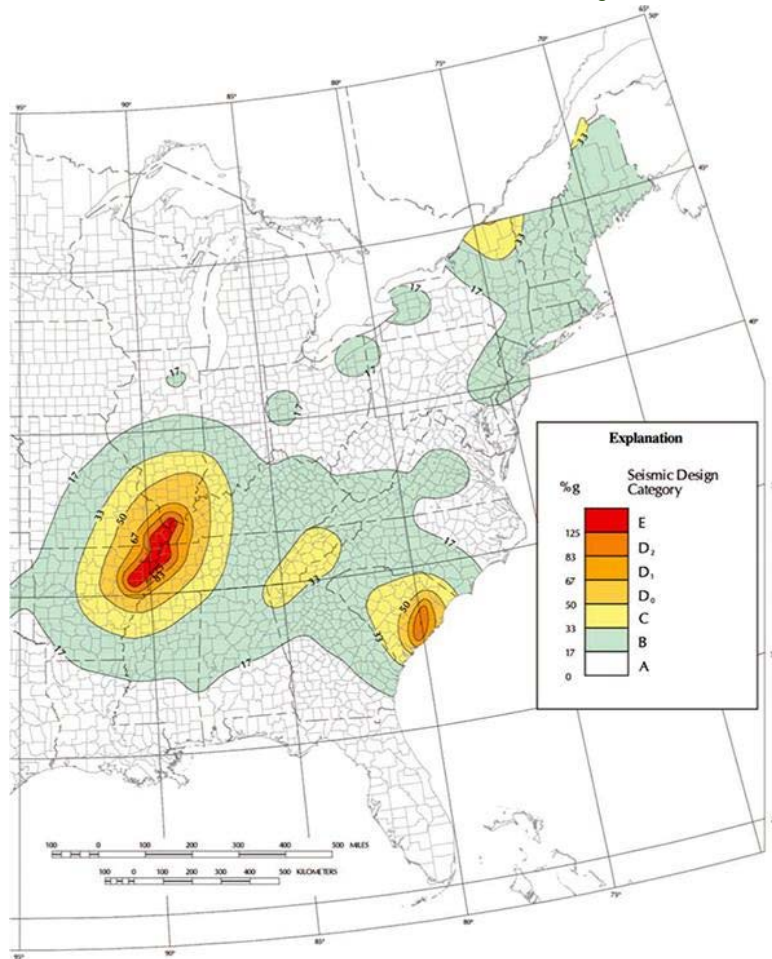
An earthquake is movement or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area.

Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site, and regional geology. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (mountain regions and along hillsides), and liquefaction, in which ground soil loses the ability to resist shear and flows much like quick sand. In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture, or collapse.

Most earthquakes are caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake.

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines located in the central and western states; however, the Eastern United State does face moderate risk to less frequent, less intense earthquake events. **Figure 5.8** shows relative seismic risk for the United States.

FIGURE 5.8: EASTERN UNITED STATES EARTHQUAKE HAZARD MAP



Source: United States Geological Survey

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude (**Table 5.19**). Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude, or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using roman numerals, ranging from “I” corresponding to imperceptible (instrumental) events to “XII” for catastrophic (total destruction). A detailed description of the Modified Mercalli Intensity Scale of earthquake intensity and its correspondence to the Richter Scale is given in **Table 5.20**.

**TABLE 5.19: RICHTER SCALE**

Richter Magnitudes	Earthquake Effects
< 3.5	Generally not felt, but recorded.
3.5 – 5.3	Often felt, but rarely causes damage.
5.4 – 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 – 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: Federal Emergency Management Agency

**TABLE 5.20: MODIFIED MERCALLI INTENSITY SCALE FOR EARTHQUAKES**

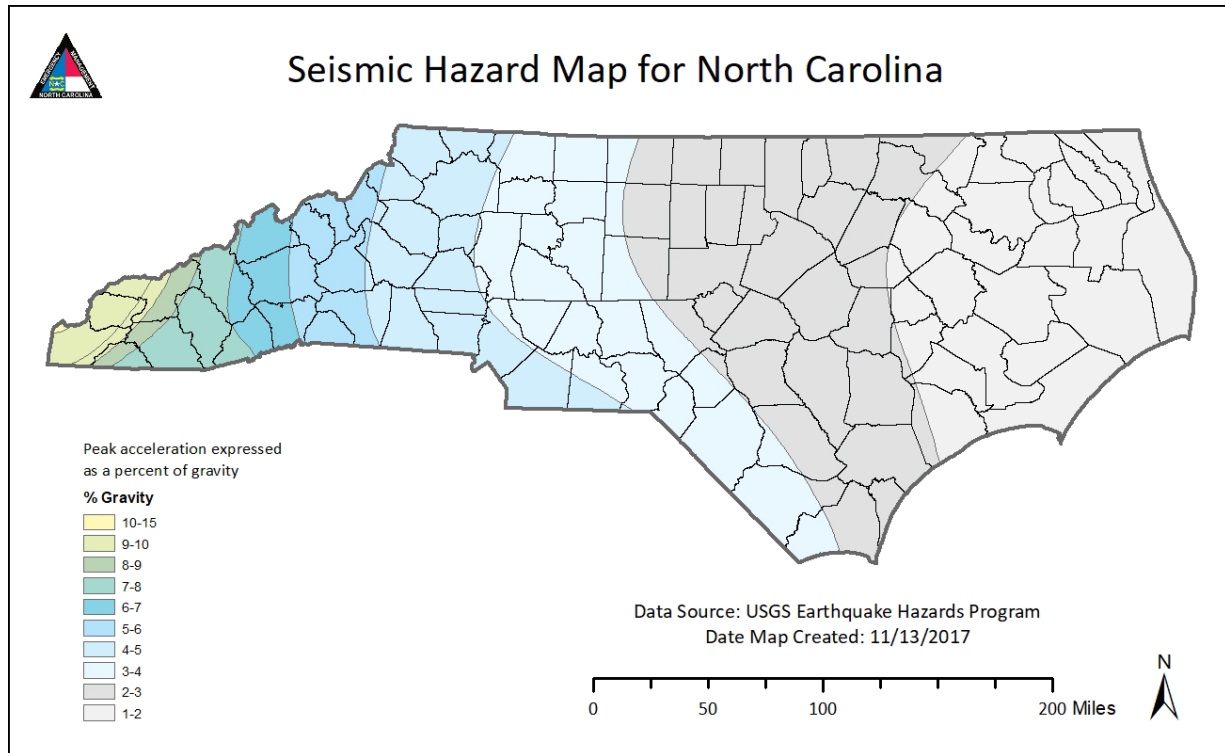
Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I	Not felt	Not felt except by a very few under especially favorable conditions.	
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.	< 4.2
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	< 4.8
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	< 5.4
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	< 6.1
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	< 6.9
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	< 7.3
I	Not felt	Not felt except by a very few under especially favorable conditions.	< 8.1
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.	> 8.1

Source: Federal Emergency Management Agency

## 5.8.2 Location and Spatial Extent

Approximately two-thirds of North Carolina is subject to earthquakes, with the western and southeast region most vulnerable to a very damaging earthquake. The state is affected by both the Charleston Fault in South Carolina and New Madrid Fault in Tennessee. Both of these faults have generated earthquakes measuring greater than 8 on the Richter Scale during the last 200 years. In addition, there are several smaller fault lines throughout North Carolina. **Figure 5.9** is a map showing geological and seismic information for North Carolina.

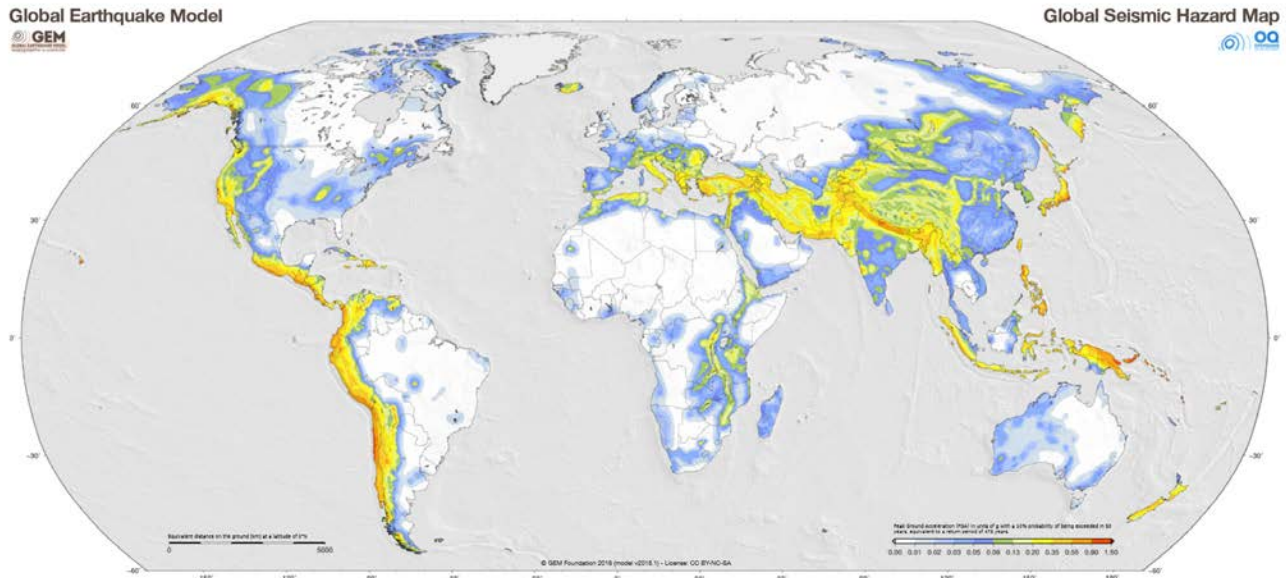
**FIGURE 5.9: GEOLOGICAL AND SEISMIC INFORMATION FOR NORTH CAROLINA**



Source: North Carolina Geological Survey

**Figure 5.10** shows the intensity level associated with the world and the Northern Piedmont Region, based on the national USGS and Global Earthquake Model (GEM). The Global Earthquake Model Global Seismic Hazard Map depicts the geographic distribution of the Peak Ground Acceleration (PGA) with a 10% probability of being exceeded in 50 years. The data represents the probability that the ground motion will reach a certain level during an earthquake. The map was created by collating maps computed using national and regional probabilistic seismic hazard models developed by various institutions and projects, and by GEM Foundation scientists. This indicates that the region as a whole exists within an area of low to moderate seismic risk.

**FIGURE 5.10: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



Source: Global Earthquake Model, 2018

### 5.8.3 Historical Occurrences

At least 48 earthquakes are known to have affected the Northern Piedmont Region since 1886. The strongest of these measured a VI on the Modified Mercalli Intensity (MMI) scale. **Table 5.21** provides a summary of earthquake events reported by the National Geophysical Data Center between 1638 and 2018.

**TABLE 5.21: SUMMARY OF SEISMIC ACTIVITY**

Location	Number of Occurrences	Greatest MMI Reported	Richter Scale Equivalent
<b>Caswell County</b>	2	V	< 4.8
Milton	1	III	< 4.8
Yanceyville	0	--	--
Unincorporated Areas	1	V	< 4.8
<b>Davie County</b>	1	V	< 4.8
Bermuda Run	0	--	--
Cooleemee	0	--	--
Mocksville	0	--	--
Unincorporated Areas	1	V	< 4.8
<b>Forsyth County</b>	10	V	< 4.8
Bethania	0	--	--
Clemmons	1	III	< 4.8
Kernersville	0	--	--
Lewisville	1	IV	< 4.8
Rural Hall	1	V	< 4.8
Tobaccoville	0	--	--
Walkertown	0	--	--



**SECTION 5: HAZARD PROFILES**

Location	Number of Occurrences	Greatest MMI Reported	Richter Scale Equivalent
Winston-Salem	7	IV	< 4.8
Unincorporated Area	0	--	--
<b>Rockingham County</b>	<b>3</b>	<b>V</b>	<b>&lt; 4.8</b>
Eden	1	V	< 4.8
Madison	1	IV	< 4.8
Mayodan	0	--	--
Reidsville	1	IV	< 4.8
Stoneville	0	--	--
Wentworth	0	--	--
Unincorporated Area	0	--	--
<b>Stokes County</b>	<b>3</b>	<b>IV</b>	<b>&lt; 4.8</b>
Danbury	1	IV	< 4.8
King	0	--	--
Walnut Cove	1	III	< 4.8
Unincorporated Area	1	III	< 4.8
<b>Surry County</b>	<b>22</b>	<b>VI</b>	<b>&lt; 5.4</b>
Dobson	2	V	< 4.8
Elkin	3	IV	< 4.8
Mount Airy	3	VI	< 5.4
Pilot Mountain	3	V	< 4.8
Unincorporated Area	11	VI	< 4.8
<b>Yadkin County</b>	<b>8</b>	<b>V</b>	<b>&lt; 4.8</b>
Boonville	2	IV	< 4.8
East Bend	1	V	< 4.8
Jonesville	2	IV	< 4.8
Yadkinville	1	--	--
Unincorporated Area	1	V	< 4.8
<b>Northern Piedmont Regional Total</b>	<b>48</b>	<b>VI</b>	<b>&lt; 5.4</b>

In addition to those earthquakes specifically affecting the Northern Piedmont Region, a list of earthquakes that have caused damage throughout North Carolina is presented below in **Table 5.22**.

**TABLE 5.22: EARTHQUAKES WHICH HAVE CAUSED DAMAGE IN NORTH CAROLINA**

Date	Location	Richter Scale (Magnitude)	MMI (Intensity)	MMI in North Carolina
12/16/1811 - 1	NE Arkansas	8.5	XI	VI
12/16/1811 - 2	NE Arkansas	8.0	X	VI
12/18/1811 - 3	NE Arkansas	8.0	X	VI
01/23/1812	New Madrid, MO	8.4	XI	VI
02/07/1812	New Madrid, MO	8.7	XII	VI
04/29/1852	Wytheville, VA	5.0	VI	VI
08/31/1861	Wilkesboro, NC	5.1	VII	VII
12/23/1875	Central Virginia	5.0	VII	VI
08/31/1886	Charleston, SC	7.3	X	VII
05/31/1897	Giles County, VA	5.8	VIII	VI
01/01/1913*	Union County, SC	4.8	VII	VI
02/21/1916*	Asheville, NC	5.5	VII	VII

## SECTION 5: HAZARD PROFILES

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07/08/1926	Mitchell County, NC	5.2	VII	VII
11/03/1928*	Newport, TN	4.5	VI	VI
05/13/1957*	McDowell County, NC	4.1	VI	VI
07/02/1957	Buncombe County, NC	3.7	VI	VI
11/24/1957	Jackson County, NC	4.0	VI	VI
10/27/1959**	Chesterfield, SC	4.0	VI	VI
07/13/1971	Newry, SC	3.8	VI	VI
11/30/1973*	Alcoa, TN	4.6	VI	VI
11/13/1976	Southwest Virginia	4.1	VI	VI
05/05/1981	Henderson County, NC	3.5	VI	VI

*Source: This information compiled by Dr. Kenneth B. Taylor and provided by Tiawana Ramsey of NCEM. Information was compiled from the National Earthquake Center, Earthquakes of the US by Carl von Hake (1983), and a compilation of newspaper reports in the Eastern Tennessee Seismic Zone compiled by Arch Johnston, CERI, Memphis State University (1983).*

### 5.8.4 Probability of Future Occurrences

The probability of significant, damaging earthquake events affecting the Northern Piedmont Region is unlikely. However, it is possible that future earthquakes resulting in light to moderate perceived shaking and damages ranging from none to very light will affect the region. The annual probability level for the region is estimated between 1 and 10 percent (possible). The USGS also uses historical data to predict the probability of a major earthquake within the next 50 years by county. Those results follow: Caswell County – 0.37%, Davie County – 0.64%, Forsyth County – 0.61%, Rockingham County - 0.51%, Stokes County – 0.85%, Surry County – 1.40%, Yadkin County – 0.91%.

## 5.9 GEOLOGICAL HAZARDS

### 5.9.1 Background and Description

For the purposes of maintaining consistency with the State of North Carolina Hazard Mitigation Plan, this section will assess geological hazards which include landslides, sinkholes, and erosion.

#### Landslides

A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation, which is driven by gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, volcanic eruptions, and changes in groundwater levels.

There are several types of landslides: rock falls, rock topple, slides, and flows. Rock falls are rapid movements of bedrock, which result in bouncing or rolling. A topple is a section or block of rock that rotates or tilts before falling to the slope below. Slides are movements of soil or rock along a distinct surface of rupture, which separates the slide material from the more stable underlying material.

Mudflows, sometimes referred to as mudslides, mudflows, lahars or debris avalanches, are fast-moving rivers of rock, earth, and other debris saturated with water. They develop when water rapidly accumulates in the ground, such as heavy rainfall or rapid snowmelt, changing the soil into a flowing river of mud or “slurry.” Slurry can flow rapidly down slopes or through channels and can strike with little or no warning at avalanche speeds. Slurry can travel several miles from its source, growing in size as it picks up trees, cars, and other materials along the way. As the flows reach flatter ground, the mudflow spreads over a broad area where it can accumulate in thick deposits. Landslides are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompanies these events. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides. Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly.

Among the most destructive types of debris flows are those that accompany volcanic eruptions. A spectacular example in the United States was a massive debris flow resulting from the 1980 eruptions of Mount St. Helens, Washington. Areas near the bases of many volcanoes in the Cascade Mountain Range of California, Oregon, and Washington are at risk from the same types of flows during future volcanic eruptions.

Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, and developed hillsides where leach-field septic systems are used. Areas that are typically considered safe from landslides include areas that have not moved in the past, relatively flat-lying areas away from sudden changes in slope, and areas at the top or along ridges set back from the tops of slopes.

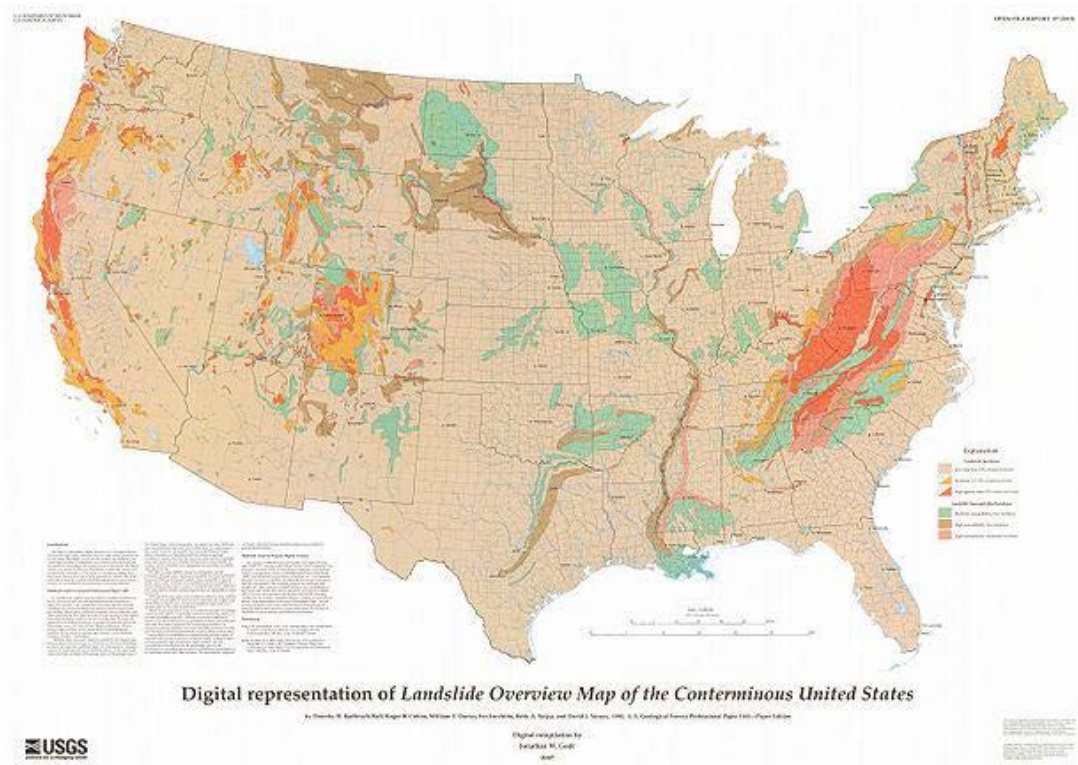
According to the United States Geological Survey, each year landslides cause \$5.1 billion (2018 dollars) in damage and between 25 and 50 deaths in the United States<sup>16</sup>. **Figure 5.11** delineates areas where large







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<sup>16</sup> United States Geological Survey (USGS). United States Department of the Interior. “Landslide Hazards – A National Threat.” 2005.

numbers of landslides have occurred and areas that are susceptible to landsliding in the conterminous United States<sup>17</sup>.

**FIGURE 5.11: LANDSLIDE OVERVIEW MAP OF THE CONTERMINOUS UNITED STATES<sup>18</sup>**



Landslide Incidence		Landslide Susceptibility/Incidence	
	Low Incidence (less than 1.5% of area involved)		Moderate susceptibility/low incidence
	Moderate Incidence (1.5%-15% of area involved)		High susceptibility/low incidence
	High Incidence (greater than 15% of area involved)		High susceptibility/moderate incidence

Source: USGS

### Sinkholes

According to the United States Geological Survey, a sinkhole is an area of ground that has no natural external surface drainage--when it rains, all of the water stays inside the sinkhole and typically drains into

<sup>17</sup> This map layer is provided in the U.S. Geological Survey Professional Paper 1183, Landslide Overview Map of the Conterminous United States, available online at: [http://landslides.usgs.gov/html\\_files/landslides/nationalmap/national.html](http://landslides.usgs.gov/html_files/landslides/nationalmap/national.html).

<sup>18</sup> Susceptibility not indicated where same or lower than incidence. Susceptibility to landsliding was defined as the probable degree of response of [the areal] rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. High, moderate, and low susceptibility are delimited by the same percentages used in classifying the incidence of landsliding. Some generalization was necessary at this scale, and several small areas of high incidence and susceptibility were slightly exaggerated.

the subsurface. Sinkholes can vary from a few feet to hundreds of acres and from less than 1 to more than 100 feet deep. Some are shaped like shallow bowls or saucers whereas others have vertical walls.

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the spaces then a sudden collapse of the land surface can occur. These collapses can be small, or, as **Figure 5.12** below shows, they can be huge and can occur where a house or road is on top<sup>19</sup>.

**FIGURE 5.12: SINKHOLE IN NORTH CAROLINA**



Source: NCEM

### **Erosion**

Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions. Natural, or geologic, erosion has occurred since the Earth's formation and continues at a very slow and uniform rate each year.

There are two types of soil erosion: wind erosion and water erosion. Wind erosion can cause significant soil loss. Winds blowing across sparsely vegetated or disturbed land can pick up soil particles and carry them through the air, thus displacing them. Water erosion can occur over land or in streams and channels. Water erosion that takes place over land may result from raindrops, shallow sheets of water flowing off the land, or shallow surface flow, which becomes concentrated in low spots. Stream channel erosion may occur as the volume and velocity of water flow increases enough to cause movement of the streambed and bank soils. Major storms, such hurricanes in coastal areas, may cause significant erosion by combining high winds with heavy surf and storm surge to significantly impact the shoreline. An area's potential for erosion is determined by four factors: soil characteristics, vegetative cover, topography climate or rainfall,

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<sup>19</sup> Sinkholes. United States Geological Survey. Retrieved on December 14, 2017 from: <https://water.usgs.gov/edu/sinkholes.html>

and topography. Soils composed of a large percentage of silt and fine sand are most susceptible to erosion. As the clay and organic content of these soils increases, the potential for erosion decreases. Well-drained and well-graded gravels and gravel-sand mixtures are the least likely to erode. Coarse gravel soils are highly permeable and have a good capacity for absorption, which can prevent or delay the amount of surface runoff. Vegetative cover can be very helpful in controlling erosion by shielding the soil surface from falling rain, absorbing water from the soil, and slowing the velocity of runoff. Runoff is also affected by the topography of the area including size, shape, and slope. The greater the slope length and gradient, the more potential an area has for erosion. Climate can affect the amount of runoff, especially the frequency, intensity, and duration of rainfall and storms. When rainstorms are frequent, intense, or of long duration, erosion risks are high. Seasonal changes in temperature and rainfall amounts define the period of highest erosion risk of the year.

During the past 20 years, the importance of erosion control has gained the increased attention of the public. Implementation of erosion control measures consistent with sound agricultural and construction operations is needed to minimize the adverse effects associated with harmful chemicals run-off due to wind or water events. The increase in government regulatory programs and public concern has resulted in a wide range of erosion control products, techniques, and analytical methodologies in the United States. The preferred method of erosion control in recent years has been the restoration of vegetation.

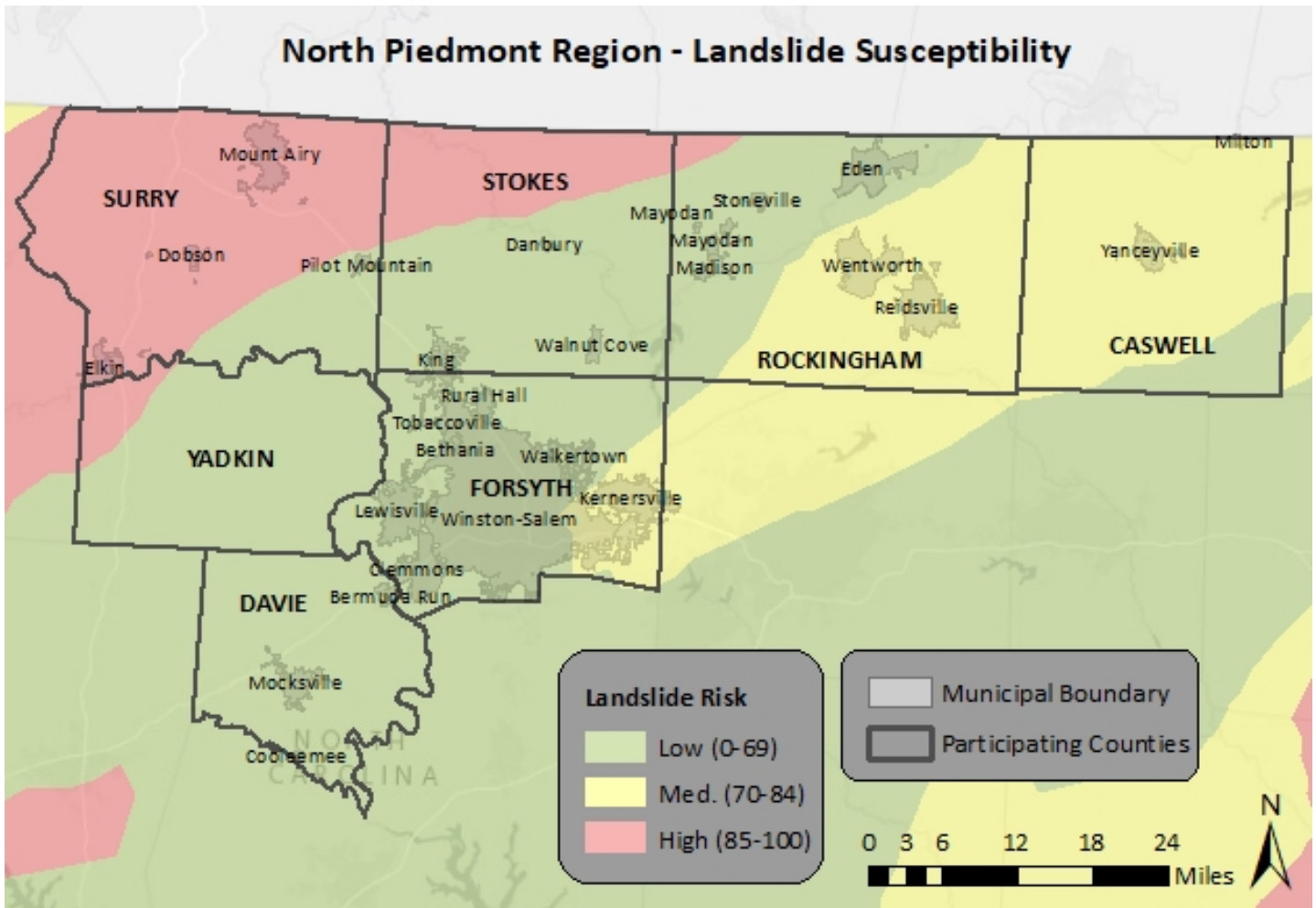
## 5.9.2 Location and Spatial Extent

### Landslides

Landslides occur along steep slopes when the pull of gravity can no longer be resisted (often due to heavy rain throughout the region). Human development can also exacerbate risk by building on previously undevelopable steep slopes and constructing roads by cutting through mountains. Landslides are possible throughout the Northern Piedmont Region.

According to **Figure 5.13** below, much of the region, has a moderate landslide activity especially in Stokes, Surry, and Yadkin Counties. The remaining portion of the region, including all of Davie County, has a low incidence occurrence rate. There is some susceptibility throughout the region.

**FIGURE 5.13: LANDSLIDE SUSCEPTIBILITY**

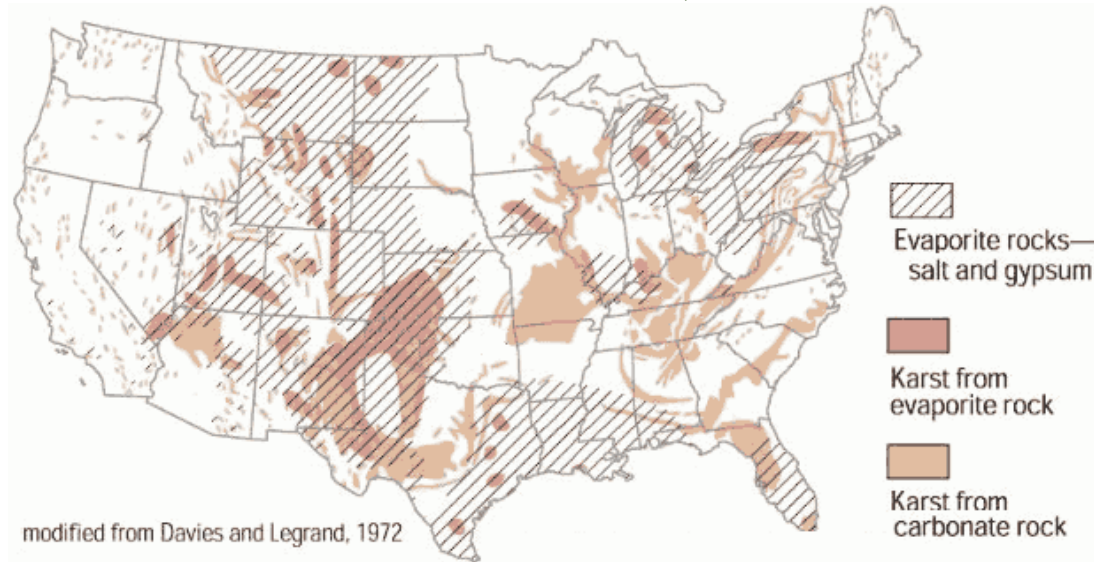


Source: United States Geological Survey

**Sinkholes**

Figure 5.14 below shows areas of the United States where certain rock types that are susceptible to dissolution in water occur. In these areas, the formation of underground cavities can form and catastrophic sinkholes can happen. These rock types are evaporites (salt, gypsum, and anhydrite) and carbonates (limestone and dolomite). Evaporite rocks underlie about 35 to 40 percent of the United States, though in many areas they are buried at great depths. In some cases, sinkholes in North Carolina have been measured at up to 20 to 25 feet in depth, with similar widths.

**FIGURE 5.14: UNITED STATES GEOLOGICAL SURVEY OF KARST MODIFIED FROM DAVIES AND LEGRAND, 1972**



### Erosion

Erosion in the Northern Piedmont Region is typically caused by flash flooding events. Unlike coastal areas, where the soil is mainly composed of fine-grained particles such as sand, Northern Piedmont soils have much greater organic matter content. Furthermore, vegetation also helps to prevent erosion in the area. Erosion occurs in the Northern Piedmont Region, particularly along the banks of rivers and streams, but it is not an extreme threat to any of the participating counties and jurisdictions. No areas of concern were reported by the mitigation council.

## 5.9.3 Historical Occurrences

### Landslides

Steep topography in some areas of the Northern Piedmont Region makes the planning area susceptible to landslides. Most landslides are caused by heavy rainfall in the area. Building on steep slopes that was not previously possible also contributes to risk. The locations of landslide events, provided by the North Carolina Geological Survey, showed that there have been no reported incidents in Northern Piedmont Region<sup>20</sup>. Some incidence mapping has also been completed throughout the western portion of North Carolina though it is not complete. Therefore, it should be noted that many more incidents than what is reported are likely to have occurred in the Northern Piedmont region counties.

Previous versions of all of the region's mitigation plans explain that there have been no recorded occurrences of significant landslides.

<sup>20</sup> It should be noted that the North Carolina Geological Survey (NCGS) emphasized the dataset provided was incomplete. Therefore, there may be additional historical landslide occurrences. Furthermore, dates were not included for every event. The earliest date reported was 1940. No damage information was provided by NCGS.



### **Sinkholes**

In North Carolina, most sinkholes occur in the southern coastal plain due to the high concentration of limestone; however, they are also common in the western part of the state and in the Northern Piedmont region though often caused by erosion from failed stormwater infrastructure.

### **Erosion**

Most historical occurrences of erosion are seen near the coast of North Carolina, but the Northern Piedmont region is still susceptible to the hazard. Several sources were vetted to identify areas of erosion in the Northern Piedmont Region. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. Little information could be found beyond the hazard mitigation plans. Erosion was referenced in the previous Northern Piedmont Regional Hazard Mitigation Plan, but there was no recorded history of significant erosion events and it was found to be hazard with a negligible potential impact.

## **5.9.4 Probability of Future Occurrences**

### **Landslides**

Based on historical information and the USGS susceptibility index, the probability of future landslide events is possible (10 to 100 percent probability). Local conditions may become more favorable for landslides due to heavy rain, for example. This would increase the likelihood of occurrence. It should also be noted that some areas in the Northern Piedmont Region have greater risk than others given factors such as steepness on slope and modification of slopes.

### **Sinkholes**

Sinkholes have also affected parts of North Carolina in recent history, but most of those impacts have been in the southeastern region of the state, not the Northern Piedmont region. While many sinkholes have been relatively small, it is still unlikely (less than 1 percent annual probability) that this region will continue to be affected in the future.

### **Erosion**

Erosion remains a natural, dynamic, and continuous process for the Northern Piedmont Region, and it will continue to occur. The annual probability level assigned for erosion is possible (between 1 and 10 percent). However, given the lack of historical events, location, data, and threat to life or property, no further analysis will be done in Section 6: *Vulnerability Assessment*.

## 5.10 DAM FAILURE

### 5.10.1 Background and Description

Worldwide interest in dam and levee safety has risen significantly in recent years. Aging infrastructure, new hydrologic information, and population growth in floodplain areas downstream from dams and near levees have resulted in an increased emphasis on safety, operation, and maintenance.

There are approximately 80,000 dams in the United States today, the majority of which are privately owned. Other owners include state and local authorities, public utilities, and federal agencies. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation. Dams also provide hydroelectric power, create lakes for fishing and recreation, and save lives by preventing or reducing floods.

Though dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and great property damage if development exists downstream. If a levee breaks, scores of properties may become submerged in floodwaters and residents may become trapped by rapidly rising water. The failure of dams and levees has the potential to place large numbers of people and great amounts of property in harm's way.

### 5.10.2 Location and Spatial Extent

The North Carolina Division of Land Resources provides information on dams, including a hazard potential classification. There are three hazard classifications—high, intermediate, and low—that correspond to qualitative descriptions and quantitative guidelines. **Table 5.23** explains these classifications.

**TABLE 5.23: NORTH CAROLINA DAM HAZARD CLASSIFICATIONS**

Hazard Classification	Description	Quantitative Guidelines
Low	Interruption of road service, low volume roads Less than 25 vehicles per day	Less than 25 vehicles per day
	Economic Damage	Less than \$30,000
Intermediate	Damage to highways, Interruption of service	25 to less than 250 vehicles per day
	Economic Damage	\$30,000 to less than \$200,000
High	Loss of human life*	Probable loss of 1 or more human lives
	Economic Damage	More than \$200,000
	*Probable loss of human life due to breached roadway or bridge on or below the dam	250 or more vehicles per day

Source: North Carolina Division of Energy, Mineral, and Land Resources

According to the North Carolina Division of Energy, Mineral, and Land Resources, there are 960 dams in the Northern Piedmont Region<sup>21</sup>. **Figure 5.15** shows the dam location and the corresponding hazard ranking for each. Of these dams, 142 are classified as high hazard potential. These high hazard dams are summarized by county in **Table 5.24**.

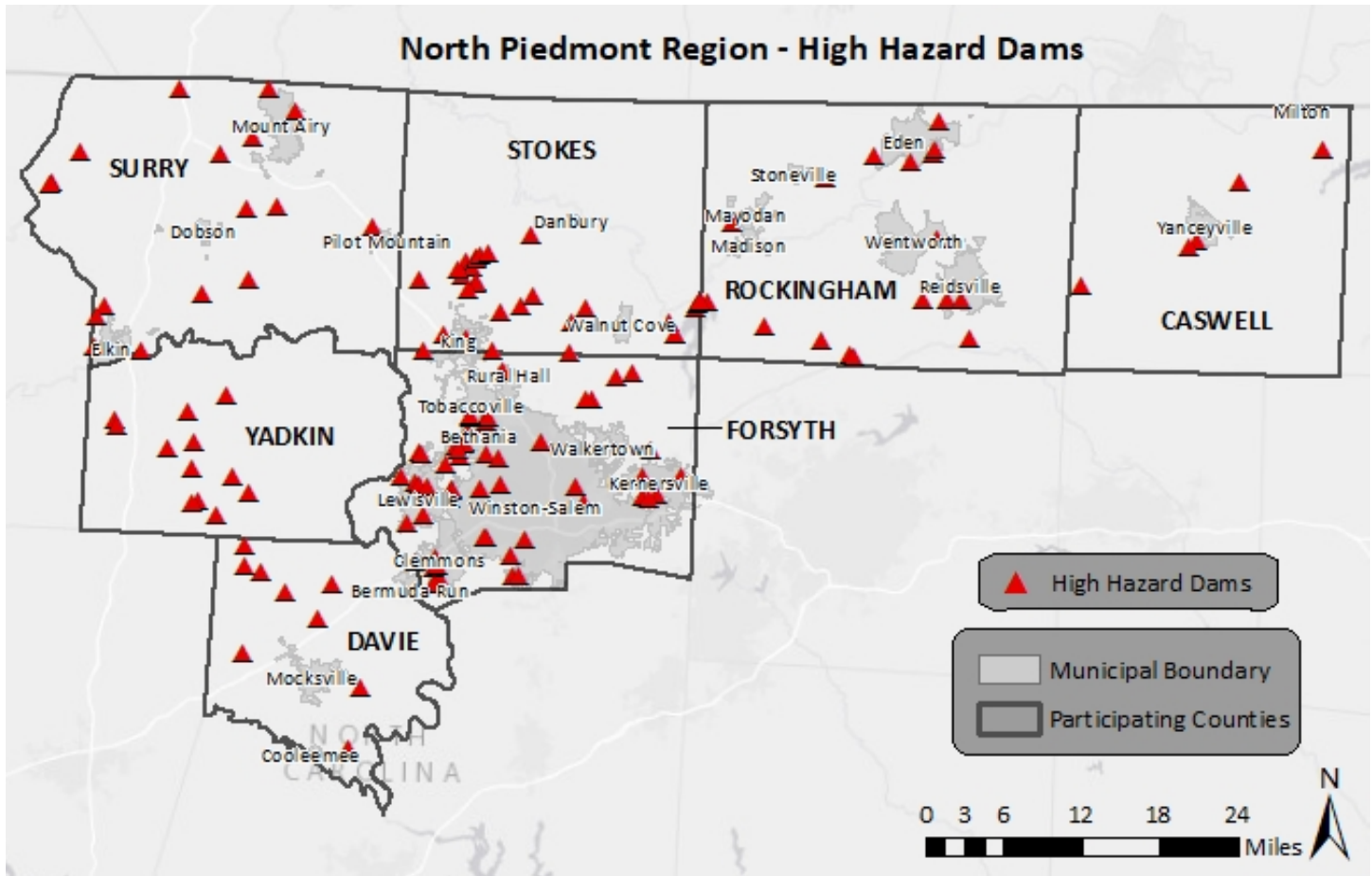
<sup>21</sup> The October 23, 2018 list of high hazard dams obtained from the North Carolina Division of Energy, Mineral, and Land Resources (<http://portal.ncdenr.org/web/lr/dams>) was reviewed and amended by local officials to the best of their knowledge.

**TABLE 5.24: SUMMARY OF HIGH HAZARD DAM LOCATION**

Location	Number High Hazard Dams
Caswell County	5
Davie County	9
Forsyth County	55
Rockingham County	18
Stokes County	27
Surry County	16
Yadkin County	12
<b>Northern Piedmont Region Total</b>	<b>142</b>

Source: North Carolina Division of Energy, Mineral, and Land Resources

**FIGURE 5.15: NORTHERN PIEDMONT REGION HIGH HAZARD DAM LOCATION**



Source: North Carolina Division of Land Resources, 2018

It should also be noted that dam regulations for classifying dams was changed in recent history. As a result, generally more dams are classified as high hazard.

### 5.10.3 Historical Occurrences

There is no record of significant dam failure in the Northern Piedmont Region, though little information was available. In addition, it should be noted that several breach scenarios in the area could be catastrophic.

### 5.10.4 Probability of Future Occurrence

Given the current dam inventory and historic data, a dam breach is unlikely (less than 1 percent annual probability) in the future. However, as has been demonstrated in the past, regular monitoring is necessary to prevent these events. No further analysis will be completed in Section 6: *Vulnerability Assessment* as more sophisticated dam breach plans (typically completed by the U.S. Army Corp of Engineers) have been completed for dams of concern in the region.

## 5.11 FLOODING

### 5.11.1 Background and Description

Flooding is the most frequent and costly natural hazard in the United States and is a hazard that has caused more than 10,000 deaths since 1900. Nearly 90 percent of presidential disaster declarations result from natural events where flooding was a major component.

Floods generally result from excessive precipitation and can be classified under two categories: general floods, precipitation over a given river basin for a long period of time along with storm-induced wave action, and flash floods, the product of heavy localized precipitation in a short time period over a given location. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surface.

General floods are usually long-term events that may last for several days. The primary types of general flooding include riverine, coastal, and urban flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, and other large coastal storms. Urban flooding occurs where manmade development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff.

Most flash flooding is caused by slow-moving thunderstorms in a local area or by heavy rains associated with hurricanes and tropical storms. However, flash flooding events may also occur from a dam or levee failure within minutes or hours of heavy amounts of rainfall or from a sudden release of water held by a retention basin or other stormwater control facility. Although flash flooding occurs most often along mountain streams, it is also common in urbanized areas where much of the ground is covered by impervious surfaces.

The periodic flooding of lands adjacent to rivers, streams, and shorelines (land known as a floodplain) is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. The recurrence interval of a flood is defined as the average time interval, in years, expected between a flood event of a particular magnitude and an equal or larger flood. Flood magnitude increases with increasing recurrence interval.

Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by the 10-year flood and the 100-year floodplain by the 100-year flood. Flood frequencies, such as the 100-year flood, are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur. Another way of expressing the flood frequency is the chance of occurrence in a given year, which is the percentage of the probability of flooding each year. For example, the 100-year flood has a 1 percent chance of occurring in any given year and the 500-year flood has a 0.2 percent chance of occurring in any given year.

### 5.11.2 Location and Spatial Extent

There are areas in the Northern Piedmont Region that are susceptible to flood events. Special flood hazard areas in the Northern Piedmont Region were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM). This includes Zone A (1-percent annual chance

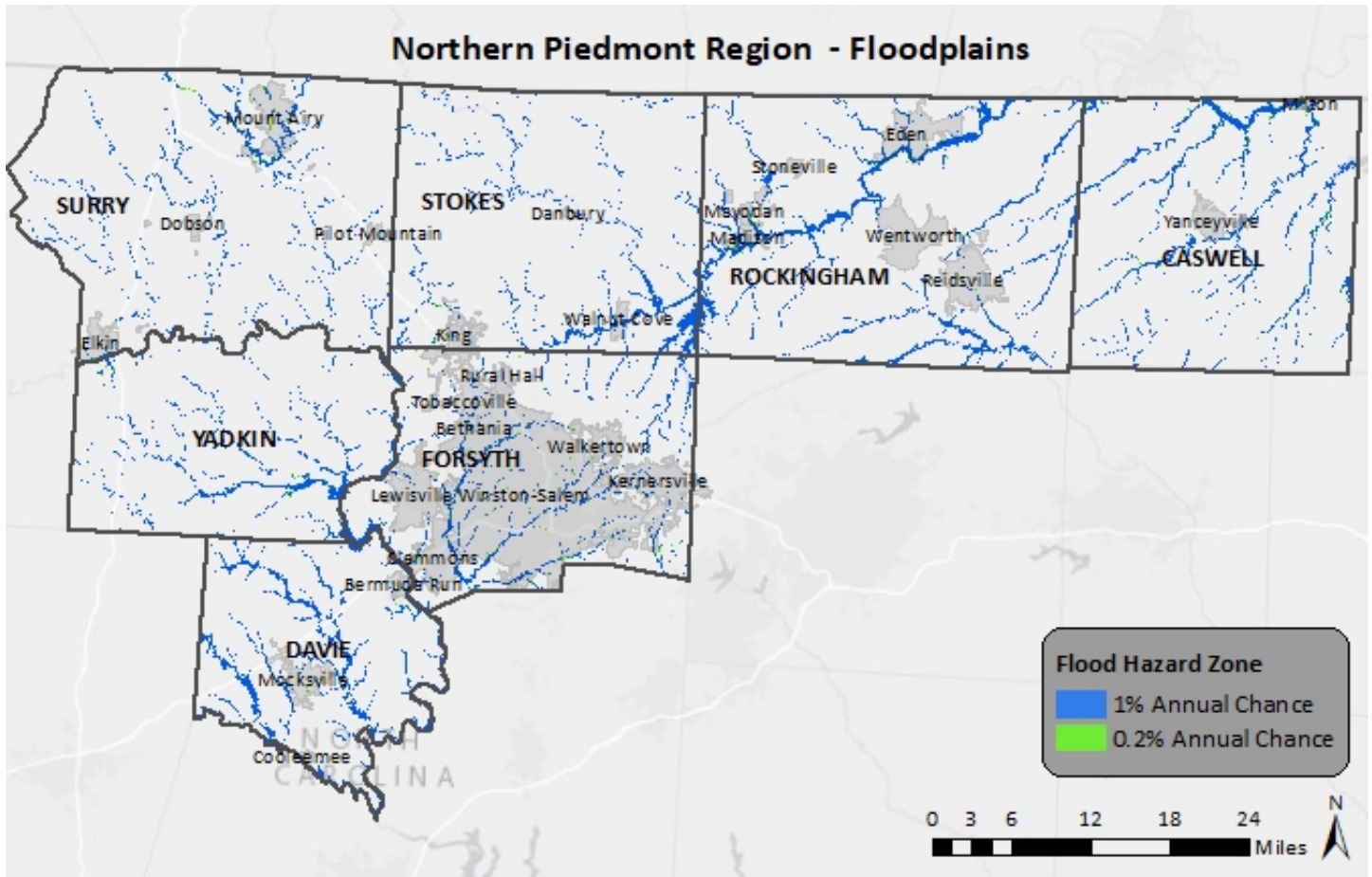
floodplain), Zone AE (1-percent annual chance floodplain with elevation), and Zone X500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 3,011 square miles that make up the Northern Piedmont Region (including the area of Caswell County, Davie County, Forsyth County, Rockingham County, Stokes County, Surry County, and Yadkin County), there are 191.3 square miles of land in zones A and AE (1-percent annual chance floodplain/100-year floodplain) and 5.3 square miles of land in zone X500 (0.2-percent annual chance floodplain/500-year floodplain). The county totals are presented below in **Table 5.25**.

**TABLE 5.25: SUMMARY OF FLOODPLAIN AREAS**

Location	100-year area (square miles)	500-year area (square miles)
Caswell County	25.6	0.9
Davie County	29.9	0.2
Forsyth County	29.2	1.7
Rockingham County	41.8	1.2
Stokes County	21.7	0.1
Surry County	21.0	0.9
Yadkin County	22.0	0.3
<b>NORTHERN PIEDMONT REGION TOTAL</b>	<b>191.3</b>	<b>5.3</b>

These flood zone values account for 6.5 percent of the total land area in the Northern Piedmont Region. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas. **Figure 5.16** illustrates the location and extent of currently mapped special flood hazard areas for the Northern Piedmont Region based on best available FEMA DFIRM data.

**FIGURE 5.16: SPECIAL FLOOD HAZARD AREAS**



Source: Federal Emergency Management Agency

### 5.11.3 Historical Occurrences

Information from the National Centers for Environmental Information was used to ascertain historical flood events. The National Centers for Environmental Information reported a total of 87 events throughout the Northern Piedmont Region since 1993<sup>22</sup>. A summary of these events is presented in **Table 5.26**. These events accounted for over \$1.6 million in property damage throughout the region<sup>23</sup>.

<sup>22</sup> These events are only inclusive of those reported by NCEI. It is likely that additional occurrences have occurred and have gone unreported.

<sup>23</sup> The total damage amount was averaged over the number of affected counties when multiple counties were involved in the flood event.

TABLE 5.26: SUMMARY OF FLOOD OCCURRENCES

Location	Number of Occurrences	Deaths / Injuries	Property Damage (2019 dollars)
<b>Caswell County</b>	<b>15</b>	<b>0/0</b>	<b>\$32,800</b>
Milton	1	0/0	\$0
Yanceyville	4	0/0	\$0
Unincorporated Areas	10	0/0	\$32,800
<b>Davie County</b>	<b>6</b>	<b>0/0</b>	<b>\$1,394,080</b>
Bermuda Run	0	0/0	0
Cooleemee	0	0/0	0
Mocksville	0	0/0	0
Unincorporated Areas	6	0/0	\$1,394,080
<b>Forsyth County</b>	<b>3</b>	<b>0/0</b>	<b>\$208,500</b>
Bethania	0	0/0	\$0
Clemmons	0	0/0	\$0
Kernersville	0	0/0	\$0
Lewisville	0	0/0	\$0
Rural Hall	0	0/0	\$0
Tobaccoville	0	0/0	\$0
Walkertown	1	0/0	\$0
Winston-Salem	0	0/0	\$0
Unincorporated Area	2	0/0	\$208,500
<b>Rockingham County</b>	<b>28</b>	<b>0/0</b>	<b>\$52,440</b>
Eden	0	0/0	\$0
Madison	6	0/0	\$0
Mayodan	1	0/0	\$0
Reidsville	2	0/0	\$0
Stoneville	0	0/0	\$0
Wentworth	0	0/0	\$0
Unincorporated Area	20	0/0	\$52,440
<b>Stokes County</b>	<b>2</b>	<b>0/0</b>	<b>\$0</b>
Danbury	0	0/0	\$0
King	0	0/0	\$0
Walnut Cove	0	0/0	\$0
Unincorporated Area	2	0/0	\$0
<b>Surry County</b>	<b>18</b>	<b>0/0</b>	<b>\$820</b>
Dobson	1	0/0	\$0
Elkin	3	0/0	\$0
Mount Airy	1	0/0	\$0
Pilot Mountain	0	0/0	\$0
Unincorporated Area	13	0/0	\$820
<b>Yadkin County</b>	<b>10</b>	<b>0/0</b>	<b>\$1,640</b>
Boonville	0	0/0	\$0
East Bend	0	0/0	\$0
Jonesville	0	0/0	\$0
Yadkinville	0	0/0	\$0
Unincorporated Area	10	0/0	\$1,640
<b>Northern Piedmont Regional Total</b>	<b>87</b>	<b>0/0</b>	<b>\$1,690,280</b>

Source: National Centers for Environmental Information



### 5.11.4 Historical Summary of Insured Flood Losses

According to FEMA flood insurance policy records as of August 2018, there have been 596 flood losses reported in the Northern Piedmont Region through the National Flood Insurance Program (NFIP) since 1978, totaling over \$5.92 million in claims payments. A summary of these figures for each Northern Piedmont county is provided in **Table 5.27**. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in the Northern Piedmont Region were either uninsured, denied claims payment, or not reported.

**TABLE 5.27: SUMMARY OF INSURED FLOOD LOSSES**

Location	Flood Losses	Claims Payments
<b>Caswell County</b>	<b>1</b>	<b>\$0</b>
Milton*	-	-
Yanceyville	-	-
Unincorporated Areas	1	\$0
<b>Davie County</b>	<b>9</b>	<b>\$124,621</b>
Bermuda Run	2	\$97,025
Cooleemee	-	-
Mocksville	0	\$0
Unincorporated Areas	7	\$27,596
<b>Forsyth County</b>	<b>399</b>	<b>\$3,912,635</b>
Bethania	0	\$0
Clemmons	4	\$56,318
Kernersville	7	\$157,501
Lewisville	3	\$14,438
Rural Hall	0	\$0
Tobaccoville	0	\$0
Walkertown	0	\$0
Winston-Salem	272	\$2,665,061
Unincorporated Area	113	\$1,019,317
<b>Rockingham County</b>	<b>101</b>	<b>\$596,235</b>
Eden	55	\$363,336
Madison	20	\$142,567
Mayodan	5	\$1,930
Reidsville	6	\$10,804
Stoneville	0	\$0
Wentworth	0	\$0
Unincorporated Area	0	\$0
<b>Stokes County</b>	<b>15</b>	<b>\$175,212</b>
Danbury	-	-
King	2	\$6,832
Walnut Cove	1	\$6,669
Unincorporated Area	12	\$161,711
<b>Surry County</b>	<b>65</b>	<b>\$1,100,531</b>
Dobson*	-	-
Elkin	1	\$3,582
Mount Airy	41	\$741,202
Pilot Mountain*	-	-

Location	Flood Losses	Claims Payments
Unincorporated Area	23	\$355,747
<b>Yadkin County</b>	<b>6</b>	<b>\$6,153</b>
Boonville*	-	-
East Bend*	-	-
Jonesville	0	\$0
Yadkinville	2	\$2,110
Unincorporated Area	4	\$4,043
<b>Northern Piedmont Regional Total</b>	<b>596</b>	<b>\$5,915,388</b>

\*This community does not participate in the National Flood Insurance Program. Therefore, no values are reported.

Source: Federal Emergency Management Agency, National Flood Insurance Program

### 5.11.5 Repetitive Loss Properties

FEMA defines a repetitive loss property as any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A repetitive loss property may or may not be currently insured by the NFIP. Currently there are over 140,000 repetitive loss properties nationwide.

There are 51 non-mitigated repetitive loss properties located in the Northern Piedmont Region, which accounted for 176 losses and nearly \$2.9 million in claims payments under the NFIP. The average claim amount for these properties is \$16,423. The majority of the properties are residential buildings, 34 are single-family residential, 1 is 2-4 family residential, 3 are assumed condominiums, 2 are other residential, and 11 are non-residential. Without mitigation these properties will likely continue to experience flood losses. **Tables 5.28** presents a summary these figures for the Northern Piedmont Region.

**TABLE 5.28: SUMMARY OF REPETITIVE LOSS PROPERTIES**

Location	Number of Properties	Number of Losses	Total Payments
<b>Caswell County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Milton	0	0	\$0
Yanceyville	0	0	\$0
Unincorporated Areas	0	0	\$0
<b>Davie County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Bermuda Run	0	0	\$0
Cooleemee	0	0	\$0
Mocksville	0	0	\$0
Unincorporated Areas	0	0	\$0
<b>Forsyth County</b>	<b>33</b>	<b>125</b>	<b>\$1,606,000</b>
Bethania	0	0	\$0
Clemmons	2	11	\$118,690
Kernersville	1	2	\$24,450
Lewisville	0	0	\$0
Rural Hall	0	0	\$0
Tobaccoville	0	0	\$0
Walkertown	0	0	\$0
Winston-Salem	30	112	\$1,462,861
Unincorporated Area	0	0	\$0

Location	Number of Properties	Number of Losses	Total Payments
<b>Rockingham County</b>	<b>11</b>	<b>31</b>	<b>\$321,076</b>
Eden	9	27	\$299,029
Madison	0	0	\$0
Mayodan	0	0	\$0
Reidsville	0	0	\$0
Stoneville	0	0	\$0
Wentworth	0	0	\$0
Unincorporated Area	2	4	\$22,047
<b>Stokes County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Danbury	0	0	\$0
King	0	0	\$0
Walnut Cove	0	0	\$0
Unincorporated Area	0	0	\$0
<b>Surry County</b>	<b>7</b>	<b>20</b>	<b>\$963,446</b>
Dobson	--	--	--
Elkin	0	0	\$0
Mount Airy	6	16	\$906,037
Pilot Mountain	--	--	--
Unincorporated Area	1	4	\$57,409
<b>Yadkin County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Boonville	--	--	--
East Bend	--	--	--
Jonesville	0	0	\$0
Yadkinville	0	0	\$0
Unincorporated Area	0	0	\$0
<b>Northern Piedmont Regional Total</b>	<b>51</b>	<b>176</b>	<b>\$2,890,522</b>

Source: National Flood Insurance Program

### 5.11.6 Probability of Future Occurrences

Flood events will remain a threat in the Northern Piedmont Region, and the probability of future occurrences will remain likely (between 10 and 100 percent annual probability). The probability of future flood events based on magnitude and according to best available data is illustrated in the figures above, which indicates those areas susceptible to the 1-percent annual chance flood (100-year floodplain) and the 0.2-percent annual chance flood (500-year floodplain).

# Other Hazards

## 5.12 WILDFIRES

### 5.12.1 Background and Description

A wildfire is any outdoor fire (i.e. grassland, forest, brush land) that is not under control, supervised, or prescribed<sup>24</sup>. Wildfires are part of the natural management of forest ecosystems, but may also be caused by human factors.

Nationally, over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning. In North Carolina, a majority of fires are caused by debris burning.

There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around.

Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings.

Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within high wildfire hazard areas. Furthermore, the increasing demand for outdoor recreation places more people in wildlands during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

Wildfires can result in severe economic losses as well. Businesses that depend on timber, such as paper mills and lumber companies, experience losses that are often passed along to consumers through higher prices and sometimes jobs are lost. The high cost of responding to and recovering from wildfires can deplete state resources and increase insurance rates. The economic impact of wildfires can also be felt in the tourism industry if roads and tourist attractions are closed due to health and safety concerns.

State and local governments can impose fire safety regulations on home sites and developments to help curb wildfire. Land treatment measures such as fire access roads, water storage, helipads, safety zones, buffers, firebreaks, fuel breaks, and fuel management can be designed as part of an overall fire defense system to aid in fire control. Fuel management, prescribed burning, and cooperative land management planning can also be encouraged to reduce fire hazards.

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<sup>24</sup> Prescription burning, or “controlled burn,” undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters.

### 5.12.2 Location and Spatial Extent

The entire region is at risk to a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to fire hazard as populations abut formerly undeveloped areas.

### 5.12.3 Historical Occurrences

Information from the National Association of State Foresters was used to ascertain historical wildfire events. The National Association of State Foresters reported that a total of 1,444 events that impacted an area greater than 1 acre have occurred throughout the Northern Piedmont Region since 2001<sup>25</sup>. A summary of these events is presented in **Table 5.29**. The largest of these events was the Lumber Plant Fire, which occurred in Surry County in 2011 and impacted 737 acres.

**TABLE 5.29: SUMMARY OF WILDFIRE INCIDENTS (2001-2018)**

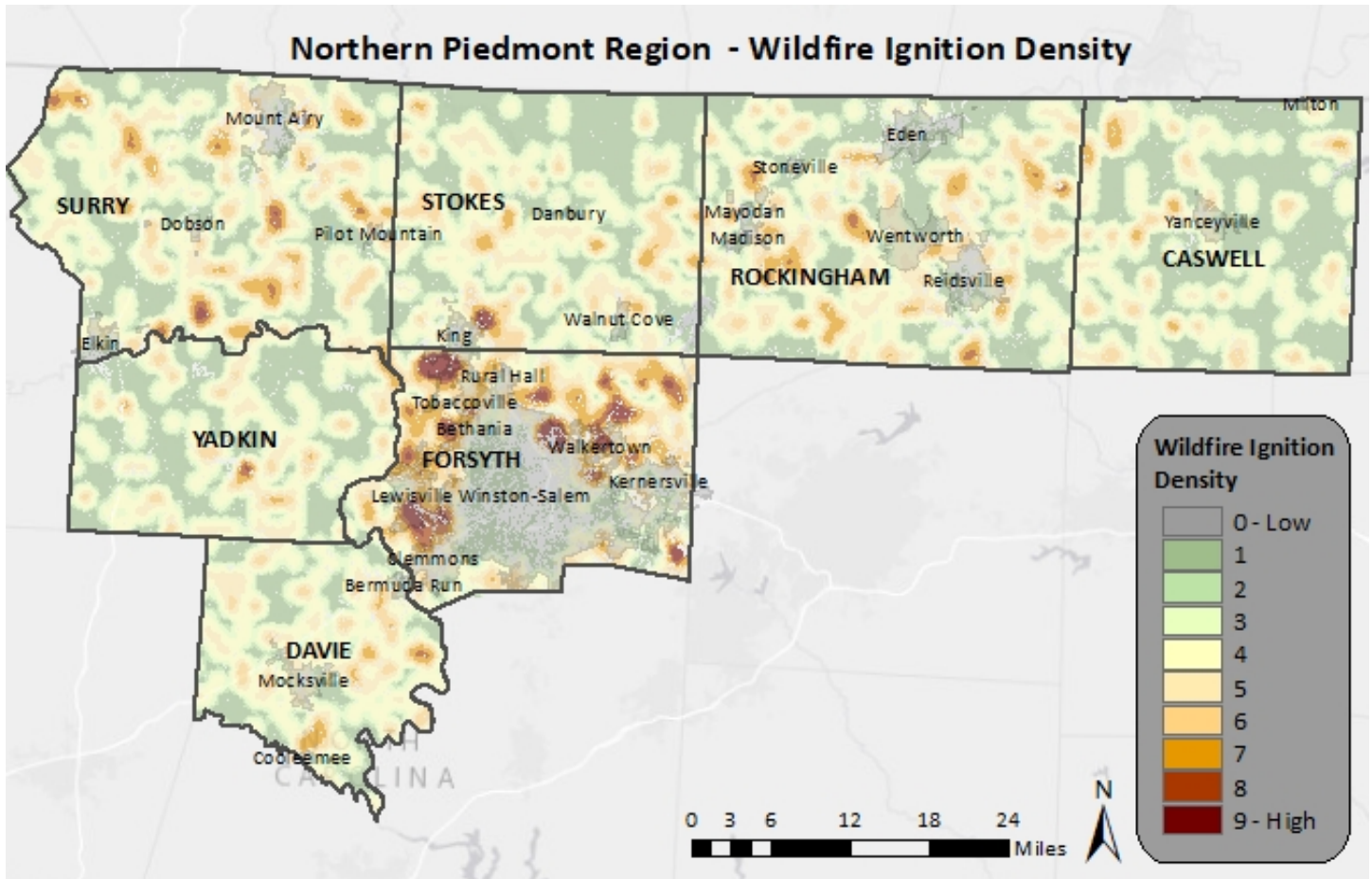
Location	Number of Occurrences	Acres Burned
<b>Caswell County</b>	<b>137</b>	<b>918.59</b>
Milton	0	0.00
Yanceyville	0	0.00
Unincorporated Areas	137	918.59
<b>Davie County</b>	<b>89</b>	<b>193.15</b>
Bermuda Run	0	
Cooleemee	0	
Mocksville	2	2.73
Unincorporated Areas	89	193.15
<b>Forsyth County</b>	<b>174</b>	<b>385.77</b>
Bethania	0	0.00
Clemmons	3	5.00
Kernersville	3	9.10
Lewisville	11	22.00
Rural Hall	2	5.00
Tobaccoville	9	26.70
Walkertown	3	3.43
Winston-Salem	16	37.70
Unincorporated Area	127	276.84
<b>Rockingham County</b>	<b>346</b>	<b>1162.59</b>
Eden	5	32.10

<sup>25</sup> These events are only inclusive of those reported by NASFI. It is likely that additional occurrences have occurred and have gone unreported.

Location	Number of Occurrences	Acres Burned
Madison	1	1.00
Mayodan	2	4.00
Reidsville	4	12.70
Stoneville	0	0.00
Wentworth	10	26.40
Unincorporated Area	324	1086.39
<b>Stokes County</b>	<b>211</b>	<b>1069.46</b>
Danbury	0	0.00
King	1	1.50
Walnut Cove	0	0.00
Unincorporated Area	210	1067.96
<b>Surry County</b>	<b>313</b>	<b>3073.73</b>
Dobson	1	2.00
Elkin	0	0.00
Mount Airy	5	9.50
Pilot Mountain	0	0.00
Unincorporated Area	307	3062.23
<b>Yadkin County</b>	<b>174</b>	<b>423.97</b>
Boonville	1	1.00
East Bend	3	5.00
Jonesville	1	1.20
Yadkinville	0	0.00
Unincorporated Area	169	416.77
<b>Northern Piedmont Regional Total</b>	<b>1444</b>	<b>7227.26</b>

Figure 5.17 shows the Wildfire Ignition Density in the Northern Piedmont Region based on data from the Southern Wildfire Risk Assessment. This data represents the likelihood of wildfire igniting in the area, which is derived from historical wildfire occurrences to create an average ignition rate map.

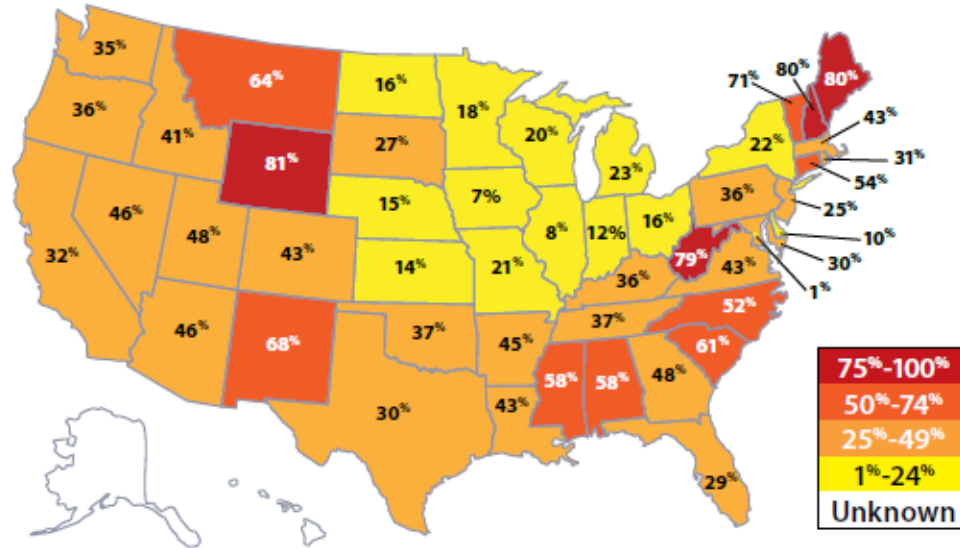
**FIGURE 5.17: WILDFIRE IGNITION DENSITY**



Source: Southern Wildfire Risk Assessment

Every state also has a Wildland Urban Interface (WUI), which is the rating of potential impact of wildfires on people and their homes. The WUI is not a fixed geographical location, but rather a combination of human development and vegetation where wildfires have the greatest potential to result in negative impacts. Nationally, one-third of all homes lie in the WUI, which is a growing danger. Below, **Figure 5.18** shows a map of each state’s WUI. Based on the data from the US Department of Agriculture, 52% of homes in North Carolina lie within the WUI.

**FIGURE 5.18: PERCENT OF TOTAL HOMES IN THE WILDLAND URBAN INTERFACE**

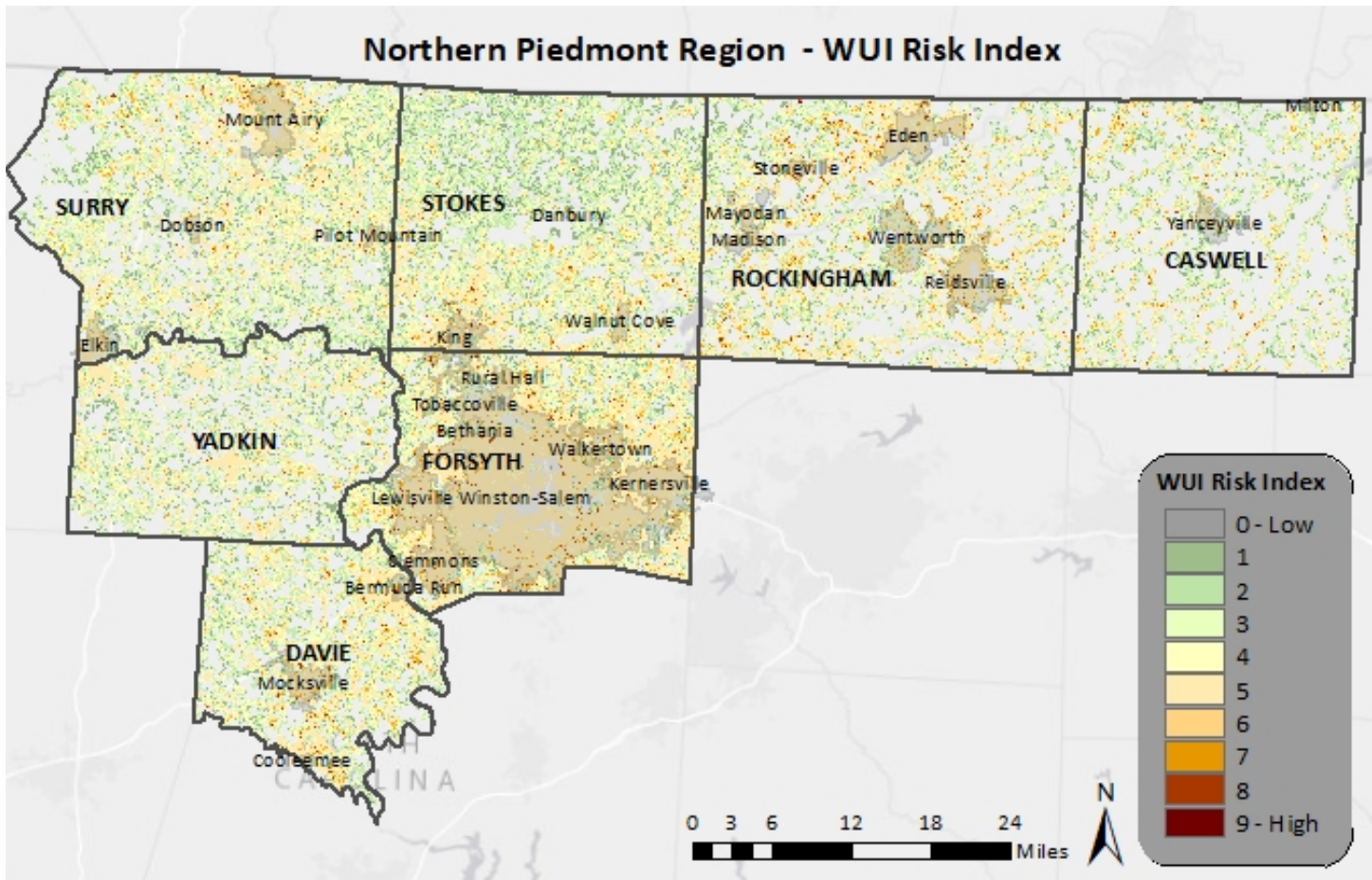


Source: US Department of Agriculture

Below, **Figure 5.19** displays the WUI Risk Index specifically for the Northern Piedmont Region.



FIGURE 5.19: WILDLAND URBAN INTERFACE RISK INDEX



Based on data from the North Carolina Division of Forest Resources from 2003 to 2012, the Northern Piedmont Region experienced an average of 343 wildfires annually which burn a combined 767 acres, on average per year. The data indicates that most of these fires are small, averaging two acres per fire. Although it is certain that wildfires have occurred in the region, NCEI reports that none have taken place in recent history.

**Appendix G** includes maps of Ignition Density, Wildland Urban Interface areas as defined by the Southern Wildfire Risk Assessment and previous wildfire events for all participating jurisdictions in the region.

### 5.12.4 Probability of Future Occurrences

Wildfire events will be an ongoing occurrence in the Northern Piedmont Region. The likelihood of wildfires increases during drought cycles and abnormally dry conditions. Fires are likely to stay small in size but could increase due to local climate and ground conditions. Dry, windy conditions with an accumulation of forest floor fuel (potentially due to ice storms or lack of fire) could create conditions for a large fire that spreads quickly. It should also be noted that some areas do vary somewhat in risk. For example, highly developed areas are less susceptible unless they are located near the urban-wildland boundary. The risk will also vary due to assets. Areas in the urban-wildland interface will have much more property at risk, resulting in increased vulnerability and need to mitigate compared to rural, mainly forested areas. The

probability assigned to the Northern Piedmont Region for future wildfire events is likely (10 to 100 percent annual probability).

## **5.13 INFECTIOUS DISEASE**

### **5.13.1 Background and Description**

For the purposes of this plan, this section will assess infectious diseases and vector-borne diseases within the Northern Piedmont region.

#### **Infectious Disease**

Communicable, or infectious, diseases are conditions that result in clinically evident illness which are transmissible directly from one person to another or indirectly through vectors such as insects, air, water, blood, or other objects. The impact of communicable disease can range from the mild effects of the common cold to the extreme lethality of pneumonic plague or anthrax. The public health system in the United States was developed in large part as a response to the often urgent need to respond to or prevent outbreaks of communicable diseases. Through public health methods of disease reporting, vaccinations, vector control, and effective treatments, most communicable diseases are well controlled in the United States and across the Northern Piedmont region. However, control systems can fail and when people come together from locations outside of the state, outbreaks can occur, even in the most modern of communities. In this section, some of the more significant potential communicable disease concerns are described.

The threats discussed in this section usually do not occur on a regular basis, though some are more frequent. The diseases described herein do not originate from intentional exposure (such as through terrorist actions) but do present significant issues and concerns for the public health community. There are numerous infectious diseases that rarely, if ever, occur in the State of North Carolina, such as botulism or bubonic plague. Some highly dangerous diseases which could potentially be used as biological weapons, such as anthrax, pneumonic plague, and smallpox, are safely housed and controlled in laboratory settings such as at the Center for Disease Control and Prevention (CDC). Other diseases have not (yet) mutated into a form that can infect humans, or otherwise lie dormant in nature.

There have been several significant viral outbreaks from emerging diseases in recent years of both national and international importance. The Zika virus and West Nile virus are viruses that are typically passed to humans or animals by mosquitoes and made major news as emergent disease threats. Meanwhile, diseases that are spread directly between human beings such as Severe Acute Respiratory Syndrome (SARS) and Ebola have also been identified as serious threats. While each of these conditions caused a great deal of public health concern when they were first identified, SARS has virtually disappeared, West Nile virus occurs with low frequency and causes serious disease in only a very small percentage of cases, Ebola has been more or less contained and a vaccine is in development, and many people infected with Zika will not experience symptoms from the disease.

Other communicable diseases pose a much more frequent threat to the citizens of in the region. Some of the infectious diseases of greatest concern include influenza, particularly in a pandemic form, as well as norovirus, and multiple antibiotic-resistant tuberculosis. Even in one of its normal year-to-year variants, influenza (commonly referred to as “flu”) can result in serious illness and even death in young children, the elderly and immune-compromised persons. But there is always the potential risk of the emergence of

influenza in one of the pandemic H1N1 forms, such as in the “Spanish Flu” outbreak of 1918-19, which killed over 50 million people worldwide. Every year, North Carolina sees hundreds of cases of influenza, leading to hundreds of hours of lost productivity in businesses due to sick employees. Of note, a vaccine for influenza is produced every year and, according to the CDC, is highly effective in preventing the disease.

Norovirus is recognized as the leading cause of foodborne-disease outbreaks in the United States. The virus can cause diarrhea, vomiting, and stomach pain, and is easily spread from person to person through contaminated food or water and by surface to surface contact. Especially vulnerable populations to this virus include those living or staying in nursing homes and assisted living facilities and other healthcare facilities such as hospitals. Norovirus could also be a threat in the event of large public gatherings such as sporting events, concerts, festivals, and so forth. North Carolina often experiences norovirus outbreaks on an annual basis. No vaccine or treatment exists for the Norovirus, making it especially dangerous for the public in the event of an outbreak.

Public health threats can occur at any time and can have varying impacts. Discussions between public health professionals, planning officials, and first response agencies are essential in order to facilitate safe, effective, and collaborative efforts toward outbreaks.

### **Vector-Borne Diseases**

Bacterial, viral and parasitic diseases that are transmitted by mosquitoes, ticks and fleas are collectively called "vector-borne diseases" (the insects and arthropods are the "vectors" that carry the diseases). Although the term "vector" can also apply to other carriers of disease — such as mammals that can transmit rabies or rodents that can transmit hantavirus — those diseases are generally called zoonotic (animal-borne) diseases.

The most common vector-borne diseases found in North Carolina and the Northern Piedmont region are carried by ticks and mosquitoes. The tick-borne illnesses most often seen in the state are Rocky Mountain Spotted Fever, ehrlichiosis, Lyme disease and Southern Tick-Associated Rash Illness (STARI). The most frequent mosquito-borne illnesses, or "arboviruses," in North Carolina include La Crosse encephalitis, West Nile virus and Eastern equine encephalitis. An outbreak of the West Nile Virus began showing up in the United States in 1999, with North Carolina reporting 63 cases from that time through the end of 2016.

### **5.13.2 Location and Spatial Extent**

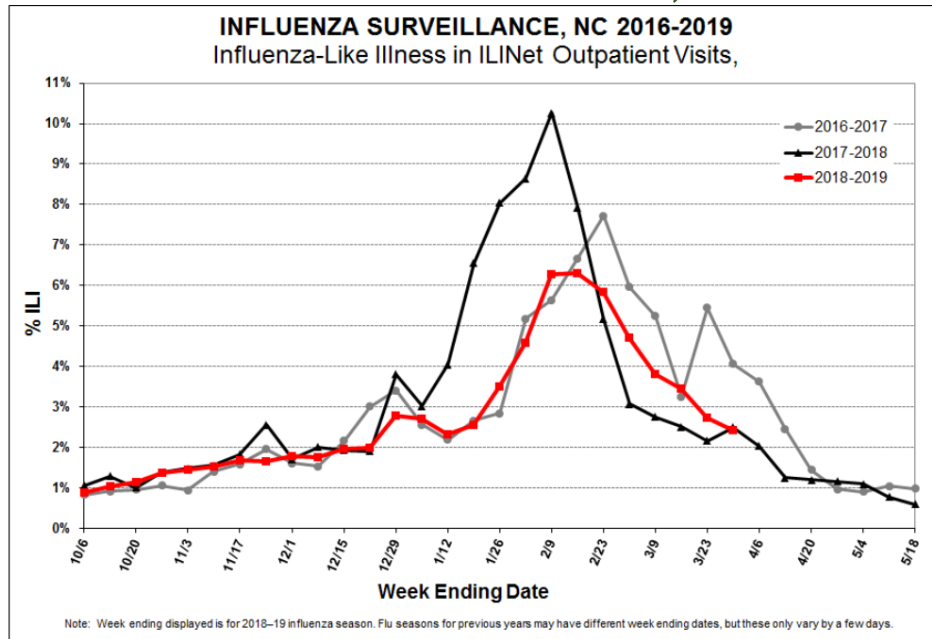
Extent is difficult to measure for an infectious disease event as the extent is largely dependent on the type of disease and on the effect that it has on the population (discussed above). Extent can be somewhat defined by the number of people impacted, which depending on the type of disease could number in the tens of thousands within the state.

### **5.13.3 Historical Occurrences**

#### **Infectious Disease**

The influenza is historically the most common infectious disease that has occurred in the Northern Piedmont region. Cases of the flu tend to occur in the late fall and early winter months. In recent years, cases of the influenza and influenza-like illnesses have been reported in hospitals. As seen in **Figure 5.20** below, 172 people throughout North Carolina died from the flu between 2018 and 2019.

**FIGURE 5.20: INFLUENZA SURVEILLANCE, NC 2016-2019**



N.C. Flu-Associated Deaths\*

**2**  
New Flu Deaths 3/24/19-3/30/19

**172**  
Total Flu Deaths This Season (9/30/2018-5/18/2019)

Source: NC Department of Health and Human Services

**Vector-Borne Diseases**

In 2016, North Carolina state health officials encouraged citizens to take preventative measures against mosquito bites to avoid contracting the Zika virus. \$477,500 dollars was allocated from the Governor’s yearly budget to develop an infrastructure to detect, prevent, control, and respond to the Zika virus and other vector-borne illnesses<sup>26</sup>.

**5.13.4 Probability of Future Occurrence**

It is difficult to predict the future probability of infectious diseases due to the difficulty with obtaining information on this type of hazard. The most common and probable disease in the state has shown to be influenza; however, based on historical data, it is relatively unlikely (less than 1 percent annual probability) that the Northern Piedmont Region will experience an outbreak of infectious diseases in the future.

<sup>26</sup> <https://www.ncdhhs.gov/news/press-releases/nc-prepared-zika-virus-risk-local-virus-carrying-mosquitoes-low>

# Technological Hazards

## 5.14 HAZARDOUS SUBSTANCES

### 5.14.1 Background and Description

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

Hazardous material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation related accidents in the air, by rail, on the nation's highways, and on the water. Approximately 6,774 HAZMAT events occur each year, 5,517 of which are highway incidents, 991 are railroad incidents, and 266 are due to other causes<sup>27</sup>. In essence, HAZMAT incidents consist of solid, liquid, and/or gaseous contaminants that are released from fixed or mobile containers, whether by accident or by design as with an intentional terrorist attack. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind, and possibly wildlife as well.

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

Hazardous material incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous material, but exclude: (1) any release which results in exposure to poisons solely within the workplace with respect to claims which such persons may assert against the employer of such persons; (2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine; (3) release of source, byproduct, or special nuclear material from a nuclear incident; and (4) the normal application of fertilizer.

### 5.14.2 Location and Spatial Extent

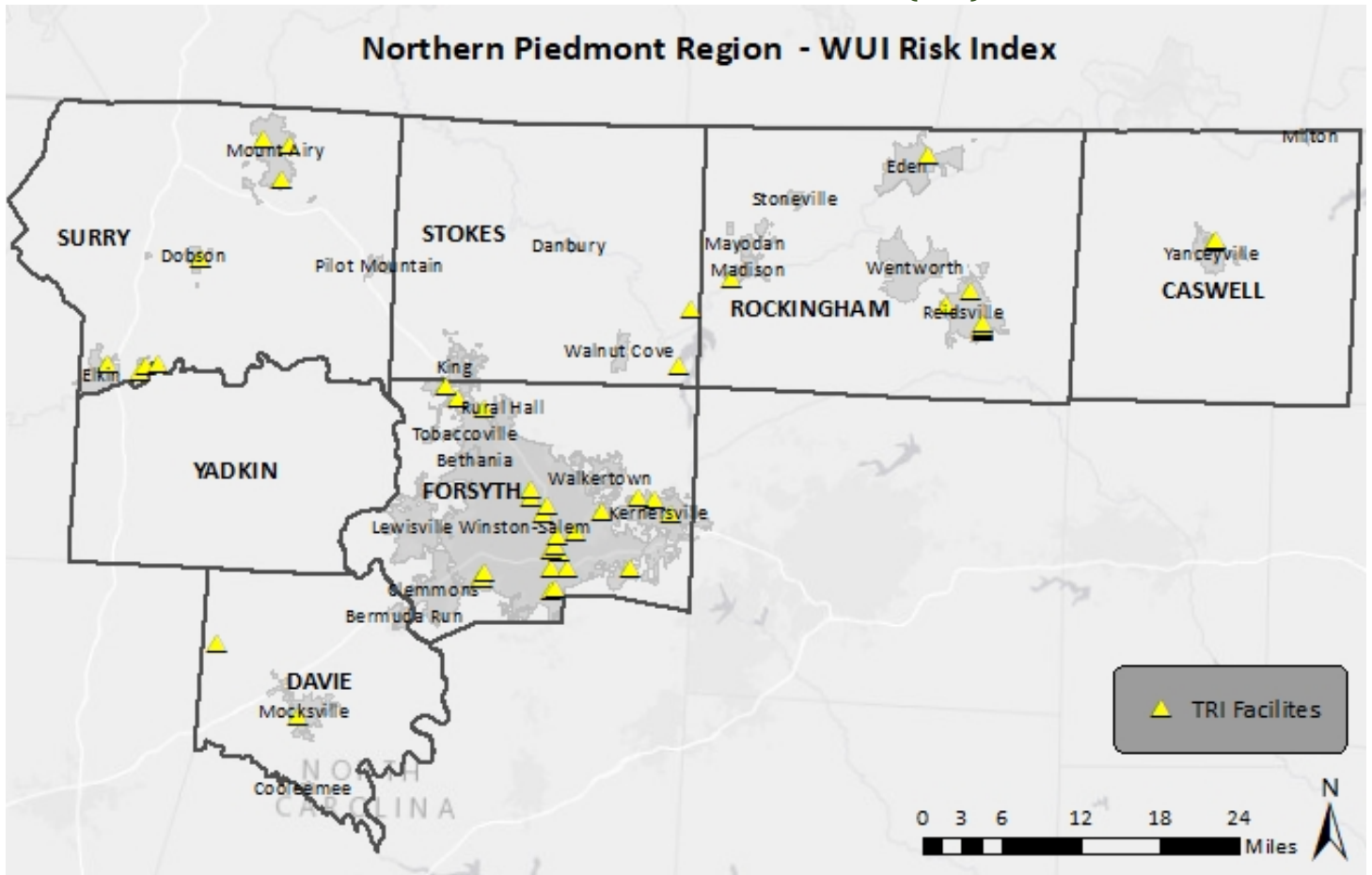
As a result of the 1986 Emergency Planning and Community Right to Know Act (EPCRA), the Environmental Protection Agency provides public information on hazardous materials. One facet of this program is to collect information from industrial facilities on the releases and transfers of certain toxic agents. This

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<sup>27</sup> FEMA, 1997.

information is then reported in the Toxic Release Inventory (TRI). TRI sites indicate where such activity is occurring. The Northern Piedmont Region has 50 TRI sites. These sites are shown in **Figure 5.21**.

**FIGURE 5.21: TOXIC RELEASE INVENTORY (TRI) SITES**



Source: Environmental Protection Agency

In addition to “fixed” hazardous materials locations, hazardous materials may also impact the region via roadways and rail. Many roads in the region are narrow or winding, making hazardous material transport in the area treacherous. All roads that permit hazardous material transport are considered potentially at risk to an incident.

### 5.14.3 Historical Occurrences

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) lists historical occurrences throughout the nation. A “serious incident” is a hazardous materials incident that involves:

- a fatality or major injury caused by the release of a hazardous material,
- the evacuation of 25 or more persons as a result of release of a hazardous material or exposure to fire,
- a release or exposure to fire which results in the closure of a major transportation artery,
- the alteration of an aircraft flight plan or operation,

- the release of radioactive materials from Type B packaging,
- the release of over 11.9 galls or 88.2 pounds of a severe marine pollutant, or
- the release of a bulk quantity (over 199 gallons or 882 pounds) of a hazardous material.

However, prior to 2002, a hazardous material “serious incident” was defined as follows:

- a fatality or major injury due to a hazardous material,
- closure of a major transportation artery or facility or evacuation of six or more person due to the presence of hazardous material, or
- a vehicle accident or derailment resulting in the release of a hazardous material.

Updated information regarding county specific releases and TRI sites have been provided through 2018. **Table 5.30** summarizes the total number of TRI Facilities in each county, along with the types of industries these facilities encompass.

**TABLE 5.30: SUMMARY OF TRI FACILITIES**

Location	Industry	Number of Facilities
<b>Caswell County</b>		<b>2</b>
	Chemicals	
	Electrical Equipment	
<b>Davie County</b>		<b>2</b>
	Machinery	
	Wood Products	
<b>Forsyth County</b>		<b>25</b>
	Beverages	
	Chemicals	
	Electrical Equipment	
	Fabricated Metals	
	Food	
	Machinery	
	Nonmetallic Mineral Product	
	Paper	
	Primary Metals	
	Textiles	
	Tobacco	
	Wood Products	
<b>Rockingham County</b>		<b>10</b>
	Chemicals	
	Fabricated Metals	
	Hazardous Waste	
	Nonmetallic Mineral Product	
	Paper	
	Plastics and Rubber	
	Tobacco	
<b>Stokes County</b>		<b>2</b>
	Electric Utilities	
	Primary Metals	
<b>Surry County</b>		<b>9</b>
	Fabricated Metals	
	Food	

**SECTION 5: HAZARD PROFILES**

	Nonmetallic Mineral Product	
	Plastics and Rubber	
	Primary Metals	
	Wood Products	
<b>Northern Piedmont Regional Total</b>		<b>50</b>

Source: United States Environmental Protection Agency, Toxic Release Inventory (TRI) Program

**Table 5.31** summarizes the serious HAZMAT incidents reported in the Northern Piedmont Region.

**TABLE 5.31: SUMMARY OF HAZMAT INCIDENTS**

Location	Number of Occurrences	Deaths / Injuries	Property Damage
<b>Caswell County</b>	<b>0</b>	<b>0/0</b>	<b>\$0</b>
Milton	0	0/0	\$0
Yanceyville	0	0/0	\$0
<b>Davie County</b>	<b>0</b>	<b>0/0</b>	<b>\$0</b>
Bermuda Run	0	0/0	\$0
Cooleemee	0	0/0	40
Mocksville	0	0/0	\$0
<b>Forsyth County</b>	<b>23</b>	<b>0/0</b>	<b>\$739,829</b>
Bethania	0	0/0	\$0
Clemmons	1	0/0	\$149,000
Kernersville	5	0/9	\$159,163
Lewisville	1	0/0	\$83,473
Rural Hall	1	0/0	\$33,681
Tobaccoville	0	0/0	\$0
Walkertown	0	0/0	\$0
Winston-Salem	13	0/0	\$314,512
<b>Rockingham County</b>	<b>5</b>	<b>0/0</b>	<b>\$26,245</b>
Eden	2	0/0	\$5,095
Madison	1	0/0	\$0
Mayodan	0	0/0	\$0
Reidsville	2	0/0	\$21,150
Stoneville	0	0/0	\$0
Wentworth	0	0/0	\$0
<b>Stokes County</b>	<b>0</b>	<b>0/0</b>	<b>\$0</b>
Danbury	0	0/0	\$0
King	0	0/0	\$0
Walnut Cove	0	0/0	\$0
<b>Surry County</b>	<b>2</b>	<b>0/0</b>	<b>\$1,029,332</b>
Dobson	0	0/0	\$0
Elkin	0	0/0	\$0
Mount Airy	2	0/0	\$1,029,332
Pilot Mountain	0	0/0	\$0
<b>Yadkin County</b>	<b>5</b>	<b>0/0</b>	<b>\$384,360</b>
Boonville	0	0/0	\$0
East Bend	0	0/0	\$0
Jonesville	0	0/0	\$0



Location	Number of Occurrences	Deaths / Injuries	Property Damage
Yadkinville	5	0/0	\$384,360
<b>Northern Piedmont Regional Total</b>	<b>35</b>	<b>0/0</b>	<b>\$2,179,766</b>

Source: U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

### 5.14.4 Probability of Future Occurrence

As of 2017, 50 toxic release inventory sites are located in the Northern Piedmont Region. Given the location of these sites and several roadway, rail, and air incidents, it is possible that a hazardous material incident may occur in the region (between 1 and 10 percent annual probability). County and municipal officials are mindful of this possibility and take precautions to prevent such an event from occurring. Furthermore, there are detailed plans in place to respond to an occurrence.

## 5.15 RADIOLOGICAL EMERGENCY – FIXED NUCLEAR FACILITIES

### 5.15.1 Background and Description

Although not referenced in the previous Northern Piedmont Regional Hazard Mitigation Plan, radiological emergencies will be assessed in this update.

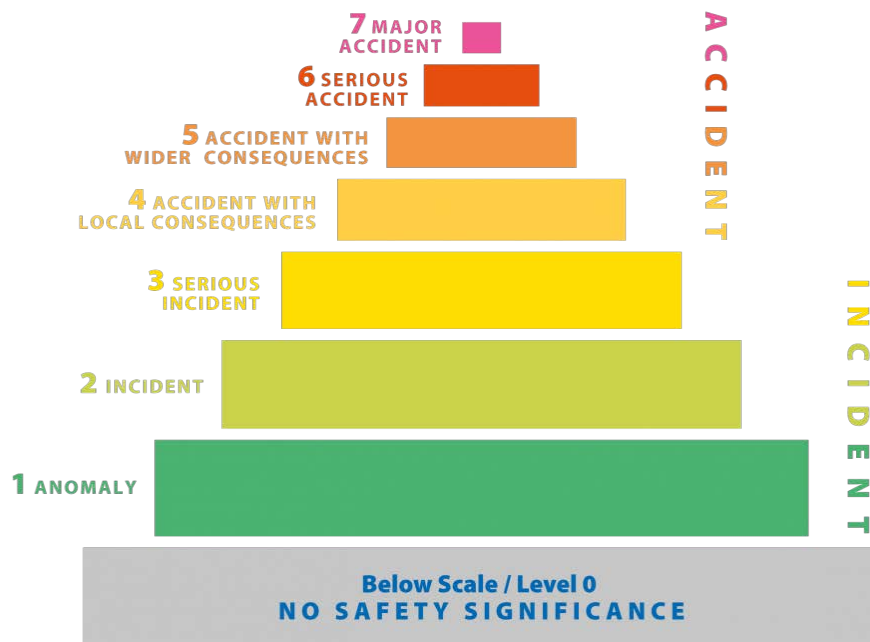
A nuclear and radiation accident is defined by the International Atomic Energy Agency as “an event that has led to significant consequences to people, the environment or the facility. Often, this type of incident results from damage to the reactor core of a nuclear power plant which can release radioactivity into the environment. The degree of exposure from nuclear accidents has varied from serious to catastrophic. While radiological emergencies generally are a rare occurrence, many incidents are extremely well known due to their large-scale impact and serious effects on people and the environment.

McGuire Nuclear Station (located in Huntersville, NC), which is the plant located closest to the Northern Piedmont Region, is a 2,258 megawatt power plan that began commercial operation in 1981. It uses uranium dioxide fuel and its reactor is a pressurized water reactor. The plant operates with a very high level of security.

### 5.15.2 Location and Spatial Extent

The entire region is at risk to a nuclear incident. However, areas in the southwestern part of the region are more susceptible due to their proximity to the McGuire Nuclear Station. The International Atomic Energy Association has developed a scale called the International Nuclear and Radiological Event Scale (INES) which provides a quantitative means of assessing the extent of a nuclear event. This scale, like the MMI used for earthquakes, is logarithmic which means that each increasing level on the scale represents an event 10 times more severe than the previous level (Figure 5.22).

**FIGURE 5.22: INTERNATIONAL NUCLEAR EVENT SCALE**

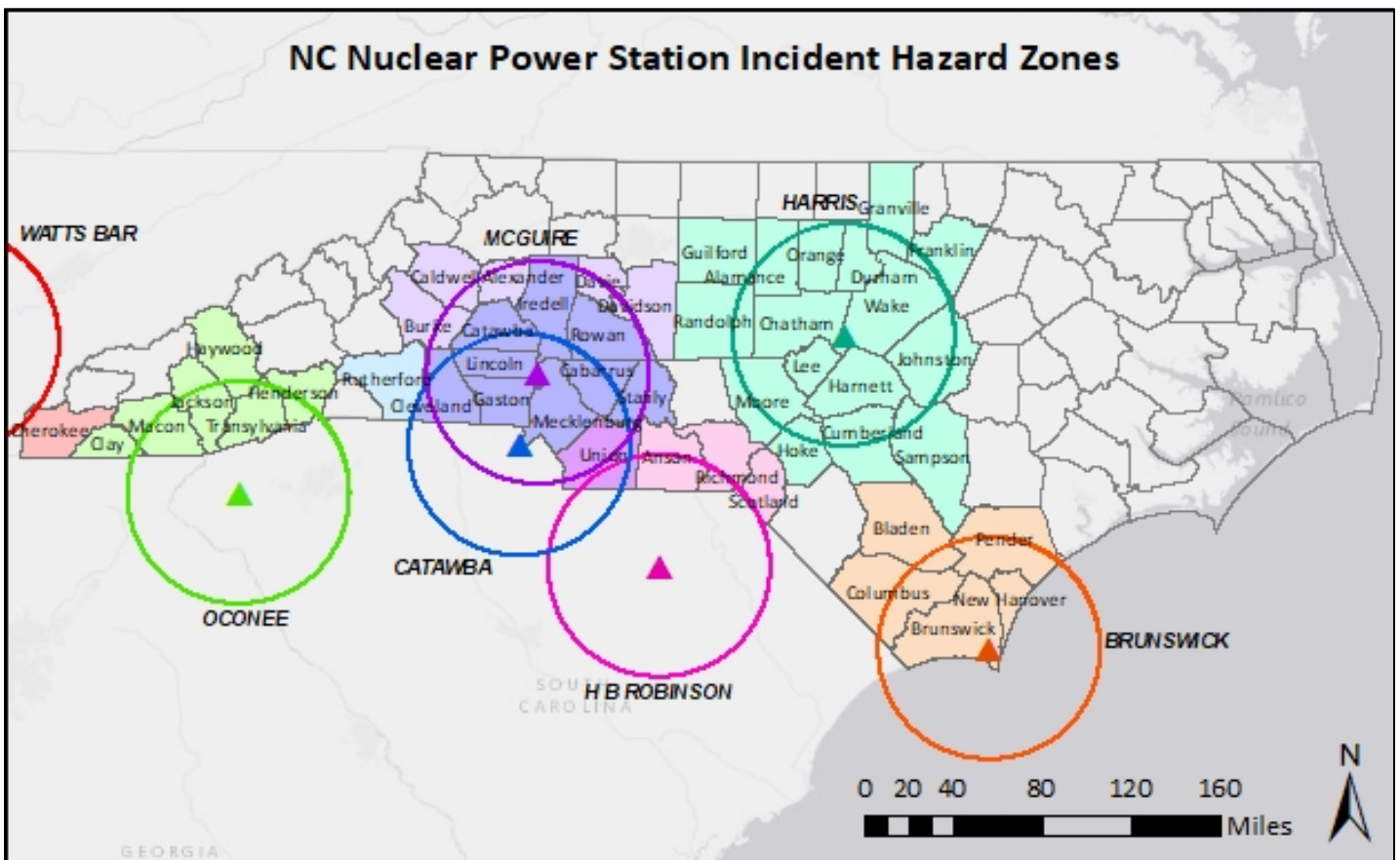


Source: International Atomic Energy Agency

The Nuclear Regulatory Commission defines two emergency planning zones around nuclear plants. Areas located within 10 miles of the station are considered to be within the zone of highest risk to a nuclear incident and this radius is the designated evacuation radius recommended by the Nuclear Regulatory Commission. Within the 10-mile zone, the primary concern is exposure to and inhalation of radioactive contamination. The most concerning effects in the secondary 50-mile zone are related to ingestion of food and liquids that may have been contaminated. All areas of the counties that are not located within the 10-mile radius are located within this 50-mile radius that is still considered to be at risk from a nuclear incident.

Davie, Forsyth, and Yadkin counties are all located within the 50-mile buffer zone of the McGuire Nuclear Station. A map of all nuclear power plants in North Carolina can be seen below in **Figure 5.23**.

**FIGURE 5.23: NC NUCLEAR POWER STATIONS INCIDENT HAZARD ZONES**



Source: North Carolina State Hazard Mitigation Plan

### 5.15.3 Historical Occurrences

Although there have been no major nuclear events at the McGuire Nuclear Station, there is some possibility that one could occur as there have been incidents in the past in the United States at other facilities and at facilities around the world.

### 5.15.4 Probability of Future Occurrences

A nuclear event is a very rare occurrence in the United States due to the intense regulation of the industry. There have been incidents in the past, but it is considered unlikely (less than 1 percent annual probability).

## 5.16 TERRORISM

### 5.16.1 Background and Description

For the purpose of this report, terrorism encompasses explosive, chemical, radiological, biological, nuclear, and other threats.

Terrorism is defined in the United States by the Code of Federal Regulations is “the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof, in furtherance of political or social objectives.” Terrorist acts may include assassinations, kidnappings, hijackings, bombings, small arms attacks, vehicle ramming attacks, edged weapon attacks, incendiary attacks, cyber-attacks (computer based), and the use of chemical, biological, nuclear and radiological weapons. For the purposes of this plan, cyber-attacks are included as a separate hazard.

Historically the main categories of weapons of mass destruction (WMDs) used in terror attacks are Chemical, Biological, Radiological, Nuclear, and Explosive (collectively referred to as CBRNE). As we rank these categories, considering immediate danger posed, impact, probability, technical feasibility, frequency, and historical success, they are typically ranked in the following way.

#### **Explosive**

Explosive attacks lead all others due to their immediate danger to life and health, immediate and measurable impact, high probability, low cost/easy degree of technical feasibility, and a long history of successful attacks.

#### **Chemical**

Chemical attacks can pose immediate danger to life and health depending upon the materials used. Chemicals are easy to access, low cost, and easy to deploy. Chemical terrorism can have high and persistent impacts to people and places. These types of attacks are probable and have enjoyed historical success.

#### **Radiological**

Radiological attacks can pose significant threats to life and health depending upon the specific materials used. Radiological materials while restricted and regulated are accessible to people with some knowledge in this discipline. While radiological incidents have occurred, they occur less frequently than explosive and chemical attacks.

#### **Biological**

Biological attacks can pose significant threats to life and health. They are typically deployed as diseases and bio-toxins. They require some degree of technical expertise in order to be deployed successfully. While biological incidents have occurred, they occur less frequently than explosive and chemical attacks.

#### **Nuclear**

While yielding a very high impact, the Nuclear attack is extremely rare due to the fact that it is cost prohibitive and very technically difficult to achieve. This type of attack, however, could be state sponsored which makes it viable.

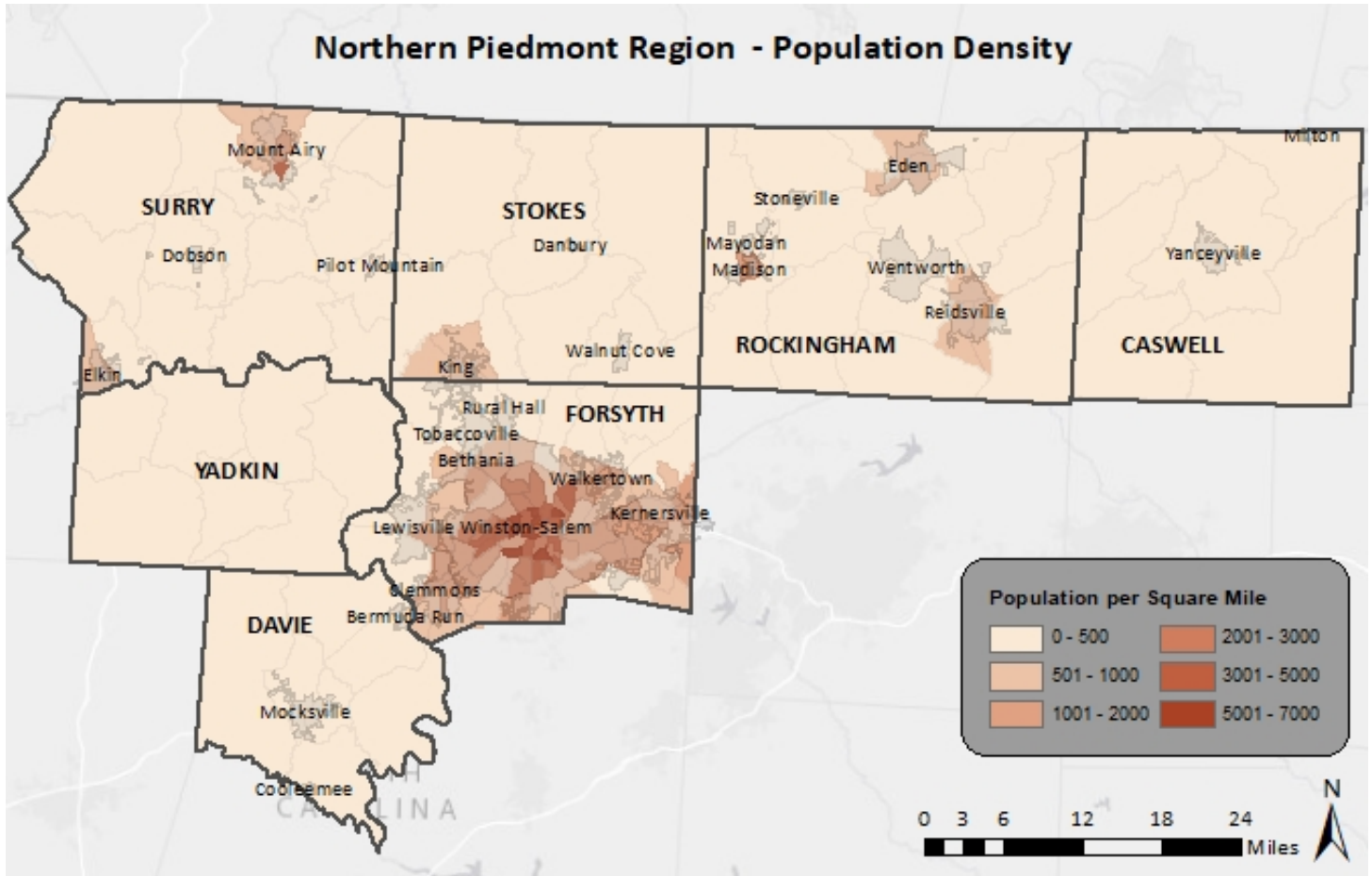
**Other**

Terrorism Hazard Assessment must also account for modern trends and changes. An additional “OTHER” category should be considered that includes small arms attacks, vehicle ramming attacks, edged weapon attacks, and incendiary attacks.

**5.16.2 Location and Spatial Extent**

All parts of North Carolina are vulnerable to a terror event; however, terrorism tends to target more densely populated areas. The map in **Figure 5.24** displays the population density in the Northern Piedmont region using census tract levels.

**FIGURE 5.24: POPULATION DENSITY IN THE NORTHERN PIEDMONT REGION**



Furthermore, the most recent population counts of each participating county and jurisdictions can be seen in **Table 5.32** below.

**TABLE 5.32: 2017 POPULATION ESTIMATES FOR THE NORTHERN PIEDMONT REGION**

Location	2018 Population Estimate
<b>Caswell County</b>	<b>22,698</b>
Milton	148
Yanceyville	1,994
Unincorporated Areas	20,556
<b>Davie County</b>	<b>42,733</b>
Bermuda Run	2,616
Cooleemee	968
Mocksville	5,291
Unincorporated Areas	33,858
<b>Forsyth County</b>	<b>379,099</b>
Bethania	359
Clemmons	20,563
Kernersville	24,767
Lewisville	13,999
Rural Hall	3,216
Tobaccoville	2,680
Walkertown	5,150
Winston-Salem	246,328
Unincorporated Area	62,037
<b>Rockingham County</b>	<b>90,690</b>
Eden	14,870
Madison	2,118
Mayodan	2,371
Reidsville	14,013
Stoneville	1,243
Wentworth	2,702
Unincorporated Area	53,373
<b>Stokes County</b>	<b>45,467</b>
Danbury	183
King	6,877
Walnut Cove	1,355
Unincorporated Area	37,052
<b>Surry County</b>	<b>71,948</b>
Dobson	1,548
Elkin	4,036
Mount Airy	10,260
Pilot Mountain	1,422
Unincorporated Area	54,682
<b>Yadkin County</b>	<b>37,543</b>
Boonville	1,156
East Bend	565
Jonesville	2,209
Yadkinville	2,899
Unincorporated Area	30,714
<b>Northern Piedmont Regional Total</b>	<b>690,178</b>

Source: US Census Bureau

### **5.16.3 Historical Occurrences**

No extreme cases of terror attacks have previously affected the Northern Piedmont region. However, as the population in the area continues to increase, so does the chance of an attack.

### **5.16.4 Probability of Future Occurrences**

The Northern Piedmont region has experienced no major terrorist attacks, but the area's population is continuing to rise. The probability of future occurrences of a terrorist attack, while unlikely (less than 1 percent annual probability) is a real possibility that the area must be prepared for.

## 5.17 CYBER

### 5.17.1 Background and Description

Cyberattacks are deliberate attacks on information technology systems in an attempt to gain illegal access to a computer, or purposely cause damage. As the world and the Northern Piedmont region become more technologically advanced and dependent upon computer systems, the threat of cyberattacks is becoming increasingly prevalent. Also known as computer network attacks, cyberattacks are difficult to recognize and typically use malicious code to alter computer data or steal information.

Mitigating and preparing for cyberattacks is challenging because of how diverse and complex attacks can be. The FBI is the lead federal agency for investigating cyberattacks by criminals, overseas adversaries, and terrorists. In North Carolina, the Department of Information Technology is the lead agency that maintains Cybersecurity and Risk Management resources.

Cyberattacks can happen in both the public and private sector. They may be carried out by a specific individual, or by groups from afar. Many attacks attempt to steal money or to disturb normal operations. According to the 2017 Verizon Report of Data Breaching, 93% of all data breaches had a financial or espionage motive, and espionage cases are rising.

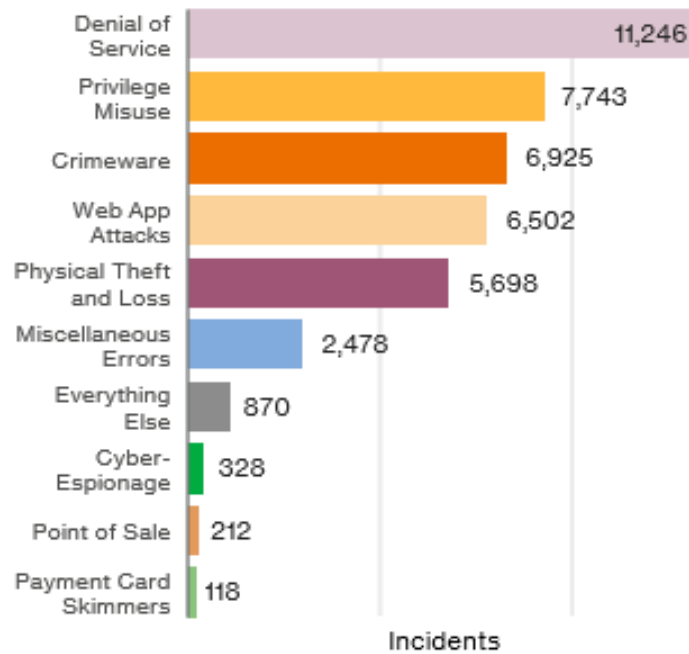
There are many types of cyberattack incident patterns, which include:

- ◆ Web App Attacks: Incidents in which web applications were attacked, which can include exploiting code-level vulnerabilities in the application.
- ◆ Point-of-Sale Intrusions: Remote attacks against environments where card-present retail transactions are conducted.
- ◆ Insider and Privilege Misuse: Unapproved or malicious use of organizational resources.
- ◆ Miscellaneous Errors: Incidents in which unintentional actions directly compromise an attribute of a security asset.
- ◆ Physical Theft and Loss: Incidents where an information asset went missing.
- ◆ Crimeware: Instances involving malware that do not fit into a more specific pattern.
- ◆ Payment Card Skimmers: Incidents involving skimming devices physically implanted on an asset that reads magnetic stripe data from payment cards.
- ◆ Cyber-espionage: Unauthorized network or system access linked to state-affiliated actors.
- ◆ Denial-of-Service Attacks: Any attack intended to compromise the availability of networks and systems that are designed to overwhelm systems, resulting in performance degradation or interruption of service.

**Figure 5.25** below displays nationwide cyberattack incident patterns from the 2017 Verizon Data Breach Investigations Report.



**FIGURE 5.25: PERCENTAGE AND COUNTS OF INCIDENTS PER PATTERN**



Source: 2017 Verizon Data Breach Investigations Report

### 5.17.2 Location and Spatial Extent

Cyberattacks happen all over the world and are not restricted to a certain locational boundary. They tend to affect the public industry rather than private industries.

### 5.17.3 Historical Occurrences

In North Carolina and the Northern Piedmont region, the Department of Information Technology specializes in cybersecurity and risk management. Within the department, the NC Information Sharing and Analysis Center gathers information on cyber threats within the State raise cybersecurity.

In 2016, North Carolina reported the highest number of cybercrimes in the “non-payment/non-delivery” sector, which can be seen in **Table 5.33** below.

**TABLE 5.33: NORTH CAROLINA CYBERCRIMES AND VICTIM COUNTS IN 2016**

Crime Type by Victim Count			
Crime Type	Victim Count	Crime Type	Victim Count
419/Overpayment	614	Health Care Related	10
Advanced Fee	384	IPR/Copyright and Counterfeit	58
Auction	442	Identity Theft	345
BEC/EAC	254	Investment	28
Charity	10	Lottery/Sweepstakes	119
Civil Matter	28	Malware/Scareware	62
Confidence Fraud/Romance	326	Misrepresentation	102
Corporate Data Breach	74	No Lead Value	121
Credit Card Fraud	274	Non-payment/Non-Delivery	1,844
Crimes Against Children	19	Other	218
Criminal Forums	0	Personal Data Breach	569
Denial of Service	28	Phishing/Vishing/Smishing/Pharming	399
Employment	467	Ransomware	67
Extortion	468	Re-shipping	25
Gambling	1	Real Estate/Rental	280
Government Impersonation	319	Tech Support	298
Hacktivist	2	Terrorism	6
Harassment/Threats of Violence	364	Virus	29
Descriptors*			
Social Media	455	Virtual Currency	38

Source: FBI Internet Crime Complaint Center, 2016

Although the Northern Piedmont region has not reported any major catastrophic cyberattacks, the potential to experience one is unpredictable and can happen at any time.

#### 5.17.4 Probability of Future Occurrences

As the world's dependency on technology grows, the possibility of experiencing cyberattacks rises as well. There have not been severe past occurrences in the region, and it is considered unlikely (less than 1 percent annual probability) to experience one in the near future.

## 5.18 ELECTROMAGNETIC PULSE

### 5.18.1 Background and Description

The United States Department of Energy defines electromagnetic pulses (EMPs) as “intense pulses of electromagnetic energy resulting from solar-caused effects or man-made nuclear and pulse power devices.” EMPs can be naturally occurring or human-caused hazards. Examples of natural EMP events include:

- ◆ Lightning electromagnetic pulse
- ◆ Electrostatic discharge
- ◆ Meteoric electromagnetic pulse, and
- ◆ Coronal mass ejection, also known as a solar electromagnetic pulse.

A human-caused EMP (such as a nuclear EMP) is a technological hazard that can cause severe damage to electrical components attached to power lines or communication systems. One of the most complex aspects of EMPs is the fact they are invisible, unpredictable, and rapid. They can also overload electronic devices that people heavily rely on every day. EMPs are harmless to people biologically; however, an EMP attack could damage electronic systems such as planes or cars. This could cause destruction of property and life and potentially generate disease or societal collapse.

In 2015, Congress amended the Homeland Security Act of 2002 by passing the Critical Infrastructure Protection Act (CIPA), which protects Americans from an EMP. It also required reporting of EMP threats, research and development, and a campaign to educate planners and emergency responders about EMP events.

### 5.18.2 Location and Spatial Extent

An EMP can happen in any location, and they are relatively unpredictable. Due to advancing technologies, densely populated may be more prone to damages from an EMP. Therefore, bigger cities in the Northern Piedmont region may be more susceptible.

### 5.18.3 Historical Occurrences

There have been no reports of EMP occurrences in the Northern Piedmont region.

### 5.18.4 Probability of Future Occurrences

The probability of an EMP is unlikely (less than 1 percent annual probability), but an occurrence could have catastrophic impacts.

## 5.19 CONCLUSIONS ON HAZARD RISK

The hazard profiles presented in this section were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies, and technical reports.

### 5.19.1 Hazard Extent

**Table 5.34** describes the extent of each natural hazard identified for the Northern Piedmont Region. The extent of a hazard is defined as its severity or magnitude, as it relates to the planning area.

**TABLE 5.34 EXTENT OF NORTHERN PIEDMONT REGION HAZARDS**

Natural Hazards	
Drought	Drought extent is defined by the North Carolina Drought Monitor Classifications which include Abnormally Dry, Moderate Drought, Severe Drought, Extreme Drought, and Exceptional Drought (page 5:6). According to the North Carolina Drought Monitor Classifications, the most severe drought condition is Exceptional. Each of the participating counties has received this ranking over the nineteen-year reporting period.
Excessive Heat	The extent of excessive heat can be defined by the maximum temperature reached. The highest temperature recorded in the Northern Piedmont Region is 109 degrees Fahrenheit (reported on July 28, 1940). <ul style="list-style-type: none"> <li>• Caswell County: 104°F</li> <li>• Davie County: 103°F</li> <li>• Forsyth County: 104°F</li> <li>• Rockingham County: 108°F</li> <li>• Stokes County: 103°F</li> <li>• Surry County: 105°F</li> <li>• Yadkin County: 105°F</li> </ul>
Hurricane and Coastal Hazards	Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5 (Table 5.9). The greatest classification of hurricanes to traverse directly through the Northern Piedmont Region was an unnamed tropical storm in 1893 which reached a maximum wind speed of 53 knots in the region. Although the region is much more likely to be impacted by the remnants of a hurricane or tropical storm, it is possible that a storm can impact the region directly.
Tornadoes/Thunderstorms	<u>Tornadoes:</u> Tornado hazard extent is measured by tornado occurrences in the US provided by FEMA (Figure 5.6) as well as the Fujita/Enhanced Fujita Scale (Tables 5.12 and 5.13). The greatest magnitude reported was an F3 (last reported on May 8, 2008). It should be noted that an F5 tornado is possible. <ul style="list-style-type: none"> <li>• Caswell County: F2</li> <li>• Davie County: F0</li> <li>• Forsyth County: F3</li> <li>• Rockingham County: F3</li> <li>• Stokes County: F1</li> <li>• Surry County: F1</li> <li>• Yadkin County: F1</li> </ul>

	<p><b>Thunderstorms:</b> Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 55-year history from the National Climatic Data Center, the strongest recorded wind event in the Northern Piedmont Region was reported on July 16, 1962 at 100 knots (approximately 115 mph). It should be noted that future events may exceed these historical occurrences.</p> <ul style="list-style-type: none"> <li>• Caswell County: 80 knots</li> <li>• Davie County: 65 knots</li> <li>• Forsyth County: 100 knots</li> <li>• Rockingham County: 80 knots</li> <li>• Stokes County: 77 knots</li> <li>• Surry County: 77 knots</li> <li>• Yadkin County: 86 knots</li> </ul> <p><b>Lightning:</b> According to the Vaisala flash density map (Figure 5.15), the Northern Piedmont Region is located in an area that experiences 4 to 5 lightning flashes per square kilometer per year. It should be noted that future lightning occurrences may exceed these figures.</p> <p><b>Hailstorms:</b> Hail extent can be defined by the size of the hail stone. The largest hail stone reported in the Northern Piedmont Region was 3.0 inches (reported on June 5, 1985). It should be noted that future events may exceed this.</p> <ul style="list-style-type: none"> <li>• Caswell County: 2.0 inches</li> <li>• Davie County: 1.75 inches</li> <li>• Forsyth County: 2.75 inches</li> <li>• Rockingham County: 2.75 inches</li> <li>• Stokes County: 2.25 inches</li> <li>• Surry County: 3.0 inches</li> <li>• Yadkin County: 1.75 inches</li> </ul>
<p>Severe Winter Weather</p>	<p>The extent of winter storms can be measured by the amount of snowfall received (in inches). The greatest 24-hour snowfall reported in the region was 18 inches on December 17, 1930. Due to unpredictable variations in snowfall throughout the region, extent totals will vary for each participating jurisdiction and reliable data on snowfall totals is not abundantly available.</p> <ul style="list-style-type: none"> <li>• Caswell County: 13 inches</li> <li>• Davie County: 12 inches</li> <li>• Forsyth County: 18 inches</li> <li>• Rockingham County: 17 inches</li> <li>• Stokes County: 12 inches</li> <li>• Surry County: 12 inches</li> <li>• Yadkin County: 16 inches</li> </ul>
<p>Earthquakes</p>	<p>Earthquake extent can be measured by the Richter Scale (Table 5.21) and the Modified Mercalli Intensity (MMI) scale (Table 5.22) and the distance of the epicenter from the Northern Piedmont Region. According to data provided by the National Geophysical Data Center, the greatest MMI to impact the region was VI (strong) with a correlating Richter Scale measurement of approximately 3.3 (reported on September 13, 1976). The epicenter of this earthquake was located 16.1 km away.</p> <ul style="list-style-type: none"> <li>• Caswell County: V; 193.0 km to epicenter</li> <li>• Davie County: V; 80.0 km to epicenter</li> <li>• Forsyth County: V; 61.0 km to epicenter</li> <li>• Rockingham County: V; 469.0 km to epicenter</li> <li>• Stokes County: IV; 130.0 km to epicenter</li> </ul>

	<ul style="list-style-type: none"> <li>• Surry County: VI; 16.0 km to epicenter</li> <li>• Yadkin County: V; 50.0 km to epicenter</li> </ul>																																								
Geological	<p><u>Landslide</u>: As noted above in the landslide profile, the landslide data provided by the North Carolina Geological survey is incomplete. This provides a challenge when trying to determine an accurate extent for the landslide hazard. However, when using the USGS landslide susceptibility index, extent can be measured with incidence, which is generally low throughout the region.</p> <p><u>Sinkhole</u>: The western part of North Carolina and the Northern Piedmont region is susceptible to sinkholes; however, there are no historical records of sinkholes in the region.</p> <p><u>Erosion</u>: The extent of erosion can be defined by the measurable rate of erosion that occurs. There are no erosion rate records available for the Northern Piedmont region.</p>																																								
Dam Failure	<p>Dam failure extent is defined using the North Carolina Division of Land Resources criteria (Table 5.25). Of the 957 dams in Northern Piedmont Region, 116 are classified as high-hazard.</p> <ul style="list-style-type: none"> <li>• Caswell County: 4 high hazard dams</li> <li>• Davie County: 6 high hazard dams</li> <li>• Forsyth County: 53 high hazard dams</li> <li>• Rockingham County: 16 high hazard dams</li> <li>• Stokes County: 18 high hazard dams</li> <li>• Surry County: 15 high hazard dams</li> <li>• Yadkin County: 4 high hazard dams</li> </ul>																																								
Flooding	<p>Flood extent can be measured by the amount of land and property in the floodplain as well as flood height and velocity. The amount of land in the floodplain accounts for 6.5 percent of the total land area in the Northern Piedmont Region. Flood depth and velocity are recorded via United States Geological Survey stream gauges throughout the region. While a gauge does not exist for each participating jurisdiction, there is one at or near many areas. The greatest peak discharge recorded for the region was reported in July 1916. Water reached a discharge of 94,300 cubic feet per second and the stream gauge height was recorded at 36.3 feet. Additional peak discharge readings and gauge heights are in the table below.</p> <table border="1"> <thead> <tr> <th>Location/Jurisdiction</th> <th>Date</th> <th>Peak Discharge (cfs)</th> <th>Gauge Height (ft)</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>Caswell County</b></td> </tr> <tr> <td>Moon Creek near Yanceyville</td> <td>6/21/1972</td> <td>4,010</td> <td>13.81</td> </tr> <tr> <td>Hycy Creek near Leasburg</td> <td>9/6/1996</td> <td>9,140</td> <td>40.47</td> </tr> <tr> <td colspan="4"><b>Davie County</b></td> </tr> <tr> <td>South Yadkin River at Cooleemee</td> <td>10/3/1929</td> <td>24,800</td> <td>32.25</td> </tr> <tr> <td>Yadkin River at Yadkin College</td> <td>7/1916</td> <td>94,300</td> <td>36.30</td> </tr> <tr> <td colspan="4"><b>Forsyth County</b></td> </tr> <tr> <td>South Fork Muddy Creek near Clemmons</td> <td>8/10/1970</td> <td>2,980</td> <td>16.30</td> </tr> <tr> <td>Belews Creek near Kernersville</td> <td>10/15/1954</td> <td>2,500</td> <td>23.98</td> </tr> </tbody> </table>	Location/Jurisdiction	Date	Peak Discharge (cfs)	Gauge Height (ft)	<b>Caswell County</b>				Moon Creek near Yanceyville	6/21/1972	4,010	13.81	Hycy Creek near Leasburg	9/6/1996	9,140	40.47	<b>Davie County</b>				South Yadkin River at Cooleemee	10/3/1929	24,800	32.25	Yadkin River at Yadkin College	7/1916	94,300	36.30	<b>Forsyth County</b>				South Fork Muddy Creek near Clemmons	8/10/1970	2,980	16.30	Belews Creek near Kernersville	10/15/1954	2,500	23.98
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Muddy Creek near Lewisville	6/21/1972	8,000	21.83
North Fork Swannanoa River near Walkertown	9/8/2004	7,000	10.33
Salem Creek at Winston-Salem	6/13/1970	5,590	12.93
Yadkin River at Enon	6/21/1972	73,300	27.83
<b>Rockingham County</b>			
Smith River at Eden	8/15/1940	45,600	19.28
Wolf Island Creek below SR 1998 at Reidsville	2/6/2004	512	5.62
Dan River near Wentworth	6/22/1972	54,200	31.60
Dan River at Leaksville	9/18/1945	54,200	28.27
<b>Stokes County</b>			
Dan River at Pine Hall	1/25/2010	27,800	25.77
<b>Surry County</b>			
Fisher River near Dobson	10/2/1929	8,300	12.10
Elkin River at Elkin	9/20/1971	6,900	15.03
Ararat River at Dam near Pilot Mountain	6/14/1947	40,000	106.50
Yadkin River at Siloam	9/22/1979	40,600	26.72
<b>Yadkin County</b>			
South Deep Creek near Yadkinville	10/10/1959	6,750	24.87
Logan Creek near Smithfield	6/22/1957	496	23.08

**Other Hazards**

**Wildfires**

Wildfire data was provided by the North Carolina Division of Forest Resources and is reported annually by county from 2003-2018. Analyzing the data by county indicates the following wildfire hazard extent for each county.

**Caswell County**

- The greatest number of fires to occur in any year was 30 in 2006.
- The greatest number of acres to burn in a single year occurred in 2005 when 184.2 acres were burned.

**Davie County**

- The greatest number of fires to occur in any year was 45 in 2006.
- The greatest number of acres to burn in a single year occurred in 2006 when 35.6 acres were burned

**Forsyth County**

- The greatest number of fires to occur in any year was 98 in 2007.
- The greatest number of acres to burn in a single year occurred in 2006 when 50.8 acres were burned.

	<p><b>Rockingham County</b></p> <ul style="list-style-type: none"> <li>• The greatest number of fires to occur in any year was 77 in 2006.</li> <li>• The greatest number of acres to burn in a single year occurred in 2006 when 173.6 acres were burned.</li> </ul> <p><b>Stokes County</b></p> <ul style="list-style-type: none"> <li>• The greatest number of fires to occur in any year was 72 in 2012.</li> <li>• The greatest number of acres to burn in a single year occurred in 2008 when 394.3 acres were burned.</li> </ul> <p><b>Surry County</b></p> <ul style="list-style-type: none"> <li>• The greatest number of fires to occur in any year was 101 in 2006.</li> <li>• The greatest number of acres to burn in a single year occurred in 2011 when 832.0 acres were burned.</li> </ul> <p><b>Yadkin County</b></p> <ul style="list-style-type: none"> <li>• The greatest number of fires to occur in any year was 55 in 2008.</li> <li>• The greatest number of acres to burn in a single year occurred in 2006 when 44.1 acres were burned.</li> </ul> <p>Although this data lists the extent that has occurred, larger and more frequent wildfires are possible throughout the region.</p>
<p>Infectious Disease</p>	<p>There is no available method for determining dollar losses due to infectious diseases at this time; however, \$477,500 dollars was allocated from the Governor’s yearly budget in 2016 for preventative measures regarding the Zika Virus. The entire Northern Piedmont region is susceptible to infectious diseases such as the flu, which kills hundreds of people annually.</p>
<p><b>Technological Hazards</b></p>	
<p>Hazardous Materials Incident</p>	<p>According to USDOT PHMSA, the largest hazardous materials incident reported in the region was 9,000 LGA released on the highway on July 29, 1997. It should be noted that larger events are possible.</p> <ul style="list-style-type: none"> <li>• Caswell County: 2,921 LGA</li> <li>• Davie County: 10 LGA</li> <li>• Forsyth County: 9,000 LGA</li> <li>• Rockingham County: 8,000 LGA</li> <li>• Stokes County: 20 LGA</li> <li>• Surry County: 1.764 LGA</li> <li>• Yadkin County: 8,500 LGA</li> </ul>
<p>Radiological Emergency – Fixed Nuclear Facilities</p>	<p>Although there is no history of a nuclear accident at the McGuire Nuclear Station, other events across the globe and in the United States in particular indicate that an event is possible. Since several national and international events were Level 7 events on the INES, the potential for a Level 7 event at McGuire is possible.</p>
<p>Terrorism</p>	<p>Although no severe terrorism attacks have been reported in the Northern Piedmont region, the entire area is still at risk to a future event. Densely populated areas, such as cities, are considered more susceptible. Terror events have the potential to affect the human population, buildings and infrastructure, and the economy in the region.</p>
<p>Cyber</p>	<p>No cyber attacks have been historically reported in the Northern Piedmont region. Technology usage, however, is increasing. A cyber attack could potentially devastate the region’s economy and could have lasting negative impacts.</p>
<p>Electromagnetic Pulse</p>	<p>Electromagnetic Pulse (EMP) occurrences have not taken place in the Northern Piedmont region, but the risk still exists. If an EMP were to occur, the effects</p>



would negatively impact first responders and communication efforts and may cause panic within the area.

### 5.19.2 Priority Risk Index

In order to draw some meaningful planning conclusions on hazard risk for the Northern Piedmont Region, the results of the hazard profiling process were used to generate countywide hazard classifications according to a “Priority Risk Index” (PRI). The purpose of the PRI is to categorize and prioritize all potential hazards for the Northern Piedmont Region as high, moderate, or low risk. Combined with the asset inventory and quantitative vulnerability assessment provided in the next section, the summary hazard classifications generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for the jurisdictions in the Northern Piedmont Region to consider as part of their proposed mitigation strategy.

The prioritization and categorization of identified hazards for the Northern Piedmont Region is based principally on the PRI, a tool used to measure the degree of risk for identified hazards in a particular planning area. The PRI is used to assist the Northern Piedmont Regional Hazard Mitigation Planning Team in gaining consensus on the determination of those hazards that pose the most significant threat to the Northern Piedmont counties based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective planning tool for classifying and prioritizing hazard risks in the Northern Piedmont Region based on standardized criteria.

The application of the PRI results in numerical values that allow identified hazards to be ranked against one another (the higher the PRI value, the greater the hazard risk). PRI values are obtained by assigning varying degrees of risk to five categories for each hazard (probability, impact, spatial extent, warning time, and duration). Each degree of risk has been assigned a value (1 to 4) and an agreed upon weighting factor<sup>28</sup>, as summarized in **Table 5.35**. To calculate the PRI value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor. The sum of all five categories equals the final PRI value, as demonstrated in the example equation below:

$$\text{PRI VALUE} = [( \text{PROBABILITY} \times .30 ) + ( \text{IMPACT} \times .30 ) + ( \text{SPATIAL EXTENT} \times .20 ) + ( \text{WARNING TIME} \times .10 ) + ( \text{DURATION} \times .10 )]$$

According to the weighting scheme and point system applied, the highest possible value for any hazard is 4.0. When the scheme is applied for the Northern Piedmont Region, the highest PRI value is 3.0 (Severe Winter Weather). Prior to being finalized, PRI values for each identified hazard were reviewed and accepted by the members of the Regional Hazard Mitigation Planning Team.

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<sup>28</sup> The Regional Hazard Mitigation Planning Team, based upon any unique concerns or factors for the planning area, may adjust the PRI weighting scheme during future plan updates.

**TABLE 5.35: PRIORITY RISK INDEX FOR THE NORTHERN PIEDMONT REGION**

PRI Category	Degree of Risk			Assigned Weighting Factor
	Level	Criteria	Index Value	
Probability	Unlikely	Less than 1% annual probability	1	30%
	Possible	Between 1% and 10% annual probability	2	
	Likely	Between 10 and 100% annual probability	3	
	Highly Likely	100% annual probability	4	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	30%
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	10%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	10%
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

### 5.19.3 Priority Risk Index Results

**Table 5.36** summarizes the degree of risk assigned to each category for all initially identified hazards based on the application of the PRI. Assigned risk levels were based on the detailed hazard profiles developed for this section, as well as input from the Regional Hazard Mitigation Planning Team. The results were then used in calculating PRI values and making final determinations for the risk assessment.

TABLE 5.36: SUMMARY OF PRI RESULTS

Hazard	Subhazard(s) Assessed	Category/Degree of Risk					
		Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
<b>Natural Hazards</b>							
Drought		Likely	Minor	Large	More than 24 hours	More than 1 week	2.5
Excessive Heat		Possible	Minor	Large	More than 24 hours	Less than 1 week	2.1
Hurricane and Coastal Hazards		Possible	Critical	Large	More than 24 hours	Less than 24 hours	2.6
Tornadoes/Thunderstorms	Hailstorm, Lightning	Highly Likely	Limited	Moderate	6 to 12 hours	Less than 6 hours	2.8
Severe Winter Weather		Likely	Critical	Large	More than 24 hours	Less than one week	3.0
Earthquakes		Possible	Minor	Moderate	Less than 6 hours	Less than 6 hours	2.0
Geological	Landslide, Sinkholes, Erosion	Possible	Limited	Small	Less than 6 hours	Less than 6 hours	2.1
Dam Failure		Unlikely	Critical	Moderate	Less than 6 hours	Less than 24 hours	2.2
Flooding		Likely	Limited	Moderate	6 to 12 hours	Less than 1 week	2.7
<b>Other Hazards</b>							
Wildfires		Likely	Minor	Small	Less than 6 hours	More than 1 week	2.4
Infectious Disease		Possible	Minor	Small	More than 24 hours	More than 1 week	1.8
<b>Technological Hazards</b>							
Hazardous Substances		Possible	Limited	Small	Less than 6 hours	Less than 24 hours	2.2
Radiological Emergency	Fixed Nuclear Facilities	Unlikely	Critical	Small	6 to 12 hours	Less than 1 week	1.9
Terrorism		Unlikely	Critical	Small	Less than 6 hours	Less than 24 hours	2.2
Cyber		Possible	Minor	Small	Less than 6 hours	Less than 24 hours	1.9
Electromagnetic Pulse		Unlikely	Minor	Large	12 to 24 hours	Less than 6 hours	1.7

## 5.20 FINAL DETERMINATIONS

The conclusions drawn from the hazard profiling process for the Northern Piedmont Region, including the PRI results and input from the Regional Hazard Mitigation Planning Team, resulted in the classification of risk for each identified hazard according to three categories: High Risk, Moderate Risk, and Low Risk. For purposes of these classifications, risk is expressed in relative terms according to the estimated impact that a hazard will have on human life and property throughout all of the Northern Piedmont Region. It should be noted that although some hazards are classified below as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible in some cases and their assigned classification will continue to be evaluated during future plan updates.

A more quantitative analysis to estimate potential dollar losses for each hazard has been performed separately, and is described in Section 6: *Vulnerability Assessment*.

**Table 5.37** ranks the hazards that were assessed in the update that were renamed to be consistent with the State of State of North Carolina Hazard Mitigation Plan. These conclusions were based on the PRI calculations and input from the Northern Piedmont Regional Planning Committee.

**TABLE 5.37: 2020 CONCLUSIONS ON HAZARD RISK FOR THE NORTHERN PIEDMONT REGION**

<b>HIGH RISK</b>	Winter Storm and Freeze Thunderstorm Wind / High Wind Flooding Hurricane and Coastal Hazards
<b>MODERATE RISK</b>	Drought Wildfires Hazardous Substances Dam Failure Terrorism Excessive Heat Infectious Disease Cyber
<b>LOW RISK</b>	Geological Earthquakes Radiological Emergency Electromagnetic Pulse

# SECTION 6

## VULNERABILITY ASSESSMENT

This section identifies and quantifies the vulnerability of the jurisdictions within the Northern Piedmont Region to the significant hazards identified in the previous sections (*Hazard Identification and Profiles*). It consists of the following subsections:

- 6.1 Overview
- 6.2 Methodology
- 6.3 Explanation of Data Sources
- 6.4 Asset Inventory
- 6.5 Vulnerability Assessment Results
- 6.6 Conclusions on Hazard Vulnerability

### 44 CFR Requirement

44 CFR Part 201.6(c)(2)(ii): The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. The description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) An estimate of the potential losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

### 6.1 OVERVIEW

This section builds upon the information provided in Section 4: *Hazard Identification and* Section 5: *Hazard Profiles* by identifying and characterizing an inventory of assets in the Northern Piedmont Region. Additionally, an assessment is conducted for each identified hazard, including the potential impact and expected amount of damages it may cause. The primary objective of the vulnerability assessment is to quantify exposure and the potential loss estimates for each hazard. In doing so, each county and their participating jurisdictions may better understand their unique risks to identified hazards and be better prepared to evaluate and prioritize specific hazard mitigation actions.

This section begins with an explanation of the methodology applied to complete the vulnerability assessment, followed by a summary description of the asset inventory as compiled for jurisdictions in the Northern Piedmont Region. The remainder of this section focuses on the results of the assessment conducted.

### 6.2 METHODOLOGY

This vulnerability assessment was conducted using three distinct methodologies: (1) A stochastic risk assessment; (2) a geographic information system (GIS)-based analysis; and (3) a risk modeling software

analysis. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation, including historical occurrence information provided in the *Hazard Identification* and *Hazard Profiles* sections. A brief description of the three different approaches is provided on the following pages.

### 6.2.1 Stochastic Risk Assessment

The stochastic risk assessment methodology was applied to analyze hazards of concern that were outside the scope of the GIS-based risk assessment and NCEM's Risk Management Tool (both described in more detail below). This involves the consideration of annualized loss estimates and impacts of current and future buildings and populations. Annualized loss is the estimated long-term weighted average value of losses to property in any single year in a specified geographic area (i.e., municipal jurisdiction or county). This methodology is applied primarily to hazards that do not have geographically-definable boundaries and are therefore excluded from spatial analysis through GIS. A stochastic risk methodology was used for the following hazards:

- Drought
- Extreme Heat
- Severe Winter Weather

The hazards listed above are considered natural and have the potential to affect all current and future buildings and all populations. **Table 6.1** provides information about all improved property in the Northern Piedmont region that is vulnerable to these hazards. For all hazards annualized loss estimates were determined using the best available data on historical losses from sources including NOAA's National Centers for Environmental Information records, the previous Northern Piedmont Regional Hazard Mitigation Plan, and local knowledge. Annualized loss estimates were generated by totaling the amount of property damage over the period of time for which records were available, and calculating the average annual loss. Given the standard weighting analysis, losses can be readily compared across hazards providing an objective approach for evaluating mitigation alternatives.

For the dam failure<sup>1</sup>, infectious disease, radiological emergency, terrorism, cyber, EMP, and geological hazards, no data with historical property damages was available. Therefore, a detailed vulnerability assessment could not be completed for these hazards at this time.

The results for these hazards are found at the end of this section in **Table 6.26**.

### 6.2.2 GIS-Based Analysis

Other hazards have specified geographic boundaries that permit additional analysis using Geographic Information Systems (GIS). These hazards include:

- Flooding
- Hazardous Substances
- Geological (Landslide)
- Wildfires

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<sup>1</sup> As noted in Section 5: *Hazard Profiles*, dam failure could be catastrophic to structures and populations in the inundation area. However, due to lack of data, no additional analysis was performed. Further, USACE and NCDENR also complete separate dam failure plans to identify risk and response measures.

The objective of the GIS-based analysis was to determine the estimated vulnerability of critical facilities and populations for the identified hazards in the Northern Piedmont Region using best available geospatial data. Digital data was collected from local, regional, state, and national sources for hazards and buildings. This included local tax assessor records for individual parcels and buildings and georeferenced point locations for identified assets (critical facilities and infrastructure, special populations, etc.) when available. ESRI® ArcGIS™ 10.6.1 was used to assess hazard vulnerability utilizing digital hazard data, as well as local building data. Using these data layers, hazard vulnerability can be quantified by estimating the assessed building value for parcels and/or buildings determined to be located in identified hazard areas. To estimate vulnerable populations in hazard areas, digital Census 2010 data by census tract was obtained and was supplemented with current population estimates from the US Census Bureau. This was intersected with hazard areas to determine exposed population counts. Unfortunately, due to the large scale of census tracts, the results are limited, but will be revised as population by census block becomes available for all areas in the region. The results of the analysis provided an estimate of the number of people and critical facilities, as well as the assessed value of parcels and improvements, determined to be potentially at risk to those hazards with delineable geographic hazard boundaries.

### 6.2.3 Risk Management Tool

The Risk Management Tool (RMT) was developed by NCEM-Risk Management (RM) as a tool to simplify hazard mitigation plan development into a single, automated, tool-based format to include geospatially based risk assessment data, also developed by NCEM-RM. The RMT is a twofold system used to create and/or update a local and the state hazard mitigation plan. The two parts of the RMT are a step-by-step system that will prompt a user to input information and narrative as well as upload pictures, documents and other information as needed. The second part of the system is the Risk Tool. The Risk Tool will run a risk assessment at the building level for certain hazards selected based on predetermined calculations for each hazard. Some hazards will have a single return period and others have multi-return periods. The availability of multi-returns periods are based on the availability of datasets for each hazard and the degree of detail in each dataset.

The Risk Assessment produced by the Risk Tool will also identify high-risk structures in the planning area and estimate cost by types of mitigation projects (wind retrofits, elevation, acquisition, mitigation reconstruction) and benefit-cost estimates by type of mitigation. The mitigation tool is only meant to begin the process of thinking about problem areas where mitigation may be of interest to the jurisdiction and property owners. It is also designed to drive mitigation actions that are specific, measurable, attainable, realistic and timely.

Finally, the Risk Management Tool also assesses vulnerable populations, such as children and elderly persons. Data used to assess these populations is from the US 2010 Census. According to the US Census Bureau, those defined as “elderly,” are 65 years old or older, while those defined as “children” are 5 years old or younger. It is important to note that the numbers assessed are from the most recent Census in 2010.

Once all of the information was input into the system, a hazard mitigation plan can then be exported into multiple document formats. The system will also store the plan so that when it is time to update the plan, the information is already in the system.

The RMT was originally developed as part of the Integrated Hazard Risk Management (IHRM) pilot project which included Durham, Edgecombe, Macon and New Hanover counties. The pilot was successful and it was determined that there is a need and interest in a system designed to be used statewide and



potentially nationwide in the future. The RMT used in this update was the second version created by NCEM.

A list of the hazards assessed by the RMT follows:

- Hurricane and Coastal Hazards
- Tornadoes/Thunderstorms
- Earthquakes
- Flooding
- Wildfires

All conclusions are presented in “**Conclusions on Hazard Vulnerability**” at the end of this section.

#### Hazard Prioritization

When it comes to evaluating hazards and determining which hazards a jurisdiction should spend the most time and effort addressing, a number of factors affect the prioritization. As discussed in *Section 5: Hazard Profiles*, the risk (magnitude, probability, location) of a hazard is one of the primary driving forces that helps determine the relative importance of addressing the potential impacts of a hazard. However, the assessment of a hazard’s risk is generally focused on the hazard itself and how severe or likely it could be within geographic scope of the study area. This assessment does not necessarily analyze the potential effects of that hazard on humans and the built environment. This is a critical component of planning for hazards since a hazard that does not impact human life, safety, or welfare is typically not considered as important to address through mitigation. The analysis that follows attempts to bring this consideration into the planning process by estimating the impacts on humans and the built environment and prioritizing hazards accordingly.

## 6.3 EXPLANATION OF DATA SOURCES

### Hurricane and Coastal Hazards

NCEM’s Risk Management Tool assessed vulnerable areas to the Hurricane and Coastal Hazards. For this assessment, vulnerable buildings and populations were analyzed against damages caused by hurricane winds.

### Tornadoes/Thunderstorms

NCEM’s Risk Management Tool analyzed the vulnerable buildings and populations to the Tornadoes/Thunderstorms hazard. Sub hazards assessed under the thunderstorms hazard include hail and lightning; however, for the purposes of this assessment, thunderstorm winds were the only risk analyzed.

### Earthquakes

NCEM’s Risk Management Tool assessed vulnerable areas to the earthquake hazard. This assessment included susceptible buildings by the type of structure, and the potential dollar losses associated with the buildings. It also analyzed susceptible populations, such as children and elderly.

### Geological (Landslide)

Data from the U.S. Geological Survey was used to first determine what areas are considered high, moderate, or low susceptibility areas to the landslide hazard. Data was downloaded in an ArcGIS compatible format. This allowed the parcel data received by local governments to be layered on top of the landslide regions to assess vulnerability to landslide occurrences.

### Flooding

FEMA Digital Flood Insurance Rate Maps (DFIRMs) were used to determine flood vulnerability. DFIRM data can be used in ArcGIS for mapping purposes and, they identify several features including floodplain boundaries and base flood elevations. Identified areas on the DFIRM represent some features of a Flood Insurance Rate Maps including the 100-year flood areas (1.0-percent annual chance flood), and the 500-year flood areas (0.2-percent annual chance flood). For the vulnerability assessment, local parcel data and critical facilities were overlaid on the 100-year floodplain areas and 500-year floodplain areas. This data was also supplemented with the NCEM RMT data, which assessed structure type and vulnerable populations within the floodplain areas. It should be noted that such an analysis does account for building elevation.

### Wildfires

The data used to determine vulnerability to wildfires in the Northern Piedmont Region is based on GIS data called the Southern Wildfire Risk Assessment (SWRA). It was provided for use in this plan by the North Carolina Division of Forest Resources. A specific layer known as the “Wildland Urban Interface” (WUI) was used to determine vulnerability of people and property. This layer uses the key input of housing density to define potential wildfire impacts to people and homes. The WUI Risk Index is then derived from a scale of -1 to -9, with the least negative impact being a -1, and uses flame length to measure fire intensity. The primary purpose of this data is to highlight areas of concern that may be conducive to mitigation actions. Many assumptions are made, making it not a true probability; however, it does provide a comparison of risk throughout the region. Data was also supplemented with the data from NCEM’s RMT, which assessed vulnerable buildings, potential dollar losses of those buildings, and susceptible populations.

### Hazardous Substances

Hazardous materials incidents can occur in both fixed facilities and through mobile transportation. For the fixed incident analysis, Toxic Release Inventory (TRI) data was used. The Toxic Release Inventory is a publicly available database from the federal Environmental Protection Agency (EPA) that contains information on toxic chemicals, releases, and other waste management activities reported annually by certain covered industry groups, as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and was further expanded by the Pollution Prevention Act of 1990. Facilities that meet certain activity thresholds must annually report their releases and other waste management activities for listed toxic chemicals to the EPA and to their state or tribal entity. A facility must report if it meets the following criteria:

- The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage, and disposal (TSD) facilities; and solvent recovery services;
- Has 10 or more full-time employee equivalents; and
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative, and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds, or 0.1 grams depending on the chemical.

For the mobile hazardous materials incident analysis, transportation data including major highways and railroads were obtained from the North Carolina Department of Transportation. This data is ArcGIS compatible, lending itself to buffer analysis to determine risk.

## 6.4 ASSET INVENTORY

An inventory of geo-referenced assets within Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin Counties and jurisdictions was compiled in order to identify and characterize those properties potentially at risk to the identified hazards<sup>2</sup>. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Under this assessment, two categories of physical assets were created and then further assessed through GIS analysis. Additionally, social assets are addressed to determine population at risk to the identified hazards. These are presented below in Section 6.4.2.

### 6.4.1 Physical and Improved Assets

The two categories of physical assets consist of:

1. **Improved Property:** Includes all improved properties in the Northern Piedmont Region according to local parcel data provided by the counties. The information has been expressed in terms of the number of parcels and total assessed value of improvements (buildings) that may be exposed to the identified hazards.

2. **Critical Facilities:** Critical facilities vary by jurisdiction. Each county provided data from their respective critical facilities that were used in this section. Identified critical facilities are fire stations, police stations, medical care facilities, schools, government facilities, emergency operation centers, or other important buildings. It should be noted that this listing is not all-inclusive for assets located in the region, but it is anticipated that it will be expanded during future plan updates as more geo-referenced data becomes available for use in GIS analysis.

The following tables provide a detailed listing of the geo-referenced assets that have been identified for inclusion in the vulnerability assessment for the Northern Piedmont Region.

**Table 6.1** lists the number of parcels, total value of parcels, total number of parcels with improvements, and the total assessed value of improvements for participating areas of the Northern Piedmont Region (study area of vulnerability assessment)<sup>3</sup>.

**TABLE 6.1: IMPROVED PROPERTY IN THE NORTHERN PIEDMONT REGION**

Location <sup>4</sup>	Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Improvements
<b>Caswell County</b>	16,989	\$911,815,592	18,943	\$2,972,620,485
Milton	167	\$1,496,454	165	\$18,135,753
Yanceyville	905	\$25,899,820	1,006	\$450,361,234
Unincorporated Areas	15,917	884,419,318	17,772	\$2,504,123,498
<b>Davie County</b>	24,801	\$1,595,865,540	42,274	\$3,092,153,036

<sup>2</sup> While potentially not all-inclusive for the jurisdictions in the Northern Piedmont region, “georeferenced” assets include those assets for which specific location data is readily available for connecting the asset to a specific geographic location for purposes of GIS analysis.

<sup>3</sup> Total assessed values for improvements is based on tax assessor records as joined to digital parcel data. This data does not include dollar figures for tax-exempt improvements such as publicly-owned buildings and facilities. It should also be noted that, due to record keeping, some duplication is possible thus potentially resulting in an inflated value exposure for an area.

<sup>4</sup> Number of buildings for each county is based on the number of parcels with an improved building value greater than zero.

**SECTION 6: VULNERABILITY ASSESSMENT**

Location <sup>4</sup>	Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Improvements
Bermuda Run	1,682	\$133,004,750	1,390	\$309,403,741
Cooleemee	495	\$6,312,460	890	\$94,505,603
Mocksville	2,653	\$107,392,470	3,458	\$502,134,437
Unincorporated Areas	19,971	\$1,349,155,860	36,536	\$2,186,109,255
<b>Forsyth County</b>	<b>159,909</b>	<b>\$9,038,591,501</b>	<b>202,229</b>	<b>\$20,893,501,382</b>
Bethania	226	\$6,192,700	323	\$20,906,861
Clemmons	7,748	\$501,296,600	9,210	\$1,129,476,607
Kernersville	9,269	\$557,062,200	11,220	\$1,548,070,107
Lewisville	5,722	\$287,399,800	7,713	\$758,499,471
Rural Hall	1,481	\$43,481,800	1,908	\$298,660,369
Tobaccoville	1,206	\$40,288,800	2,592	\$108,718,891
Walkertown	2,498	\$107,761,500	3,892	\$227,979,610
Winston-Salem	96,055	\$5,521,533,100	113,412	\$13,814,203,148
Unincorporated Area	35,704	1,973,575,001	51,959	\$2,986,986,318
<b>Rockingham County</b>	<b>54,500</b>	<b>\$1,970,384,050</b>	<b>74,248</b>	<b>\$4,570,710,360</b>
Eden	8,739	\$152,510,172	8,777	\$704,159,598
Madison	1,363	\$29,363,883	1,530	\$127,746,987
Mayodan	1,283	\$26,509,802	1,818	\$126,805,845
Reidsville	7,388	\$166,308,914	7,851	\$714,952,193
Stoneville	653	\$9,361,254	826	\$45,738,487
Wentworth	1,397	\$56,428,726	2,205	\$239,554,251
Unincorporated Area	33,677	1,529,901,299	51,241	\$2,611,752,999
<b>Stokes County</b>	<b>30,332</b>	<b>\$1,357,726,601</b>	<b>32,406</b>	<b>\$4,572,446,047</b>
Danbury	121	\$2,392,200	106	\$31,195,577
King	3,086	\$139,677,600	3,664	\$609,555,742
Walnut Cove	812	\$24,076,000	733	\$172,242,395
Unincorporated Area	26,313	1,191,580,801	27,903	\$3,759,452,333
<b>Surry County</b>	<b>43,581</b>	<b>\$1,760,945,680</b>	<b>64,225</b>	<b>\$4,724,980,781</b>
Dobson	606	\$28,731,140	846	\$284,261,412
Elkin	2,184	\$97,921,400	2,627	\$365,974,139
Mount Airy	5,494	\$232,537,250	6,883	\$933,605,600
Pilot Mountain	871	\$28,467,060	1,000	\$170,807,530
Unincorporated Area	34,426	1,373,288,830	52,869	\$2,970,332,100
<b>Yadkin County</b>	<b>27,819</b>	<b>\$841,446,468</b>	<b>30,105</b>	<b>\$1,759,003,642</b>
Boonville	622	\$10,844,411	590	\$56,339,426
East Bend	446	\$10,445,499	473	\$33,695,773
Jonesville	1,379	\$33,827,886	1,220	\$97,567,002
Yadkinville	1,401	\$49,318,883	1,462	\$172,262,506
Unincorporated Area	23,971	737,009,789	26,360	\$1,399,138,935
<b>Northern Piedmont Regional Total</b>	<b>357,931</b>	<b>17,476,775,432</b>	<b>464,430</b>	<b>42,585,415,733</b>

Source: Local governments

**SECTION 6: VULNERABILITY ASSESSMENT**

The following table lists the fire stations, police stations, emergency operations centers (EOCs), medical care facilities, schools, and other critical facilities located in the Northern Piedmont Region. Local governments at the county level provided a majority of the data for this analysis. In addition, **Figure 6.1** shows the locations of essential facilities in the Northern Piedmont Region. **Table 6.26**, at the end of this section, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all inclusive and only includes information provided by the counties.

**TABLE 6.2: CRITICAL FACILITY INVENTORY**

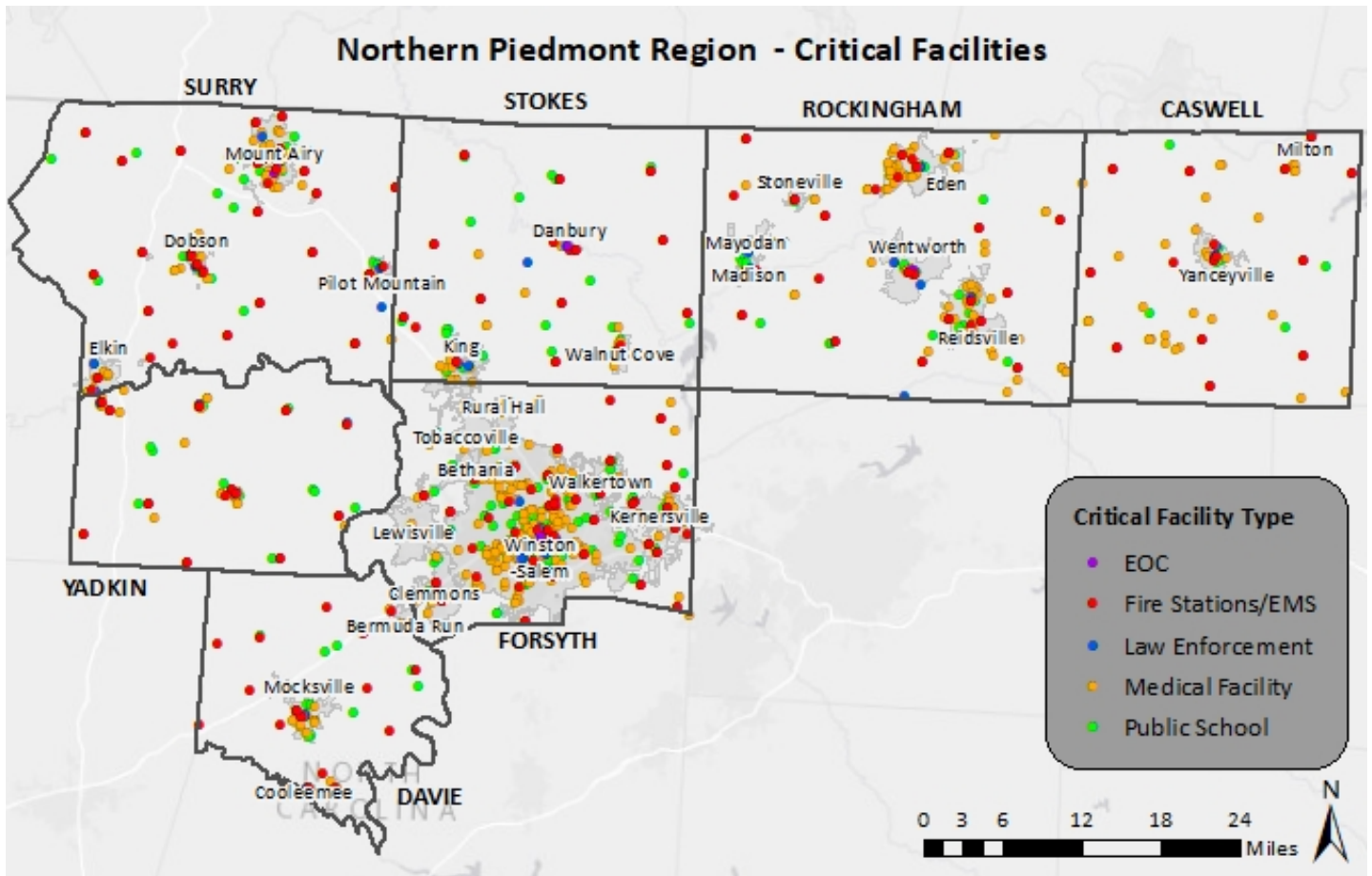
Location	Fire/EMS Stations	Police Stations	Medical Care Facilities	Schools	Other
<b>Caswell County</b>	27	3	36	7	1
Milton	2	0	0	0	0
Yanceyville	5	3	7	3	1
Unincorporated Areas	20	0	29	4	0
<b>Davie County</b>	17	4	25	12	1
Bermuda Run	1	0	1	0	0
Cooleemee	1	1	0	1	0
Mocksville	3	3	20	4	1
Unincorporated Areas	12	0	4	7	0
<b>Forsyth County</b>	83	14	215	86	1
Bethania	0	0	0	0	0
Clemmons	4	0	8	4	0
Kernersville	14	1	19	3	0
Lewisville	4	0	3	1	0
Rural Hall	2	0	1	1	0
Tobaccoville	2	0	0	1	0
Walkertown	2	0	1	4	0
Winston-Salem	37	13	174	61	1
Unincorporated Area	18	0	9	11	0
<b>Rockingham County</b>	48	9	87	27	2
Eden	11	1	26	6	0
Madison	3	1	1	2	0
Mayodan	1	2	0	0	0
Reidsville	7	1	23	5	0
Stoneville	2	1	0	1	0
Wentworth	4	1	5	5	2
Unincorporated Area	20	2	32	8	0
<b>Stokes County</b>	30	5	25	20	1
Danbury	3	1	1	0	1
King	2	2	9	2	0
Walnut Cove	3	1	5	2	0
Unincorporated Area	22	1	10	16	0
<b>Surry County</b>	57	9	50	28	1
Dobson	4	3	3	2	0
Elkin	3	2	10	3	0
Mount Airy	8	2	24	5	1

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Fire/EMS Stations	Police Stations	Medical Care Facilities	Schools	Other
Pilot Mountain	4	1	2	3	0
Unincorporated Area	38	1	11	15	0
<b>Yadkin County</b>	<b>33</b>	<b>5</b>	<b>27</b>	<b>14</b>	<b>1</b>
Boonville	2	1	2	1	0
East Bend	1	1	0	1	0
Jonesville	4	1	3	1	0
Yadkinville	4	2	14	2	1
Unincorporated Area	22	0	8	9	0
<b>Northern Piedmont Regional Total</b>	<b>285</b>	<b>49</b>	<b>465</b>	<b>194</b>	<b>8</b>

Source: Local governments

**FIGURE 6.1: CRITICAL FACILITIES IN THE NORTHERN PIEDMONT REGION**



Source: Local governments

**6.4.2 Social Vulnerability**

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in the Northern Piedmont Region that are potentially at risk to these hazards.

**Table 6.3** lists the population by county according to U.S. Census 2010 population estimates. The population estimates are updated using the most recent vintage tables dated July 1, 2018. The total population in the Northern Piedmont Region according to Census data is 690,178.

**TABLE 6.3: TOTAL POPULATION IN THE NORTHERN PIEDMONT REGION**

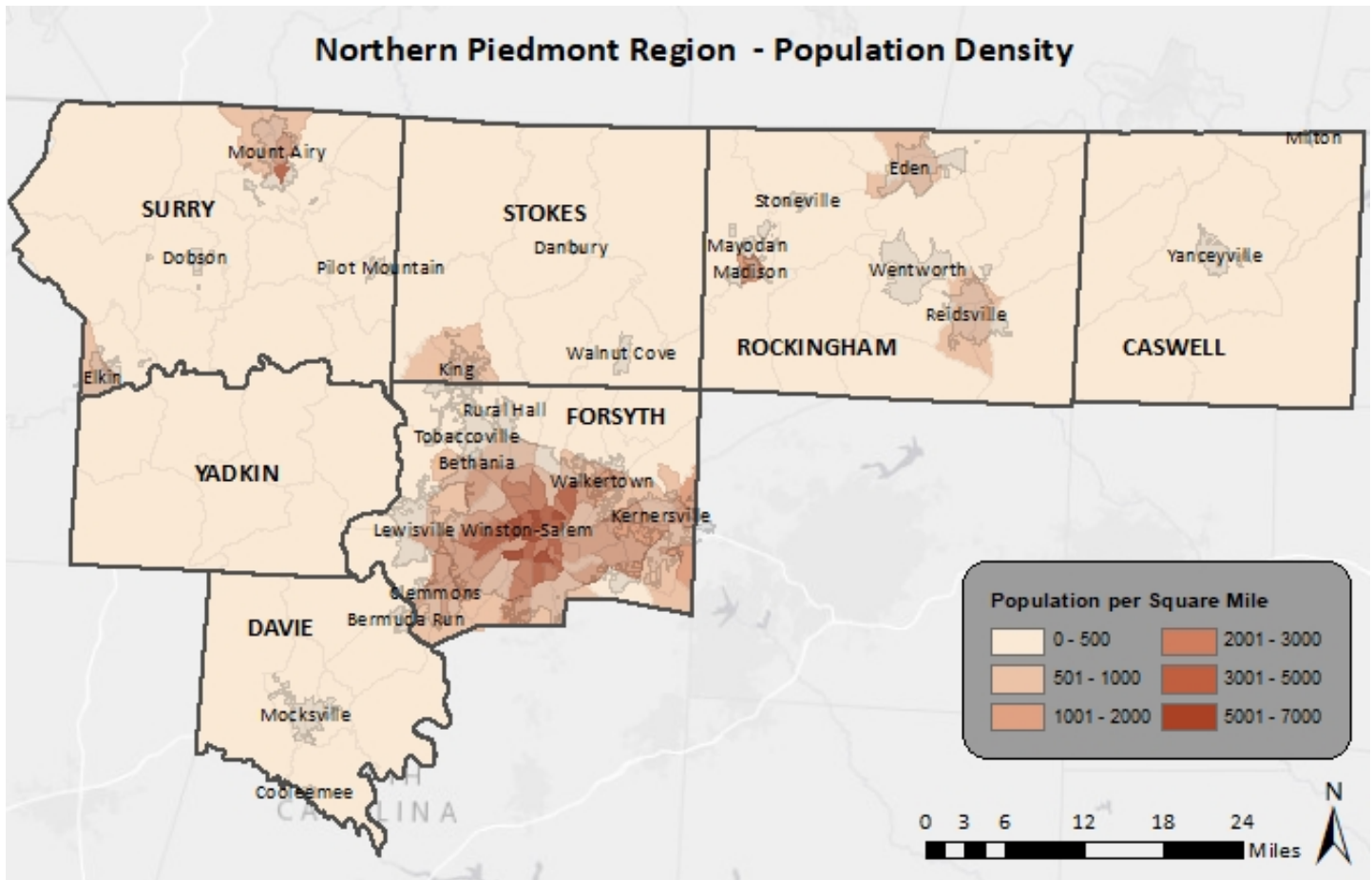
Location	2018 Population Estimate
Caswell County	22,698
Davie County	42,733
Forsyth County	379,099
Rockingham County	90,690
Stokes County	45,467
Surry County	71,948
Yadkin County	37,543
<b>Northern Piedmont Regional Total</b>	<b>690,178</b>

Source: US Census Bureau

Additional population estimates are presented in Section 3: *Community Profile*.

In addition, **Figure 6.2** illustrates the population density by census tract as it was reported by the US Census Bureau in 2010 and updated with 2017 population estimates.

**FIGURE 6.2: POPULATION DENSITY IN THE NORTHERN PIEDMONT REGION**



### 6.4.3. Development Trends and Changes in Vulnerability

Since the previous regional hazard mitigation plan was approved (in 2015), the Northern Piedmont Region has experienced some growth and development, mainly in Forsyth and Davie counties. **Table 6.4** shows the number of building units constructed since 2010 according to the US Census American Community Survey.

**TABLE 6.4: BUILDING COUNTS FOR THE NORTHERN PIEDMONT REGION**

Location	Total Housing Units (2017)	Units Built 2010 or Later	% Building Stock Built Post-2010
<b>Caswell County</b>	10,748	141	1.3%
Milton	113	-	-
Yanceyville	897	-	-
Unincorporated Areas	9,738	141	1.4%
<b>Davie County</b>	18,477	322	1.7%
Bermuda Run	1,630	32	2.0%
Cooleemee	437	17	3.9%
Mocksville	2,261	111	4.9%
Unincorporated Areas	14,149	162	1.1%
<b>Forsyth County</b>	161,856	5,257	3.2%
Bethania	165	1	0.6%
Clemmons	8,421	270	3.2%
Kernersville	11,214	289	2.6%
Lewisville	5,713	137	2.4%
Rural Hall	1,403	63	4.5%
Tobaccoville	1,244	10	0.8%
Walkertown	2,170	49	2.3%
Winston-Salem	106,239	3,358	3.2%
Unincorporated Area	25,287	1,080	4.3%
<b>Rockingham County</b>	43,879	586	1.3%
Eden	7,767	34	0.4%
Madison	1,185	-	-
Mayodan	1,355	4	0.3%
Reidsville	7,312	14	0.2%
Stoneville	623	-	-
Wentworth	1,047	11	1.1%
Unincorporated Area	24,590	523	2.1%
<b>Stokes County</b>	22,113	435	2.0%
Danbury	62	-	-
King	3,002	136	4.5%
Walnut Cove	851	15	1.8%
Unincorporated Area	18,198	284	1.6%
<b>Surry County</b>	33,950	804	2.4%
Dobson	643	18	2.8%
Elkin	1,999	8	0.4%
Mount Airy	5,276	48	0.9%
Pilot Mountain	718	-	-



**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Total Housing Units (2017)	Units Built 2010 or Later	% Building Stock Built Post-2010
Unincorporated Area	25,314	730	2.9%
<b>Yadkin County</b>	<b>17,412</b>	<b>236</b>	<b>1.4%</b>
Boonville	606	-	-
East Bend	272	-	-
Jonesville	1,256	-	-
Yadkinville	1,264	31	2.5%
Unincorporated Area	14,014	205	1.5%
<b>Northern Piedmont Regional Total</b>	<b>308,435</b>	<b>7,781</b>	<b>2.5%</b>

Source: US Census Bureau

Table 6.5 shows population growth estimates for the region from 2010 to 2018 based on the US Census Annual Estimates of Resident Population and 2018 population estimates.

**TABLE 6.5: POPULATION GROWTH FOR THE NORTHERN PIEDMONT REGION**

Location	2010	2012	2014	2016	2018	% Change 2010-2018
<b>Caswell County</b>	<b>23,457</b>	<b>23,045</b>	<b>22,811</b>	<b>22,765</b>	<b>22,698</b>	<b>-3.2%</b>
Milton	159	154	152	150	148	-6.9%
Yanceyville	2,085	2,034	2,024	2,009	1,994	-4.4%
Unincorporated Areas	21,213	20,857	20,635	20,606	20,556	-3.1%
<b>Davie County</b>	<b>41,255</b>	<b>41,282</b>	<b>41,265</b>	<b>41,933</b>	<b>42,733</b>	<b>3.6%</b>
Bermuda Run	2,509	2,511	2,507	2,560	2,616	4.3%
Cooleemee	962	957	952	953	968	0.6%
Mocksville	5,052	5,058	5,056	5,217	5,291	4.7%
Unincorporated Areas	32,732	32,756	32,750	33,203	33,858	3.4%
<b>Forsyth County</b>	<b>351,393</b>	<b>357,628</b>	<b>364,537</b>	<b>371,157</b>	<b>379,099</b>	<b>7.9%</b>
Bethania	328	335	341	351	359	9.5%
Clemmons	18,685	19,097	19,492	20,074	20,563	10.1%
Kernersville	23,133	23,412	23,679	24,059	24,767	7.1%
Lewisville	12,750	13,025	13,285	13,669	13,999	9.8%
Rural Hall	2,940	3,001	3,056	3,143	3,216	9.4%
Tobaccoville	2,442	2,493	2,542	2,617	2,680	9.7%
Walkertown	4,722	4,816	4,904	5,037	5,150	9.1%
Winston-Salem	230,033	233,867	238,508	241,656	246,328	7.1%
Unincorporated Area	56,360	57,582	58,730	60,551	62,037	10.1%
<b>Rockingham County</b>	<b>93,658</b>	<b>92,692</b>	<b>91,800</b>	<b>91,345</b>	<b>90,690</b>	<b>-3.2%</b>
Eden	15,672	15,430	15,281	15,188	14,870	-5.1%
Madison	2,240	2,209	2,177	2,158	2,118	-5.4%
Mayodan	2,477	2,449	2,424	2,401	2,371	-4.3%
Reidsville	14,452	14,236	14,000	13,845	14,013	-3.0%
Stoneville	1,290	1,278	1,265	1,256	1,243	-3.6%
Wentworth	2,779	2,759	2,737	2,723	2,702	-2.8%
Unincorporated Area	54,748	54,331	53,916	53,774	53,373	-2.5%

## SECTION 6: VULNERABILITY ASSESSMENT

Location	2010	2012	2014	2016	2018	% Change 2010-2018
<b>Stokes County</b>	47,349	46,732	46,326	45,887	45,467	-4.0%
Danbury	189	187	186	184	183	-3.2%
King	6,870	6,815	6,784	6,888	6,877	0.1%
Walnut Cove	851	861	864	864	862	1.3%
Unincorporated Area	39,439	38,869	38,492	37,951	37,545	-4.8%
<b>Surry County</b>	73,769	73,292	72,492	71,964	71,948	-2.5%
Dobson	1,586	1,581	1,566	1,551	1,548	-2.4%
Elkin	4,024	3,978	3,927	3,969	4,036	0.3%
Mount Airy	10,406	10,358	10,231	10,212	10,260	-1.4%
Pilot Mountain	1,473	1,463	1,445	1,425	1,422	-3.5%
Unincorporated Area	56,280	55,912	55,323	54,807	54,682	-2.8%
<b>Yadkin County</b>	38,434	38,145	37,850	37,663	37,543	-2.3%
Boonville	1,192	1,183	1,171	1,164	1,156	-3.0%
East Bend	615	609	604	597	595	-3.3%
Jonesville	2,286	2,264	2,243	2,223	2,209	-3.4%
Yadkinville	2,976	2,953	2,930	2,919	2,899	-2.6%
Unincorporated Area	31,365	31,136	30,902	30,760	30,684	-2.2%
<b>Northern Piedmont Regional Total</b>	<b>377,178</b>	<b>381,373</b>	<b>386,333</b>	<b>391,062</b>	<b>397,443</b>	<b>5.4%</b>

Source: US Census Bureau

Based on the above data, the rate of residential development and population growth in the region since 2010 has increased, most dramatically in Forsyth and Davie Counties. The overall population has decreased in the remaining counties. Changes in development do impact the region's vulnerability since the last update. The greater the population, the greater the risk is that persons are impacted by hazards. It should be noted that if future development occurs in vulnerable areas, populations and infrastructure will be exposed to potential hazards.

Conversely, it can be expected that development has slowed or is minimal in those jurisdictions experiencing population loss. Therefore, there is limited future development being conducted in hazard zones and less people vulnerable to hazards.

### 6.5 VULNERABILITY ASSESSMENT RESULTS

As noted earlier, only hazards with a specific geographic boundary, modeling tool, or sufficient historical data allow for further analysis. Those results are presented here. All other hazards are assumed to impact the entire planning region (drought, excessive heat, hailstorm, lightning, and severe winter weather) or, due to lack of data, analysis would not lead to credible results (sinkholes, erosion, dam failure, infectious disease, terrorism, cyber, EMP). The total region exposure for critical facilities is presented in **Table 6.26**. The annualized loss estimate for all hazards is presented at the end of this section in **Table 6.25**.

The hazards presented in this subsection include: hurricane and coastal hazards, tornadoes/thunderstorms, earthquakes, landslides, flooding, wildfires, and hazardous substances.

### 6.5.1. Hurricane and Coastal Hazards

Historical evidence indicates that the Northern Piedmont Region has a significant risk to the hurricane and tropical storm hazard, mostly due to the location of the state of North Carolina as a coastal state. In recent years, there have been six disaster declarations from hurricanes in the region (Hurricane Hugo, Hurricane Fran, Hurricane Floyd, Hurricane Ivan, Hurricane Katrina, and Hurricane Michael). The most recent hurricane experienced by the region was Hurricane Michael in 2018. Many more storm tracks have come near or traversed through the region, as shown and discussed in Section 5: Hazard Profiles.

Numerous secondary hazards, such as erosion, flooding, tornadoes, and high winds, tend to be a result of hurricanes or tropical storms. These cumulative effects often make potential loss estimates difficult to calculate and track.

NCEM's Risk Management Tool analyzes hurricane winds and no other hazards often associated with hurricanes; therefore, only hurricane winds are analyzed in this section. Building and population vulnerabilities to hurricane winds in a 100-year frequency event (return period) are reported in the following **Table 6.6** and **Table 6.7**.

It is assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard.

**TABLE 6.6: BUILDING VULNERABILITIES TO HURRICANE WINDS IN THE NORTHERN PIEDMONT REGION**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	17,894	16,459	\$1,293,035	920	\$114,883	510	\$170,830	17,889	\$1,578,748
Milton	162	135	\$2,227	16	\$195	11	\$213	162	\$2,635
Yanceyville	978	670	\$55,936	178	\$10,153	123	\$47,268	971	\$113,357
Unincorporated Areas	16,754	15,654	\$1,234,872	726	\$104,535	376	\$123,349	16,756	\$1,462,756
<b>Davie County</b>	20,130	27,197	\$2,690,700	1,965	\$747,898	430	\$232,422	29,592	\$3,671,020
Bermuda Run	401	1,440	\$308,190	117	\$70,607	10	\$12,065	1,567	\$390,862
Cooleemee	617	567	\$46,890	22	\$5,593	25	\$8,922	614	\$61,406
Mocksville	3,678	3,114	\$306,684	461	\$169,356	95	\$23,152	3,670	\$499,192
Unincorporated Areas	15,434	22,076	\$2,028,936	1,365	\$502,342	300	\$188,283	23,741	\$2,719,560
<b>Forsyth County</b>	78,249	136,323	\$10,158,285	7,892	\$2,312,234	2,287	\$743,651	146,502	\$13,214,171
Bethania	196	204	\$13,409	13	\$1,125	5	\$465	222	\$14,999
Clemmons	1,918	6,909	\$523,686	372	\$59,345	83	\$14,603	7,364	\$597,634
Kernersville	8,424	9,391	\$665,912	927	\$183,027	174	\$23,868	10,492	\$872,808
Lewisville	1,580	5,439	\$432,733	139	\$16,626	61	\$6,466	5,639	\$455,825
Rural Hall	753	1,132	\$70,806	133	\$49,203	22	\$5,175	1,287	\$125,184
Tobaccoville	706	1,575	\$88,583	31	\$2,503	17	\$3,175	1,623	\$94,261
Walkertown	1,537	2,464	\$157,240	152	\$10,286	61	\$9,798	2,677	\$177,323
Winston-Salem	51,320	79,468	\$6,333,136	5,548	\$1,893,084	1,576	\$628,867	86,592	\$8,855,087
Unincorporated Area	11,815	29,741	\$1,872,780	577	\$97,035	288	\$51,234	30,606	\$2,021,050
<b>Rockingham County</b>	49,744	53,485	\$4,442,045	7,551	\$1,509,825	2,150	\$402,549	63,186	\$6,354,419

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Eden	9,016	9,551	\$908,100	1,421	\$427,508	403	\$69,867	11,375	\$1,405,475
Madison	1,698	1,611	\$229,447	559	\$45,612	93	\$20,893	2,263	\$295,951
Mayodan	1,722	1,649	\$147,899	388	\$49,134	56	\$5,501	2,093	\$202,534
Reidsville	6,420	6,266	\$629,662	1,377	\$190,991	375	\$51,434	8,018	\$872,087
Stoneville	1,275	1,098	\$102,170	144	\$27,769	48	\$5,748	1,290	\$135,688
Wentworth	1,354	1,520	\$87,698	160	\$19,695	197	\$41,966	1,877	\$149,359
Unincorporated Area	28,259	31,790	\$2,337,069	3,502	\$749,116	978	\$207,140	36,270	\$3,293,325
<b>Stokes County</b>	<b>29,171</b>	<b>22,931</b>	<b>\$1,907,025</b>	<b>5,975</b>	<b>\$229,732</b>	<b>447</b>	<b>\$126,776</b>	<b>29,353</b>	<b>\$2,263,532</b>
Danbury	204	162	\$8,903	30	\$1,648	21	\$1,132	213	\$11,683
King	4,895	4,389	\$500,938	615	\$44,099	81	\$12,051	5,085	\$557,087
Walnut Cove	1,729	1,440	\$116,728	219	\$26,829	69	\$8,046	1,728	\$151,603
Unincorporated Area	22,343	16,940	\$1,280,456	5,111	\$157,156	276	\$105,547	22,327	\$1,543,159
<b>Surry County</b>	<b>50,412</b>	<b>45,772</b>	<b>\$3,864,490</b>	<b>5,313</b>	<b>\$876,813</b>	<b>1,096</b>	<b>\$338,200</b>	<b>52,181</b>	<b>\$5,079,502</b>
Dobson	1,481	1,110	\$129,244	281	\$25,079	86	\$24,320	1,477	\$178,643
Elkin	2,330	2,240	\$194,589	374	\$85,729	97	\$23,336	2,711	\$303,654
Mount Airy	9,954	8,756	\$856,835	927	\$294,975	255	\$81,588	9,938	\$1,233,398
Pilot Mountain	1,625	1,429	\$159,141	138	\$37,631	53	\$9,470	1,620	\$206,241
Unincorporated Area	35,022	32,237	\$2,524,681	3,593	\$433,399	605	\$199,486	36,435	\$3,157,566
<b>Yadkin County</b>	<b>23,308</b>	<b>25,906</b>	<b>\$2,468,847</b>	<b>1,444</b>	<b>\$195,038</b>	<b>548</b>	<b>\$125,697</b>	<b>27,898</b>	<b>\$2,789,583</b>
Boonville	1,055	934	\$71,961	94	\$7,064	29	\$7,712	1,057	\$86,736
East Bend	445	374	\$30,249	59	\$2,896	12	\$2,444	445	\$35,589
Jonesville	1,578	1,611	\$107,525	156	\$12,293	45	\$10,620	1,812	\$130,439
Yadkinville	17,818	20,971	\$2,062,986	828	\$102,435	360	\$92,763	22,159	\$2,258,184
Unincorporated Area	2,412	2,016	\$196,126	307	\$70,350	102	\$12,158	2,425	\$278,635
<b>Northern Piedmont Regional Total</b>	<b>268,908</b>	<b>328,073</b>	<b>\$26,824,427</b>	<b>31,060</b>	<b>\$5,986,423</b>	<b>7,468</b>	<b>\$2,140,125</b>	<b>366,601</b>	<b>\$34,950,975</b>

Source: NCEM Risk Management Tool

**TABLE 6.7: POPULATION VULNERABILITIES TO HURRICANE WINDS IN THE NORTHERN PIEDMONT REGION**

Location	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>29,868</b>	<b>15,644</b>	<b>229,947</b>
Milton	371	195	2,854
Yanceyville	97	35	594
Unincorporated Areas	29,400	15,414	226,499
<b>Davie County</b>	<b>9,490</b>	<b>3,392</b>	<b>58,304</b>
Bermuda Run	2,837	1,013	17,065
Cooleemee	1,637	554	10,354
Mocksville	434	149	2,682
Unincorporated Areas	4,582	1,676	28,203
<b>Forsyth County</b>	<b>12,785</b>	<b>5,015</b>	<b>83,382</b>

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Elderly at Risk	Children at Risk	Total at Risk
Bethania	2,472	848	15,263
Clemmons	56	19	350
Kernersville	532	195	3,272
Lewisville	524	179	3,235
Rural Hall	416	149	2,504
Tobaccoville	41	21	315
Walkertown	320	100	2,015
Winston-Salem	5,075	1,748	30,622
Unincorporated Area	3,349	1,756	25,806
<b>Rockingham County</b>	<b>16,887</b>	<b>6,879</b>	<b>115,738</b>
Eden	6,604	3,462	50,878
Madison	516	178	3,116
Mayodan	467	154	2,927
Reidsville	5,359	1,765	33,533
Stoneville	313	164	2,416
Wentworth	286	105	1,761
Unincorporated Area	3,342	1,051	21,107
<b>Stokes County</b>	<b>12,154</b>	<b>4,171</b>	<b>74,904</b>
Danbury	1,047	361	6,317
King	7,540	2,587	46,561
Walnut Cove	312	107	1,926
Unincorporated Area	3,255	1,116	20,100
<b>Surry County</b>	<b>12,028</b>	<b>4,703</b>	<b>76,515</b>
Dobson	778	278	4,676
Elkin	695	254	4,279
Mount Airy	7,708	2,752	46,369
Pilot Mountain	434	155	2,612
Unincorporated Area	2,413	1,264	18,579
<b>Yadkin County</b>	<b>2,907</b>	<b>1,393</b>	<b>21,275</b>
Boonville	1,605	841	12,365
East Bend	585	307	4,505
Jonesville	537	184	3,315
Yadkinville	156	53	939
Unincorporated Area	24	8	151
<b>Northern Piedmont Regional Total</b>	<b>96,119</b>	<b>41,197</b>	<b>660,065</b>

Source: NCEM Risk Management Tool

**SOCIAL VULNERABILITY**

Given the equal susceptibility across the entire Northern Piedmont Region, it can be assumed that the entire population is at risk to the hurricane and tropical storm hazard.

**CRITICAL FACILITIES**

Given equal vulnerability across the Northern Piedmont Region, all critical facilities are considered to be at risk. Although some buildings may perform better than others in the face of such an event due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation actions for vulnerable structures, including critical facilities, to reduce the impacts of the hurricane wind hazard. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in the Northern Piedmont Region. Hurricane events can cause substantial damage in their wake including fatalities, extensive debris clean-up, and extended power outages.

**6.5.2 Tornadoes/Thunderstorms****Tornadoes**

A probabilistic scenario was created to estimate building and population vulnerabilities in the Northern Piedmont region for the tornado hazard. For this scenario, a tornado ranked F2 on the Fujita scale was analyzed. The Risk Management Tool analyzed this information which has been reported in **Table 6.8** and **Table 6.9**.

**TABLE 6.8: BUILDING VULNERABILITY TO THE TORNADOES HAZARD IN THE NORTHERN PIEDMONT REGION**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	<b>18,224</b>	<b>16,789</b>	<b>\$1,567,990,629</b>	<b>920</b>	<b>\$323,923,428</b>	<b>510</b>	<b>\$321,707,405</b>	<b>18219</b>	<b>\$2,213,621,461</b>
Milton	162	135	\$11,895,984	16	\$1,550,595	11	\$1,744,626	162	\$15,191,205
Yanceyville	979	671	\$64,815,226	178	\$61,135,083	123	\$86,563,201	972	\$212,513,510
Unincorporated Areas	17,083	15,983	\$1,491,279,419	726	\$261,237,750	376	\$233,399,578	17,085	\$1,985,916,746
<b>Davie County</b>	<b>20,240</b>	<b>27,318</b>	<b>\$3,146,821,595</b>	<b>1,965</b>	<b>\$1,715,871,677</b>	<b>430</b>	<b>\$365,791,125</b>	<b>29713</b>	<b>\$5,228,484,398</b>
Bermuda Run	401	1,440	\$299,814,478	117	\$130,285,318	10	\$22,549,630	1,567	\$452,649,427
Cooleemee	624	574	\$51,989,175	22	\$20,488,180	25	\$12,904,760	621	\$85,382,115
Mocksville	3,688	3,124	\$392,278,042	461	\$581,114,925	95	\$80,788,345	3,680	\$1,054,181,312
Unincorporated Areas	15,527	22,180	\$2,402,739,900	1,365	\$983,983,254	300	\$249,548,390	23,845	\$3,636,271,544
<b>Forsyth County</b>	<b>79,646</b>	<b>138,658</b>	<b>\$15,144,450,643</b>	<b>7,892</b>	<b>\$8,403,433,111</b>	<b>2287</b>	<b>\$2,136,537,546</b>	<b>148837</b>	<b>\$25,684,421,302</b>
Bethania	202	210	\$21,444,925	13	\$4,074,074	5	\$1,702,921	228	\$27,221,919
Clemmons	1,954	7,007	\$884,189,265	372	\$254,972,136	83	\$57,898,200	7,462	\$1,197,059,602
Kernersville	8,524	9,530	\$1,076,414,509	927	\$823,679,328	174	\$110,461,463	10,631	\$2,010,555,301
Lewisville	1,620	5,567	\$697,927,430	139	\$78,504,178	61	\$33,960,425	5,767	\$810,392,033
Rural Hall	777	1,163	\$110,470,041	133	\$284,967,802	22	\$16,694,187	1,318	\$412,132,030
Tobaccoville	730	1,609	\$148,540,494	31	\$11,511,660	17	\$9,139,475	1,657	\$169,191,629
Walkertown	1,561	2,512	\$224,050,650	152	\$52,126,391	61	\$37,296,998	2,725	\$313,474,039
Winston-Salem	52,252	80,833	\$8,966,056,046	5,548	\$6,422,078,058	1,576	\$1,701,629,087	87,957	\$17,089,763,191
Unincorporated Area	12,026	30,227	\$3,015,357,283	577	\$471,519,484	288	\$167,754,790	31,092	\$3,654,631,558
<b>Rockingham County</b>	<b>49,927</b>	<b>53,821</b>	<b>\$5,361,770,028</b>	<b>7,551</b>	<b>\$4,985,684,180</b>	<b>2,150</b>	<b>\$1,070,983,859</b>	<b>63,522</b>	<b>\$11,418,438,068</b>

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Eden	9,025	9,573	\$982,541,235	1,421	\$1,452,835,699	403	\$222,067,405	11,397	\$2,657,444,338
Madison	1,705	1,622	\$300,137,884	559	\$254,723,378	93	\$80,946,496	2,274	\$635,807,759
Mayodan	1,731	1,664	\$160,585,806	388	\$318,920,154	56	\$17,845,064	2,108	\$497,351,024
Reidsville	6,489	6,343	\$735,170,657	1,377	\$1,014,851,166	375	\$182,166,673	8,095	\$1,932,188,496
Stoneville	1,275	1,098	\$113,732,409	144	\$119,816,516	48	\$17,010,719	1,290	\$250,559,644
Wentworth	1,355	1,536	\$140,789,007	160	\$70,152,581	197	\$128,453,339	1,893	\$339,394,927
Unincorporated Area	28,347	31,985	\$2,928,813,030	3,502	\$1,754,384,686	978	\$422,494,163	36,465	\$5,105,691,880
<b>Stokes County</b>	<b>29564</b>	<b>23,315</b>	<b>\$2,521,313,412</b>	<b>5,982</b>	<b>\$1,289,693,888</b>	<b>449</b>	<b>\$327,361,190</b>	<b>29746</b>	<b>\$4,138,368,489</b>
Danbury	205	163	\$17,545,251	30	\$15,427,774	21	\$10,085,082	214	\$43,058,107
King	5,107	4,601	\$507,601,048	615	\$196,976,714	81	\$47,879,792	5,297	\$752,457,555
Walnut Cove	1,731	1,442	\$158,643,060	219	\$112,525,061	69	\$34,896,904	1,730	\$306,065,024
Unincorporated Area	22,521	17,109	\$1,837,524,053	5,118	\$964,764,339	278	\$234,499,412	22,505	\$3,036,787,803
<b>Surry County</b>	<b>50,754</b>	<b>46,114</b>	<b>\$4,775,640,142</b>	<b>5,315</b>	<b>\$2,702,540,852</b>	<b>1,098</b>	<b>\$805,407,418</b>	<b>52,527</b>	<b>\$8,283,588,412</b>
Dobson	1,481	1,110	\$148,678,377	281	\$66,587,302	86	\$94,601,728	1,477	\$309,867,407
Elkin	2,330	2,240	\$261,048,251	374	\$508,319,155	97	\$88,553,458	2,711	\$857,920,864
Mount Airy	10,029	8,831	\$1,025,256,997	927	\$907,550,697	255	\$214,885,811	10,013	\$2,147,693,504
Pilot Mountain	1,628	1,432	\$200,808,412	138	\$165,441,307	53	\$40,457,163	1,623	\$406,706,883
Unincorporated Area	35,286	32,501	\$3,139,848,105	3,595	\$1,054,642,391	607	\$366,909,258	36,703	\$4,561,399,754
<b>Yadkin County</b>	<b>23,490</b>	<b>26,126</b>	<b>\$2,660,135,207</b>	<b>1,444</b>	<b>\$721,931,712</b>	<b>548</b>	<b>\$287,580,466</b>	<b>28,118</b>	<b>\$3,669,647,382</b>
Boonville	1,055	934	\$86,683,042	94	\$42,514,292	29	\$15,275,279	1,057	\$144,472,612
East Bend	445	374	\$31,696,735	59	\$16,714,615	12	\$6,916,318	445	\$55,327,667
Jonesville	1,581	1,615	\$154,764,832	156	\$51,819,639	45	\$37,512,213	1,816	\$244,096,683
Yadkinville	2,417	2,021	\$208,037,990	307	\$337,911,418	102	\$42,911,632	2,430	\$588,861,040
Unincorporated Area	17,992	21,182	\$2,178,952,608	828	\$272,971,748	360	\$184,965,024	22,370	\$2,636,889,380
<b>Northern Piedmont Regional Total</b>	<b>271,845</b>	<b>332,141</b>	<b>\$35,178,121,656</b>	<b>31,069</b>	<b>\$20,143,078,848</b>	<b>7,472</b>	<b>\$5,315,369,009</b>	<b>370,682</b>	<b>\$60,636,569,512</b>

Source: NCEM Risk Management Tool

**TABLE 6.9: POPULATION VULNERABILITY TO THE TORNADOES HAZARD IN THE NORTHERN PIEDMONT REGION**

Location	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>30,468</b>	<b>15,867</b>	<b>233,903</b>
Milton	468	154	2,931
Yanceyville	97	35	594
Unincorporated Areas	29,903	15,678	230,378
<b>Davie County</b>	<b>9,644</b>	<b>3,447</b>	<b>59,261</b>
Bermuda Run	2,861	1,022	17,211
Cooleemee	1,716	581	10,853
Mocksville	439	151	2,710
Unincorporated Areas	4,628	1,693	28,487
<b>Forsyth County</b>	<b>12,897</b>	<b>5,062</b>	<b>84,147</b>

**SECTION 6: VULNERABILITY ASSESSMENT**

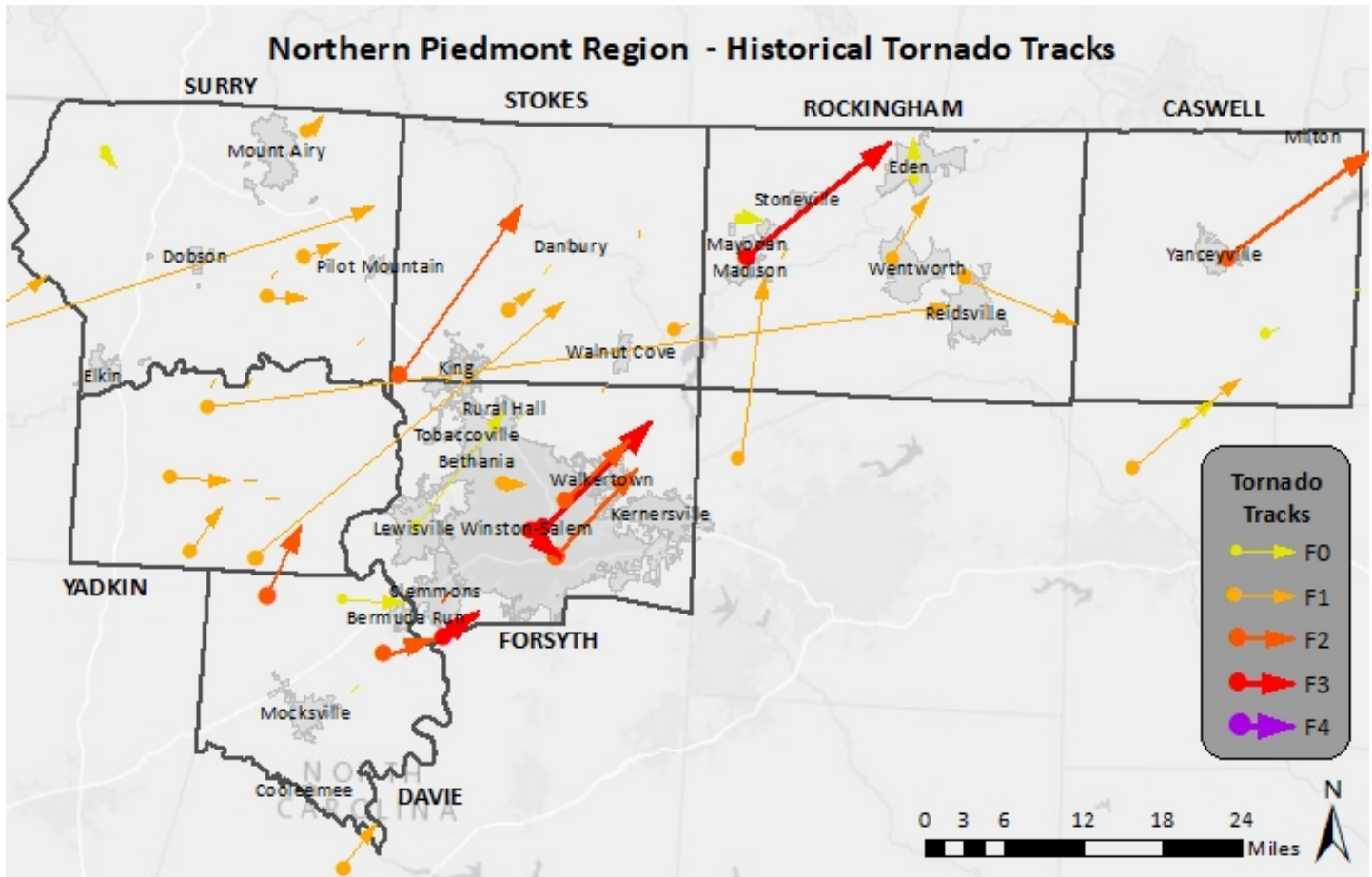
Location	Elderly at Risk	Children at Risk	Total at Risk
Bethania	2,502	858	15,447
Clemmons	56	19	352
Kernersville	533	195	3,280
Lewisville	529	181	3,264
Rural Hall	417	149	2,509
Tobaccoville	42	22	324
Walkertown	320	100	2,018
Winston-Salem	5,099	1,756	30,766
Unincorporated Area	3,399	1,782	26,187
<b>Rockingham County</b>	<b>17,039</b>	<b>7,026</b>	<b>117,401</b>
Eden	6,712	3,519	51,709
Madison	516	178	3,116
Mayodan	381	200	2,932
Reidsville	5,412	1,783	33,867
Stoneville	320	168	2,468
Wentworth	286	105	1,761
Unincorporated Area	3,412	1,073	21,548
<b>Stokes County</b>	<b>12,211</b>	<b>4,191</b>	<b>75,253</b>
Danbury	1,050	362	6,337
King	7,586	2,603	46,844
Walnut Cove	312	107	1,926
Unincorporated Area	3,263	1,119	20,146
<b>Surry County</b>	<b>12,127</b>	<b>4,745</b>	<b>77,169</b>
Dobson	778	278	4,676
Elkin	697	255	4,290
Mount Airy	7,771	2,775	46,749
Pilot Mountain	434	155	2,612
Unincorporated Area	2,447	1,282	18,842
<b>Yadkin County</b>	<b>2,962</b>	<b>1,421</b>	<b>21,689</b>
Boonville	1,643	861	12,656
East Bend	596	313	4,593
Jonesville	541	185	3,338
Yadkinville	158	54	951
Unincorporated Area	24	8	151
<b>Northern Piedmont Regional Total</b>	<b>97,348</b>	<b>41,759</b>	<b>668,823</b>

Source: NCEM Risk Management Tool



A map of historical tornado points of origin and paths can be seen below in **Figure 6.3**.

**FIGURE 6.3: HISTORICAL TORNADO TRACKS**



Source: NOAA

### Thunderstorms

A probabilistic scenario was created to estimate building and population vulnerabilities in the Northern Piedmont region for the thunderstorm hazard. For this scenario, damages due to thunderstorm winds on a 50-year frequency event (return period) were analyzed. It is important to note that this data does not include damages caused by other remnants of thunderstorms, such as lightning or hail. The Risk Management Tool analyzed this information which has been reported below in **Table 6.10** and **Table 6.11**.

**TABLE 6.10: BUILDING VULNERABILITY TO THUNDERSTORM WINDS IN THE NORTHERN PIEDMONT REGION**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	18,224	16,789	\$6,801,876	920	\$1,095,801	510	\$1,661,043	18,219	\$9,558,721
Milton	162	135	\$26,388	16	\$1,125	11	\$914	162	\$28,427
Yanceyville	979	671	\$285,002	178	\$74,766	123	\$471,876	972	\$831,644
Unincorporated Areas	17,083	15,983	\$6,490,486	726	\$1,019,910	376	\$1,188,253	17,085	\$8,698,650
<b>Davie County</b>	20,240	27,318	\$9,355,700	1,965	\$3,872,723	430	\$1,292,763	29,713	\$14,521,185
Bermuda Run	401	1,440	\$1,037,309	117	\$362,333	10	\$59,378	1,567	\$1,459,020
Cooleemee	624	574	\$151,197	22	\$23,683	25	\$41,695	621	\$216,574
Mocksville	3,688	3,124	\$1,039,758	461	\$790,768	95	\$97,625	3,680	\$1,928,150
Unincorporated Areas	15,527	22,180	\$7,127,436	1,365	\$2,695,939	300	\$1,094,065	23,845	\$10,917,441
<b>Forsyth County</b>	79,646	138,658	\$61,040,813	7,892	\$18,267,018	2,287	\$6,724,139	148,837	\$86,031,970
Bethania	202	210	\$81,352	13	\$9,606	5	\$1,297	228	\$92,255
Clemmons	1,954	7,007	\$3,370,039	372	\$532,230	83	\$144,973	7,462	\$4,047,242
Kernersville	8,524	9,530	\$4,253,583	927	\$1,343,511	174	\$213,574	10,631	\$5,810,667
Lewisville	1,620	5,567	\$2,284,112	139	\$168,848	61	\$41,509	5,767	\$2,494,470
Rural Hall	777	1,163	\$439,804	133	\$344,085	22	\$34,291	1,318	\$818,180
Tobaccoville	730	1,609	\$541,265	31	\$24,090	17	\$19,346	1,657	\$584,701
Walkertown	1,561	2,512	\$940,738	152	\$78,124	61	\$70,211	2,725	\$1,089,073
Winston-Salem	52,252	80,833	\$38,071,966	5,548	\$15,022,777	1,576	\$5,775,054	87,957	\$58,869,798
Unincorporated Area	12,026	30,227	\$11,057,954	577	\$743,747	288	\$423,884	31,092	\$12,225,584
<b>Rockingham County</b>	49,927	53,821	\$23,367,552	7,551	\$14,456,410	2,150	\$4,062,849	63,522	\$41,886,812
Eden	9,025	9,573	\$4,559,007	1,421	\$4,046,472	403	\$731,740	11,397	\$9,337,219
Madison	1,705	1,622	\$1,372,138	559	\$466,378	93	\$240,278	2,274	\$2,078,794
Mayodan	1,731	1,664	\$744,917	388	\$473,882	56	\$57,783	2,108	\$1,276,582
Reidsville	6,489	6,343	\$3,288,557	1,377	\$1,864,616	375	\$574,991	8,095	\$5,728,164
Stoneville	1,275	1,098	\$497,372	144	\$215,276	48	\$47,555	1,290	\$760,203
Wentworth	1,355	1,536	\$527,054	160	\$178,902	197	\$475,256	1,893	\$1,181,213
Unincorporated Area	28,347	31,985	\$12,378,507	3,502	\$7,210,884	978	\$1,935,246	36,465	\$21,524,637
<b>Stokes County</b>	29,549	23,309	\$9,390,556	5,975	\$1,721,661	447	\$740,996	29,731	\$11,853,212
Danbury	205	163	\$60,150	30	\$18,850	21	\$15,028	214	\$94,028
King	5,107	4,601	\$2,189,736	615	\$308,162	81	\$82,518	5,297	\$2,580,416
Walnut Cove	1,731	1,442	\$727,776	219	\$149,216	69	\$57,615	1,730	\$934,606
Unincorporated Area	22,506	17,103	\$6,412,894	5,111	\$1,245,433	276	\$585,835	22,490	\$8,244,162
<b>Surry County</b>	50,662	46,026	\$13,086,211	5,313	\$4,003,379	1,096	\$1,624,573	52,435	\$18,714,162
Dobson	1,481	1,110	\$446,470	281	\$110,475	86	\$90,800	1,477	\$647,745

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Elkin	2,330	2,240	\$719,700	374	\$271,569	97	\$95,728	2,711	\$1,086,996
Mount Airy	10,029	8,831	\$2,815,495	927	\$1,302,945	255	\$391,447	10,013	\$4,509,886
Pilot Mountain	1,628	1,432	\$521,614	138	\$147,423	53	\$37,218	1,623	\$706,256
Unincorporated Area	35,194	32,413	\$8,582,932	3,593	\$2,170,967	605	\$1,009,380	36,611	\$11,763,279
<b>Yadkin County</b>	<b>23,490</b>	<b>26,126</b>	<b>\$8,332,030</b>	<b>1,444</b>	<b>\$796,667</b>	<b>548</b>	<b>\$614,405</b>	<b>28,118</b>	<b>\$9,743,102</b>
Boonville	1,055	934	\$277,263	94	\$25,000	29	\$34,571	1,057	\$336,834
East Bend	445	374	\$98,830	59	\$7,890	12	\$9,351	445	\$116,071
Jonesville	1,581	1,615	\$431,573	156	\$43,503	45	\$61,847	1,816	\$536,923
Yadkinville	2,417	2,021	\$664,336	307	\$240,305	102	\$60,481	2,430	\$965,122
Unincorporated Area	17,992	21,182	\$6,860,028	828	\$479,969	360	\$448,155	22,370	\$7,788,152
<b>Northern Piedmont Regional Total</b>	<b>271,738</b>	<b>332,047</b>	<b>\$131,374,738</b>	<b>31,060</b>	<b>\$44,213,659</b>	<b>7,468</b>	<b>\$16,720,768</b>	<b>370,575</b>	<b>\$192,309,164</b>

Source: NCEM Risk Management Tool

**TABLE 6.11: POPULATION VULNERABILITY TO THUNDERSTORM WINDS IN THE NORTHERN PIEDMONT REGION**

Location	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>30,468</b>	<b>15,867</b>	<b>233,903</b>
Milton	468	154	2,931
Yanceyville	97	35	594
Unincorporated Areas	29,903	15,678	230,378
<b>Davie County</b>	<b>9,644</b>	<b>3,447</b>	<b>59,261</b>
Bermuda Run	2,861	1,022	17,211
Cooleemee	1,716	581	10,853
Mocksville	439	151	2,710
Unincorporated Areas	4,628	1,693	28,487
<b>Forsyth County</b>	<b>12,897</b>	<b>5,062</b>	<b>84,147</b>
Bethania	2,502	858	15,447
Clemmons	56	19	352
Kernersville	533	195	3,280
Lewisville	529	181	3,264
Rural Hall	417	149	2,509
Tobaccoville	42	22	324
Walkertown	320	100	2,018
Winston-Salem	5,099	1,756	30,766
Unincorporated Area	3,399	1,782	26,187
<b>Rockingham County</b>	<b>17,037</b>	<b>7,025</b>	<b>117,389</b>
Eden	6,712	3,519	51,709
Madison	516	178	3,116
Mayodan	381	200	2,932

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Elderly at Risk	Children at Risk	Total at Risk
Reidsville	5,410	1,782	33,855
Stoneville	320	168	2,468
Wentworth	286	105	1,761
Unincorporated Area	3,412	1,073	21,548
<b>Stokes County</b>	<b>12,211</b>	<b>4,191</b>	<b>75,253</b>
Danbury	1,050	362	6,337
King	7,586	2,603	46,844
Walnut Cove	312	107	1,926
Unincorporated Area	3,263	1,119	20,146
<b>Surry County</b>	<b>12,106</b>	<b>4,737</b>	<b>77,042</b>
Dobson	778	278	4,676
Elkin	697	255	4,290
Mount Airy	7,750	2,767	46,622
Pilot Mountain	434	155	2,612
Unincorporated Area	2,447	1,282	18,842
<b>Yadkin County</b>	<b>2,962</b>	<b>1,421</b>	<b>21,689</b>
Boonville	1,643	861	12,656
East Bend	596	313	4,593
Jonesville	541	185	3,338
Yadkinville	158	54	951
Unincorporated Area	24	8	151
<b>Northern Piedmont Regional Total</b>	<b>97,325</b>	<b>41,750</b>	<b>584,537</b>

Source: NCEM Risk Management Tool

**SOCIAL VULNERABILITY**

It is assumed that all existing populations and future populations are at risk to the tornadoes/thunderstorms hazard.

**CRITICAL FACILITIES**

All critical facilities should still be considered at-risk to damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.26**.

**6.5.3. Earthquakes**

A probabilistic scenario was created to estimate building and population vulnerabilities in the Northern Piedmont region for the earthquake hazard with a 500-year frequency (return period). The Risk Management Tool analyzed this information which has been reported below in **Table 6.12** and **Table 6.13**.

**TABLE 6.12: BUILDING VULNERABILITY TO THE EARTHQUAKE HAZARD IN THE NORTHERN PIEDMONT REGION**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	54,428	82,649	\$10,422,449	5,826	\$15,521,886	1,657	\$3,612,781	90,132	\$29,557,117
Milton	1,731	1,442	\$104,280	219	\$300,845	69	\$96,312	1,730	\$501,438
Yanceyville	445	374	\$29,003	59	\$44,685	12	\$22,875	445	\$96,563

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Unincorporated Areas	52,252	80,833	\$10,289,166	5,548	\$15,176,356	1,576	\$3,493,594	87,957	\$28,959,116
<b>Davie County</b>	33,008	27,088	\$2,063,812	6,958	\$4,804,049	800	\$1,018,901	34,846	\$7,886,761
Bermuda Run	6,489	6,343	\$438,948	1,377	\$1,698,888	375	\$279,171	8,095	\$2,417,007
Cooleemee	2,417	2,021	\$202,410	307	\$1,186,247	102	\$120,124	2,430	\$1,508,781
Mocksville	1,581	1,615	\$186,019	156	\$136,298	45	\$94,452	1,816	\$416,768
Unincorporated Areas	22,521	17,109	\$1,236,435	5,118	\$1,782,616	278	\$525,154	22,505	\$3,544,205
<b>Forsyth County</b>	37,494	58,824	\$5,713,137	2,431	\$4,515,359	1,166	\$1,597,393	62,421	\$11,825,888
Bethania	2,330	2,240	\$249,404	374	\$1,539,111	97	\$260,948	2,711	\$2,049,462
Clemmons	205	163	\$12,864	30	\$39,431	21	\$25,563	214	\$77,858
Kernersville	1,628	1,432	\$231,340	138	\$409,925	53	\$122,105	1,623	\$763,370
Lewisville	777	1,163	\$121,605	133	\$541,110	22	\$38,425	1,318	\$701,141
Rural Hall	1,355	1,536	\$68,167	160	\$123,798	197	\$189,956	1,893	\$381,921
Tobaccoville	202	210	\$20,304	13	\$8,304	5	\$5,720	228	\$34,328
Walkertown	979	671	\$29,567	178	\$107,838	123	\$125,473	972	\$262,878
Winston-Salem	12,026	30,227	\$2,880,916	577	\$1,005,254	288	\$304,575	31,092	\$4,190,745
Unincorporated Area	17,992	21,182	\$2,098,970	828	\$740,588	360	\$524,628	22,370	\$3,364,185
<b>Rockingham County</b>	58,227	56,162	\$5,042,413	6,516	\$8,203,451	1,426	\$2,353,706	64,104	\$15,599,569
Eden	35,286	32,501	\$2,707,019	3,595	\$2,399,431	607	\$980,025	36,703	\$6,086,475
Madison	1,481	1,110	\$141,134	281	\$174,577	86	\$315,833	1,477	\$631,544
Mayodan	401	1,440	\$260,027	117	\$287,743	10	\$46,870	1,567	\$594,641
Reidsville	10,029	8,831	\$1,170,912	927	\$2,687,667	255	\$624,288	10,013	\$4,482,867
Stoneville	1,275	1,098	\$72,032	144	\$250,502	48	\$33,738	1,290	\$356,271
Wentworth	730	1,609	\$146,008	31	\$19,056	17	\$21,714	1,657	\$186,778
Unincorporated Area	9,025	9,573	\$545,281	1,421	\$2,384,475	403	\$331,238	11,397	\$3,260,993
<b>Stokes County</b>	55,009	58,432	\$3,257,370	5,249	\$5,280,535	1,557	\$1,361,952	65,238	\$9,899,856
Danbury	17,083	15,983	\$577,553	726	\$377,180	376	\$339,215	17,085	\$1,293,949
King	28,347	31,985	\$1,500,251	3,502	\$3,128,074	978	\$780,262	36,465	\$5,408,586
Walnut Cove	1,055	934	\$87,935	94	\$129,644	29	\$40,233	1,057	\$257,811
Unincorporated Area	8,524	9,530	\$1,091,631	927	\$1,645,637	174	\$202,242	10,631	\$2,939,510
<b>Surry County</b>	27,588	34,039	\$3,396,428	3,152	\$5,247,910	630	\$1,181,555	37,821	\$9,825,894
Dobson	5,107	4,601	\$378,585	615	\$471,936	81	\$132,649	5,297	\$983,170
Elkin	1,705	1,622	\$182,203	559	\$494,035	93	\$147,270	2,274	\$823,508
Mount Airy	15,527	22,180	\$2,159,259	1,365	\$2,429,109	300	\$602,666	23,845	\$5,191,034
Pilot Mountain	1,561	2,512	\$227,499	152	\$107,953	61	\$72,664	2,725	\$408,116
Unincorporated Area	3,688	3,124	\$448,882	461	\$1,744,877	95	\$226,306	3,680	\$2,420,066
<b>Yadkin County</b>	6,091	14,947	\$1,924,889	937	\$1,358,405	236	\$263,066	16,120	\$3,546,358
Boonville	1,954	7,007	\$1,040,138	372	\$550,768	83	\$112,590	7,462	\$1,703,495

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
East Bend	1,620	5,567	\$717,123	139	\$140,490	61	\$72,604	5,767	\$930,217
Jonesville	1,731	1,664	\$113,492	388	\$620,930	56	\$34,339	2,108	\$768,760
Yadkinville	624	574	\$50,723	22	\$43,842	25	\$40,752	621	\$135,317
Unincorporated Area	162	135	\$3,413	16	\$2,375	11	\$2,781	162	\$8,569
<b>Northern Piedmont Regional Total</b>	<b>238,837</b>	<b>305,053</b>	<b>\$29,756,686</b>	<b>24,111</b>	<b>\$40,127,546</b>	<b>6,672</b>	<b>\$10,370,453</b>	<b>335,836</b>	<b>\$80,254,682</b>

Source: NCEM Risk Management Tool

**TABLE 6.13: POPULATION VULNERABILITY TO THE EARTHQUAKE HAZARD IN THE NORTHERN PIEDMONT REGION**

Location	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>30,468</b>	<b>15,867</b>	<b>233,903</b>
Milton	468	154	2,931
Yanceyville	97	35	594
Unincorporated Areas	29,903	15,678	230,378
<b>Davie County</b>	<b>9,644</b>	<b>3,447</b>	<b>59,261</b>
Bermuda Run	2,861	1,022	17,211
Cooleemee	1,716	581	10,853
Mocksville	439	151	2,710
Unincorporated Areas	4,628	1,693	28,487
<b>Forsyth County</b>	<b>12,897</b>	<b>5,062</b>	<b>84,147</b>
Bethania	2,502	858	15,447
Clemmons	56	19	352
Kernersville	533	195	3,280
Lewisville	529	181	3,264
Rural Hall	417	149	2,509
Tobaccoville	42	22	324
Walkertown	320	100	2,018
Winston-Salem	5,099	1,756	30,766
Unincorporated Area	3,399	1,782	26,187
<b>Rockingham County</b>	<b>17,039</b>	<b>7,026</b>	<b>117,401</b>
Eden	6,712	3,519	51,709
Madison	516	178	3,116
Mayodan	381	200	2,932
Reidsville	5,412	1,783	33,867
Stoneville	320	168	2,468
Wentworth	286	105	1,761
Unincorporated Area	3,412	1,073	21,548
<b>Stokes County</b>	<b>12,211</b>	<b>4,191</b>	<b>75,253</b>
Danbury	1,050	362	6,337
King	7,586	2,603	46,844

## SECTION 6: VULNERABILITY ASSESSMENT

Location	Elderly at Risk	Children at Risk	Total at Risk
Walnut Cove	312	107	1,926
Unincorporated Area	3,263	1,119	20,146
<b>Surry County</b>	<b>12,127</b>	<b>4,745</b>	<b>77,169</b>
Dobson	778	278	4,676
Elkin	697	255	4,290
Mount Airy	7,771	2,775	46,749
Pilot Mountain	434	155	2,612
Unincorporated Area	2,447	1,282	18,842
<b>Yadkin County</b>	<b>2,962</b>	<b>1,421</b>	<b>21,689</b>
Boonville	1,643	861	12,656
East Bend	596	313	4,593
Jonesville	541	185	3,338
Yadkinville	158	54	951
Unincorporated Area	24	8	151
<b>Northern Piedmont Regional Total</b>	<b>97,348</b>	<b>41,759</b>	<b>668,823</b>

Source: NCEM Risk Management Tool

### SOCIAL VULNERABILITY

It is assumed that all existing populations and future populations are at risk to the earthquake hazard.

### CRITICAL FACILITIES

All critical facilities should still be considered at-risk to minor damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.26**.

In conclusion, an earthquake could potentially impact all existing and future buildings, facilities, and populations in the Northern Piedmont region. Though minor earthquakes are often recorded but not felt, they may rattle breakables and cause minimal damage. Furthermore, major earthquakes have potential to damage structures. Severe impacts of earthquakes may result in debris clean-up, service disruption, building collapse, and fatalities. Specific vulnerabilities for assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available. Furthermore, mitigation actions to address earthquake vulnerability will be considered.

#### 6.5.4. Geological (Landslide)

GIS analysis was used to complete the vulnerability assessment for landslides in the Northern Piedmont Region. The potential dollar value of exposed land and property total can be determined using the USGS Landslide Susceptibility Index (detailed in Section 5: *Hazard Profiles*), county level tax parcel data, and GIS analysis. **Table 6.14** presents the potential at-risk property where available. All areas of the Northern Piedmont Region are identified as moderate or high incidence areas by the USGS landslide data. The incidence levels (high and moderate) were used to identify different areas of concern for the analysis below.

**TABLE 6.14: TOTAL POTENTIAL AT-RISK PARCELS FOR THE GEOLOGICAL (LANDSLIDE) HAZARD**

Location	Number of Parcels at Risk		Number of Improvements at Risk		Total Value of Improvements at Risk (\$)	
	Moderate	High	Moderate	High	Moderate	High
<b>Caswell County</b>	<b>1,251</b>	<b>0</b>	<b>860</b>	<b>0</b>	<b>\$140,600,134</b>	<b>\$0</b>
Milton	167	0	114	0	\$6,872,946	\$0
Yanceyville	905	0	646	0	\$106,333,072	\$0
Unincorporated Areas	0	0	0	0	\$0	\$0
<b>Davie County</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$0</b>	<b>\$0</b>
Bermuda Run	0	0	0	0	\$0	\$0
Cooleemee	0	0	0	0	\$0	\$0
Mocksville	0	0	0	0	\$0	\$0
Unincorporated Areas	0	0	0	0	\$0	\$0
<b>Forsyth County</b>	<b>17,869</b>	<b>0</b>	<b>15,136</b>	<b>0</b>	<b>\$3,043,846,100</b>	<b>\$0</b>
Bethania	0	0	0	0	\$0	\$0
Clemmons	0	0	0	0	\$0	\$0
Kernersville	9,269	0	7,880	0	\$1,587,486,800	\$0
Lewisville	0	0	0	0	\$0	\$0
Rural Hall	0	0	0	0	\$0	\$0
Tobaccoville	0	0	0	0	\$0	\$0
Walkertown	85	0	67	0	\$11,060,000	\$0
Winston-Salem	7,242	0	6,313	0	\$851,006,900	\$0
Unincorporated Area	0	0	0	0	\$0	\$0
<b>Rockingham County</b>	<b>9,476</b>	<b>0</b>	<b>7,395</b>	<b>0</b>	<b>\$1,068,022,286</b>	<b>\$0</b>
Eden	0	0	0	0	\$0	\$0
Madison	0	0	0	0	\$0	\$0
Mayodan	0	0	0	0	\$0	\$0
Reidsville	7,388	0	5,845	0	\$786,443,659	\$0
Stoneville	0	0	0	0	\$0	\$0
Wentworth	1,397	0	1,108	0	\$226,530,963	\$0
Unincorporated Area	0	0	0	0	\$0	\$0
<b>Stokes County</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$0</b>	<b>\$0</b>
Danbury	0	0	0	0	\$0	\$0
King	0	0	0	0	\$0	\$0
Walnut Cove	0	0	0	0	\$0	\$0
Unincorporated Area	0	0	0	0	\$0	\$0
<b>Surry County</b>	<b>0</b>	<b>9,133</b>	<b>0</b>	<b>7,174</b>	<b>\$0</b>	<b>\$1,385,938,341</b>
Dobson	0	606	0	458	\$0	\$100,161,660
Elkin	0	2,184	0	1,665	\$0	\$304,229,397
Mount Airy	0	5,494	0	4,499	\$0	\$735,283,925
Pilot Mountain	0	0	0	0	\$0	\$0
Unincorporated Area	0	0	0	0	\$0	\$0
<b>Yadkin County</b>	<b>0</b>	<b>1,535</b>	<b>0</b>	<b>1,123</b>	<b>\$0</b>	<b>\$103,140,922</b>
Boonville	0	0	0	0	\$0	\$0



## SECTION 6: VULNERABILITY ASSESSMENT

Location	Number of Parcels at Risk		Number of Improvements at Risk		Total Value of Improvements at Risk (\$)	
	Moderate	High	Moderate	High	Moderate	High
East Bend	0	0	0	0	\$0	\$0
Jonesville	0	1,379	0	1,056	\$0	\$97,490,995
Yadkinville	0	0	0	0	\$0	\$0
Unincorporated Area	0	0	0	0	\$0	\$0
<b>Northern Piedmont Regional Total</b>	<b>28,596</b>	<b>10,668</b>	<b>23,391</b>	<b>8,297</b>	<b>\$4,252,468,520</b>	<b>\$1,489,079,263</b>

Source: United States Geological Survey, Local governments

### SOCIAL VULNERABILITY

Given moderate to high susceptibility across the entire Northern Piedmont Region, it is assumed that a moderate amount of population is at risk.

### CRITICAL FACILITIES

There are 183 critical facilities located in a high susceptibility area, including the following: 100 Medical facilities, 38 fire/EMS stations, 8 police stations, 34 schools, and 3 others. The remaining critical facilities are located in low incidence areas. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a landslide has the potential to impact many existing and future buildings, facilities, and populations in the Northern Piedmont Region, though some areas are at a higher risk than others due to a variety of factors. For example, steep slopes and modified slopes bear a greater risk than flat areas. Specific vulnerabilities for Northern Piedmont assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

### 6.5.5 Flooding

Historical evidence indicates that the Northern Piedmont Region is susceptible to flood events. A total of 87 flood events have been reported by the National Centers for Environmental Information since 1993, resulting in over \$1.69 million (2019 dollars) in damages.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with local tax assessor records for each of the Northern Piedmont counties. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total assessed building values for only those improved properties that were confirmed to be located within an identified floodplain. **Table 6.15** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

**TABLE 6.15: ESTIMATED EXPOSURE OF PARCELS TO THE FLOODING HAZARD**

Location	1% Annual Chance of Flooding (100-year)			0.2% Annual Chance of Flooding (500-year)		
	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings
<b>Caswell County</b>	<b>94</b>	<b>45</b>	<b>\$4,421,519</b>	<b>101</b>	<b>47</b>	<b>\$4,442,757</b>
Milton	26	13	\$663,737	32	15	\$684,975
Yanceyville	15	9	\$936,244	15	9	\$936,244
Unincorporated Areas	53	23	\$2,821,538	54	23	\$2,821,538
<b>Davie County</b>	<b>287</b>	<b>179</b>	<b>\$153,087,610</b>	<b>322</b>	<b>199</b>	<b>\$156,683,580</b>
Bermuda Run	93	80	\$24,515,620	97	83	\$25,519,270
Cooleemee	6	3	\$136,470	6	3	\$136,470
Mocksville	81	45	\$13,462,030	108	62	\$16,054,350
Unincorporated Areas	107	51	\$114,973,490	111	51	\$114,973,490
<b>Forsyth County</b>	<b>5,989</b>	<b>4,196</b>	<b>\$1,752,165,394</b>	<b>6,544</b>	<b>4,631</b>	<b>\$1,902,077,794</b>
Bethania	27	17	\$1,861,300	33	20	\$2,179,000
Clemmons	484	398	\$91,404,700	515	425	\$96,721,900
Kernersville	336	253	\$104,512,700	351	265	\$107,064,500
Lewisville	183	157	\$41,219,600	203	174	\$45,519,600
Rural Hall	40	23	\$2,062,000	40	23	\$2,062,000
Tobaccoville	59	35	\$3,555,600	61	36	\$3,707,600
Walkertown	40	26	\$2,186,000	49	32	\$2,788,200
Winston-Salem	4,223	2,981	\$1,284,776,100	4,660	3,328	\$1,373,197,800
Unincorporated Area	597	306	\$220,587,394	632	328	\$268,837,194
<b>Rockingham County</b>	<b>1,113</b>	<b>665</b>	<b>\$137,024,621</b>	<b>1,274</b>	<b>782</b>	<b>\$152,817,907</b>
Eden	518	326	\$46,513,159	603	384	\$50,752,031
Madison	123	84	\$12,434,905	166	121	\$17,436,269
Mayodan	15	6	\$3,481,616	30	16	\$4,907,990
Reidsville	256	151	\$48,118,695	267	161	\$53,014,702
Stoneville	-	-	\$-	-	-	\$-
Wentworth	3	3	\$294,660	3	3	\$294,660
Unincorporated Area	198	95	\$26,181,586	205	97	\$26,412,255
<b>Stokes County</b>	<b>273</b>	<b>151</b>	<b>\$29,194,200</b>	<b>279</b>	<b>165</b>	<b>\$29,622,000</b>
Danbury	13	8	\$691,300	13	8	\$691,300
King	100	75	\$11,455,200	104	77	\$11,586,700
Walnut Cove	60	31	\$8,759,400	60	31	\$8,759,400
Unincorporated Area	100	37	\$8,288,300	102	49	\$8,584,600
<b>Surry County</b>	<b>661</b>	<b>420</b>	<b>\$201,171,210</b>	<b>796</b>	<b>525</b>	<b>\$220,462,670</b>
Dobson	-	-	\$-	-	-	\$-
Elkin	215	132	\$59,813,630	264	169	\$67,429,470
Mount Airy	303	210	\$94,059,660	382	274	\$105,369,280
Pilot Mountain	9	6	\$4,605,010	11	8	\$4,844,410
Unincorporated Area	134	72	\$42,692,910	139	74	\$42,819,510
<b>Yadkin County</b>	<b>200</b>	<b>89</b>	<b>\$12,416,487</b>	<b>222</b>	<b>104</b>	<b>\$13,941,753</b>
Boonville	-	-	\$-	-	-	\$-

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	1% Annual Chance of Flooding (100-year)			0.2% Annual Chance of Flooding (500-year)		
	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings
East Bend	-	-	\$-	-	-	\$-
Jonesville	106	60	\$8,974,970	124	74	\$10,489,526
Yadkinville	6	2	\$492,997	6	2	\$492,997
Unincorporated Area	88	27	\$2,948,520	92	28	\$2,959,230
<b>Northern Piedmont Regional Total</b>	<b>8,617</b>	<b>5,745</b>	<b>\$2,289,481,041</b>	<b>9,538</b>	<b>6,453</b>	<b>\$2,480,048,461</b>

Source: FEMA DFIRM

To assess flood risk, the NCEM Risk Management Tool (RMT) analyzed buildings located in the 1 percent chance of annual floodplains. The buildings are assessed by the type of building (commercial, residential, or public) and also assesses Pre-Firm buildings, or structures built before flood code regulations were installed. This data is shown by jurisdiction in **Table 6.16**.

**TABLE 6.16: BUILDING VULNERABILITY FOR THE 100-YEAR FLOODPLAINS IN NORTHERN PIEDMONT REGION**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	<b>10</b>	<b>9</b>	<b>\$77,184</b>	<b>1</b>	<b>\$6,618</b>	<b>-</b>	<b>\$-</b>	<b>10</b>	<b>\$83,802</b>
Milton	-	-	\$-	-	\$-	-	\$-	-	\$-
Yanceyville	-	-	\$-	-	\$-	-	\$-	-	\$-
Unincorporated Areas	10	9	\$77,184	1	\$6,618	-	\$-	10	\$83,802
<b>Davie County</b>	<b>72</b>	<b>92</b>	<b>\$737,496</b>	<b>15</b>	<b>\$68,096</b>	<b>1</b>	<b>\$5,712</b>	<b>108</b>	<b>\$811,305</b>
Bermuda Run	-	9	\$103,242	-	\$-	-	\$-	9	\$103,242
Cooleemee	-	-	\$-	-	\$-	-	\$-	-	\$-
Mocksville	1	-	\$-	-	\$-	1	\$5,712	1	\$5,712
Unincorporated Areas	71	83	\$634,254	15	\$68,096	-	\$-	98	\$702,351
<b>Forsyth County</b>	<b>310</b>	<b>374</b>	<b>\$5,875,511</b>	<b>119</b>	<b>\$8,406,447</b>	<b>16</b>	<b>\$1,041,346</b>	<b>509</b>	<b>\$15,323,303</b>
Bethania	2	2	\$28,923	-	\$-	-	\$-	2	\$28,923
Clemmons	13	20	\$166,793	2	\$16,801	-	\$-	22	\$183,593
Kernersville	8	9	\$23,856	1	\$3,083	-	\$-	10	\$26,939
Lewisville	1	3	\$8,903	-	\$-	-	\$-	3	\$8,903
Rural Hall	2	3	\$32,911	-	\$-	-	\$-	3	\$32,911
Tobaccoville	1	1	\$2,313	-	\$-	-	\$-	1	\$2,313
Walkertown	-	3	\$12,948	-	\$-	-	\$-	3	\$12,948
Winston-Salem	262	276	\$5,122,252	114	\$8,328,026	15	\$835,517	405	\$14,285,795

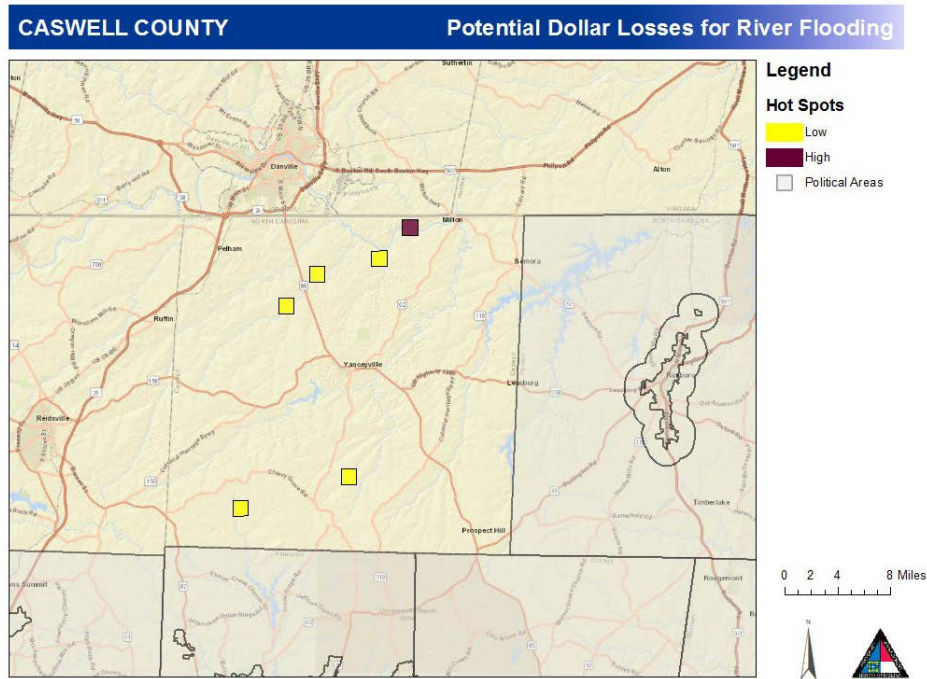
**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Unincorporated Area	21	57	\$476,612	2	\$58,537	1	\$205,829	60	\$740,978
<b>Rockingham County</b>	<b>260</b>	<b>254</b>	<b>\$2,139,729</b>	<b>46</b>	<b>\$3,259,170</b>	<b>3</b>	<b>\$124,896</b>	<b>303</b>	<b>\$5,523,795</b>
Eden	99	96	\$1,165,346	25	\$1,490,371	3	\$124,896	124	\$2,780,614
Madison	17	10	\$71,126	9	\$407,645	-	\$-	19	\$478,771
Mayodan	7	4	\$52,081	3	\$103,040	-	\$-	7	\$155,121
Reidsville	26	29	\$211,488	7	\$1,168,899	-	\$-	36	\$1,380,386
Stoneville	-	-	\$-	-	\$-	-	\$-	-	\$-
Wentworth	-	-	\$-	-	\$-	-	\$-	-	\$-
Unincorporated Area	111	115	\$639,688	2	\$89,215	-	\$-	117	\$728,903
<b>Stokes County</b>	<b>46</b>	<b>41</b>	<b>\$146,630</b>	<b>5</b>	<b>\$47,634</b>	<b>-</b>	<b>\$-</b>	<b>46</b>	<b>\$194,263</b>
Danbury	1	1	\$1,559	-	\$-	-	\$-	1	\$1,559
King	18	14	\$41,645	4	\$45,433	-	\$-	18	\$87,077
Walnut Cove	2	2	\$921	-	\$-	-	\$-	2	\$921
Unincorporated Area	25	24	\$102,505	1	\$2,201	-	\$-	25	\$104,706
<b>Surry County</b>	<b>176</b>	<b>107</b>	<b>\$604,602</b>	<b>63</b>	<b>\$2,667,276</b>	<b>6</b>	<b>\$140,679</b>	<b>176</b>	<b>\$3,412,557</b>
Dobson	1	1	\$4,891	-	\$-	-	\$-	1	\$4,891
Elkin	46	9	\$190,058	31	\$1,957,087	4	\$129,010	44	\$2,276,155
Mount Airy	60	36	\$155,920	24	\$650,529	-	\$-	60	\$806,449
Pilot Mountain	1	1	\$476	-	\$-	-	\$-	1	\$476
Unincorporated Area	68	60	\$253,257	8	\$59,660	2	\$11,669	70	\$324,586
<b>Yadkin County</b>	<b>20</b>	<b>13</b>	<b>\$31,932</b>	<b>11</b>	<b>\$417,517</b>	<b>2</b>	<b>\$46,846</b>	<b>26</b>	<b>\$496,296</b>
Boonville	-	-	\$-	-	\$-	-	\$-	-	\$-
East Bend	-	-	\$-	-	\$-	-	\$-	-	\$-
Jonesville	3	1	\$1,564	3	\$167,452	-	\$-	4	\$169,016
Yadkinville	-	-	\$-	-	\$-	-	\$-	-	\$
Unincorporated Area	17	12	\$30,368	8	\$250,065	2	\$46,846	22	\$327,280
<b>Northern Piedmont Regional Total</b>	<b>894</b>	<b>890</b>	<b>\$9,613,084</b>	<b>260</b>	<b>\$14,872,758</b>	<b>28</b>	<b>\$1,359,479</b>	<b>1,178</b>	<b>\$25,845,321</b>

Source: NCEM Risk Management Tool

Figures 6.4 through 6.10 below display visual hotspots of potential dollar losses for the flood hazard in Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties. Based on the photo, most hot spots are in an area with low vulnerability.

**FIGURE 6.4: POTENTIAL DOLLAR LOSSES FOR FLOODING IN CASWELL COUNTY**



Source: NCEM Risk Management Tool

**FIGURE 6.5: POTENTIAL DOLLAR LOSSES FOR FLOODING IN DAVIE COUNTY**

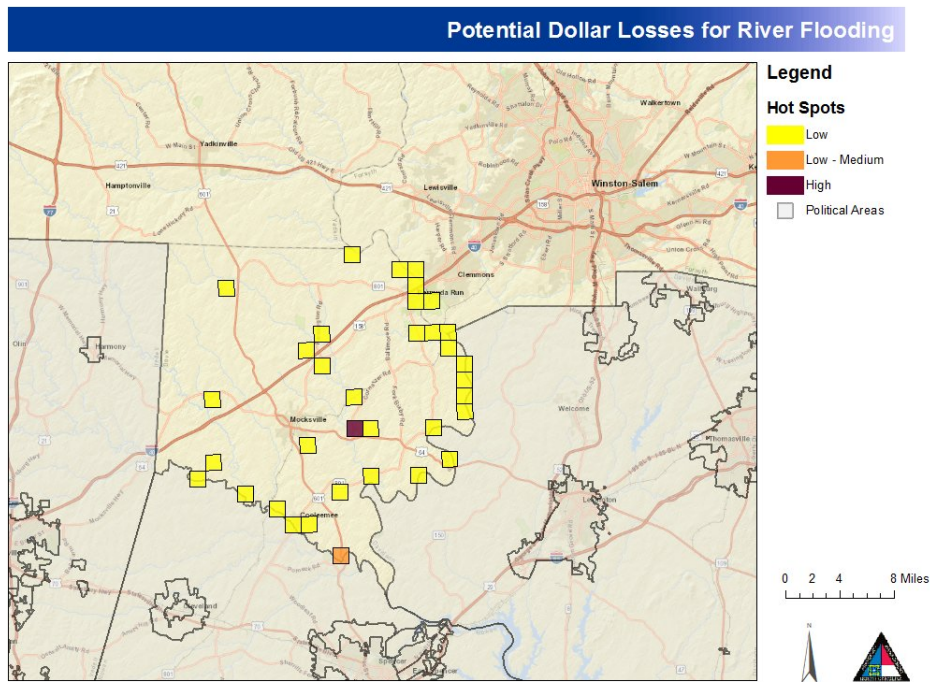
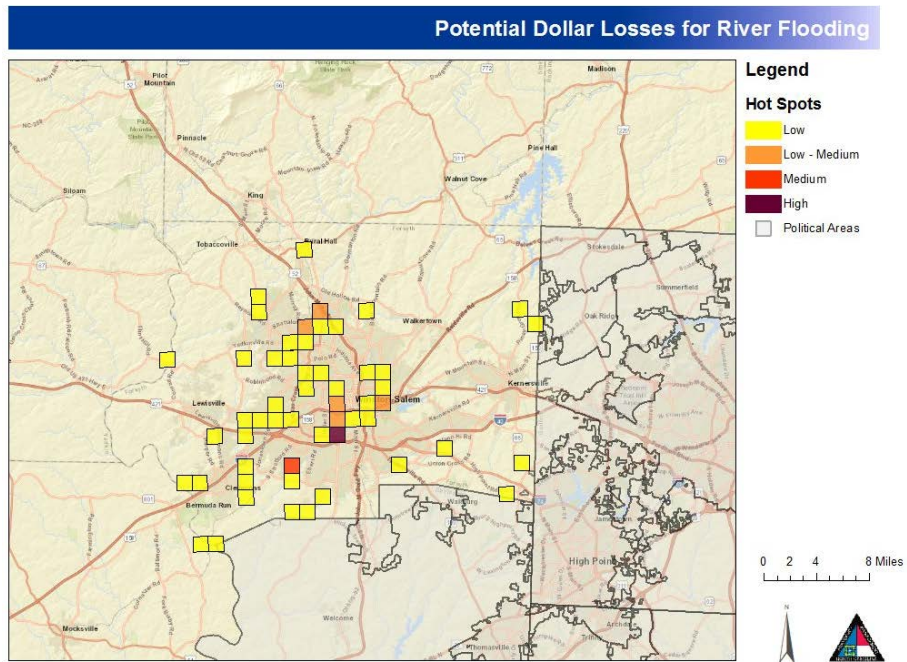
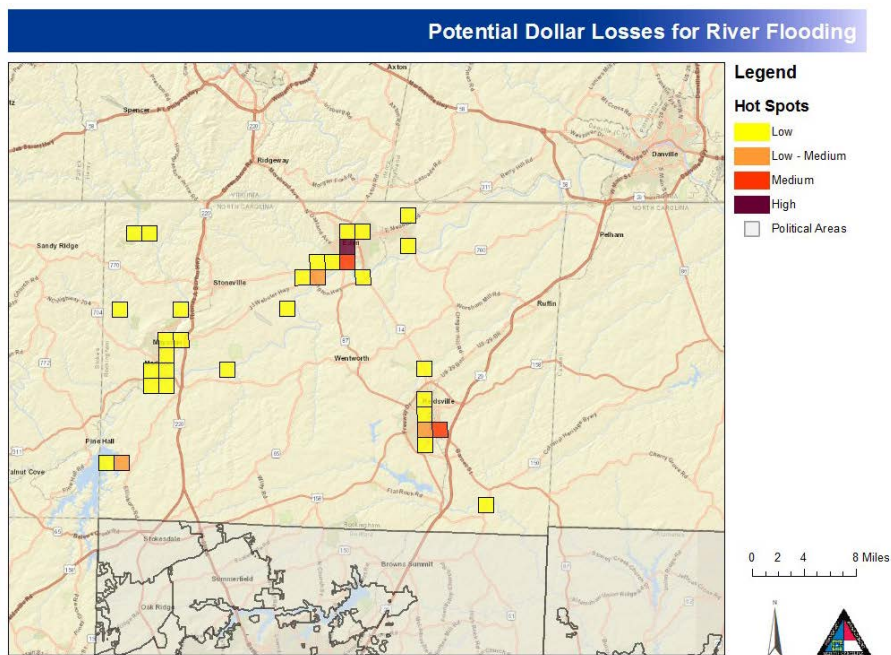


FIGURE 6.6: POTENTIAL DOLLAR LOSSES FOR FLOODING IN FORSYTH COUNTY



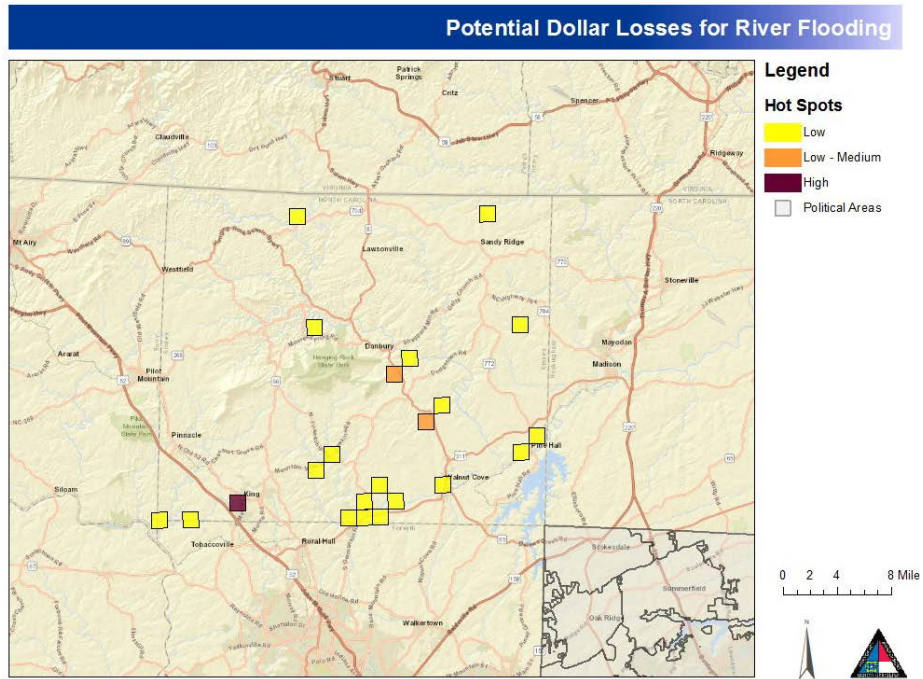
Source: NCEM Risk Management Tool

FIGURE 6.7: POTENTIAL DOLLAR LOSSES FOR FLOODING IN ROCKINGHAM COUNTY



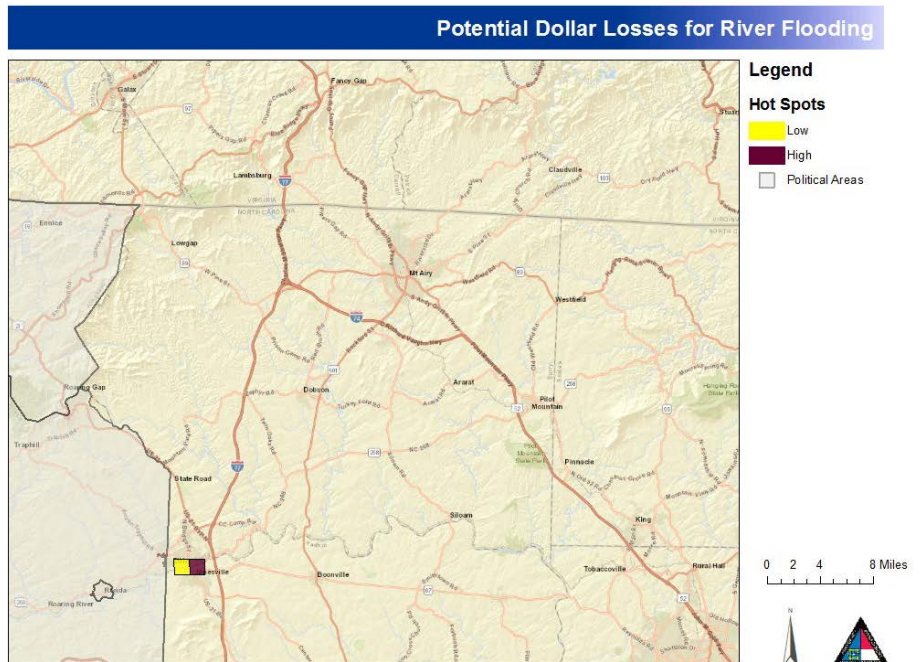
Source: NCEM Risk Management Tool

**FIGURE 6.8: POTENTIAL DOLLAR LOSSES FOR FLOODING IN STOKES COUNTY**



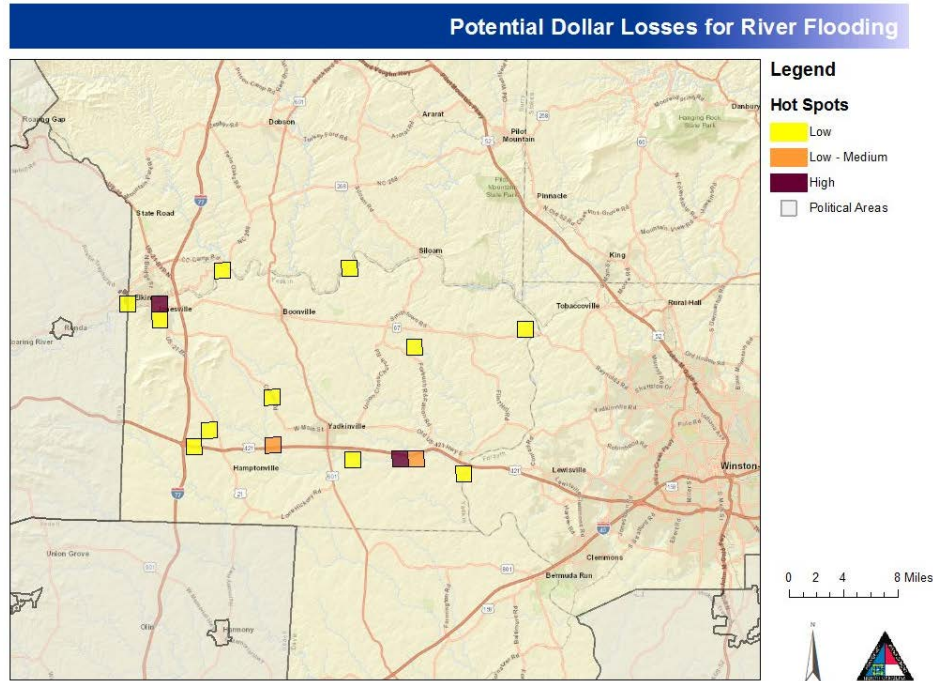
Source: NCEM Risk Management Tool

**FIGURE 6.9: POTENTIAL DOLLAR LOSSES FOR FLOODING IN SURRY COUNTY**



Source: NCEM Risk Management Tool

**FIGURE 6.10: POTENTIAL DOLLAR LOSSES FOR FLOODING IN YADKIN COUNTY**



Source: NCEM Risk Management Tool

Table 6.17 assesses the vulnerability of the region’s population. This data is also from the RMT and analyzes the populations of elderly and children living at risk to the 1 percent annual flooding.

**TABLE 6.17: POPULATION VULNERABILITY FOR 100-YEAR FLOODPLAINS IN NORTHERN PIEDMONT REGION**

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>103</b>	<b>54</b>	<b>798</b>
Milton	0	0	2
Yanceyville	0	0	0
Unincorporated Areas	103	54	796
<b>Davie County</b>	<b>18</b>	<b>7</b>	<b>116</b>
Bermuda Run	3	2	25
Cooleemee	3	1	19
Mocksville	0	0	2
Unincorporated Areas	12	4	70
<b>Forsyth County</b>	<b>30</b>	<b>10</b>	<b>187</b>
Bethania	3	1	21
Clemmons	0	0	0
Kernersville	1	0	5
Lewisville	1	0	4
Rural Hall	0	0	2
Tobaccoville	0	0	0



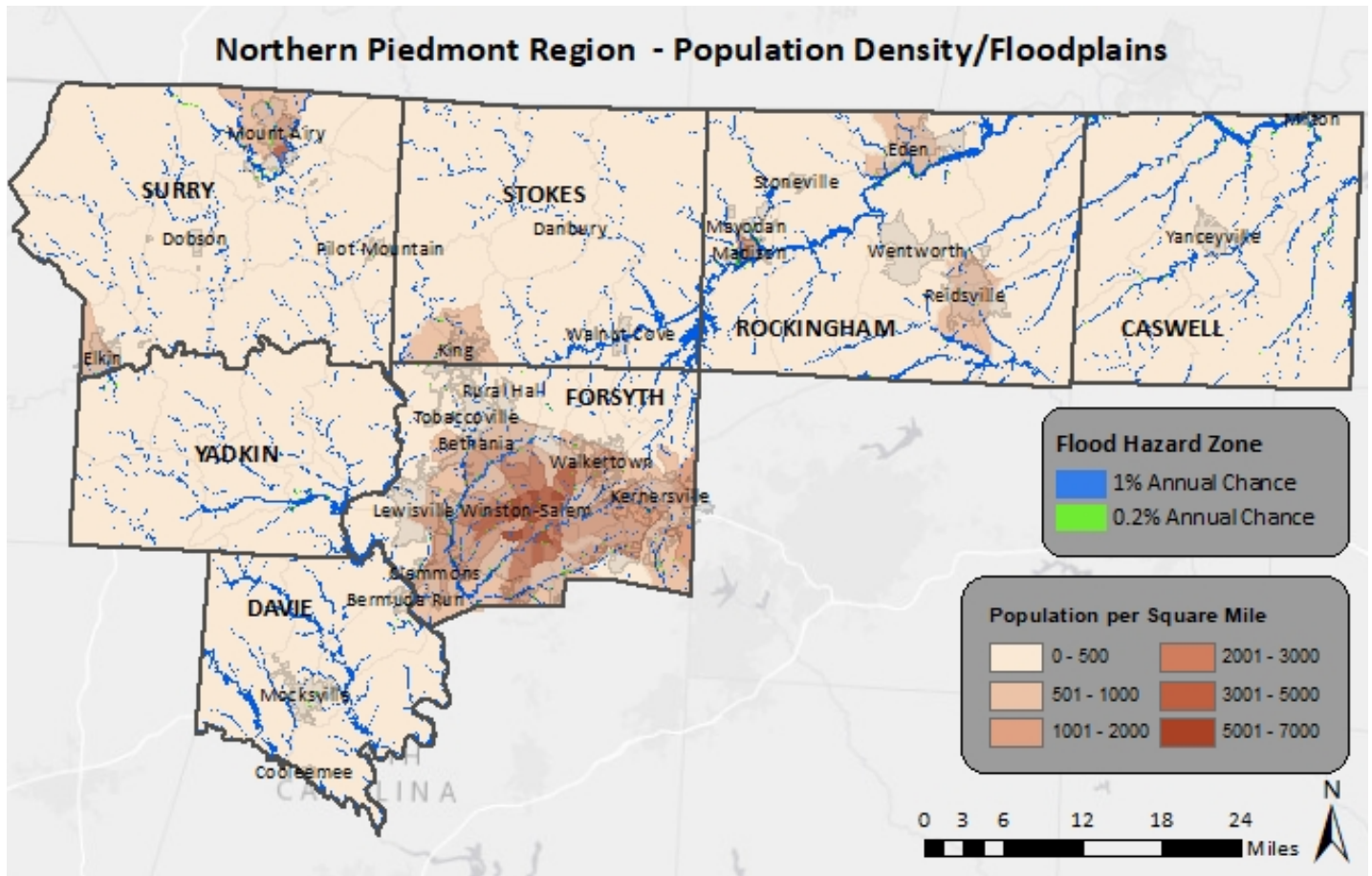
**SECTION 6: VULNERABILITY ASSESSMENT**

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Walkertown	0	0	0
Winston-Salem	14	5	86
Unincorporated Area	11	4	69
<b>Rockingham County</b>	<b>53</b>	<b>22</b>	<b>358</b>
Eden	33	11	202
Madison	0	0	3
Mayodan	0	0	2
Reidsville	13	7	97
Stoneville	0	0	0
Wentworth	0	0	0
Unincorporated Area	7	4	54
<b>Stokes County</b>	<b>38</b>	<b>13</b>	<b>230</b>
Danbury	3	1	16
King	27	9	167
Walnut Cove	0	0	0
Unincorporated Area	8	3	47
<b>Surry County</b>	<b>27</b>	<b>10</b>	<b>170</b>
Dobson	2	1	12
Elkin	1	0	8
Mount Airy	19	7	115
Pilot Mountain	0	0	2
Unincorporated Area	5	2	33
<b>Yadkin County</b>	<b>5</b>	<b>2</b>	<b>34</b>
Boonville	3	1	19
East Bend	1	1	8
Jonesville	1	0	7
Yadkinville	0	0	0
Unincorporated Area	0	0	0
<b>Northern Piedmont Regional Total</b>	<b>274</b>	<b>118</b>	<b>1,893</b>

Source: NCEM Risk Management Tool

**SOCIAL VULNERABILITY**

A national Census has not been conducted since 2010; therefore, 2010 Census tract level population counts are outdated for this update. However, population estimates from the US Census Bureau as of July 1, 2017 were available at a jurisdictional level. This data was analyzed to present at-risk populations to the flooding hazard in the Northern Piedmont region and can be seen below in **Figure 6.11**.

**FIGURE 6.11: POPULATION DENSITY NEAR FLOODPLAINS**

Source: FEMA DFIRM, US Census Bureau

### CRITICAL FACILITIES

The critical facility analysis revealed that there are 11 critical facilities located in the Northern Piedmont Region's 1.0-percent and 2.0-percent annual chance floodplain based on FEMA DFIRM boundaries and GIS analysis. (As previously noted, this analysis does not consider building elevation, which may negate risk.) These facilities include 1 public school in Forsyth County, and 9 medical facilities in Forsyth County, and 1 medical facility in Rockingham County. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in the Northern Piedmont Region, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. As noted, the floodplains used in this analysis include the 100-year and 500-year FEMA regulated floodplain boundaries. It is certainly possible that more severe events could occur beyond these boundaries or urban (flash) flooding could impact additional structures. Such site-specific vulnerability determinations should be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions. **Table 6.18** below lists repetitive loss properties and their associated payments for each county.

**TABLE 6.18: SUMMARY OF REPETITIVE LOSS PROPERTIES**

Location	Number of Properties	Number of Losses	Total Payments
<b>Caswell County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Milton	0	0	\$0
Yanceyville	0	0	\$0
Unincorporated Areas	0	0	\$0
<b>Davie County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Bermuda Run	0	0	\$0
Cooleemee	0	0	\$0
Mocksville	0	0	\$0
Unincorporated Areas	0	0	\$0
<b>Forsyth County</b>	<b>33</b>	<b>125</b>	<b>\$1,606,000</b>
Bethania	0	0	\$0
Clemmons	2	11	\$118,690
Kernersville	1	2	\$24,450
Lewisville	0	0	\$0
Rural Hall	0	0	\$0
Tobaccoville	0	0	\$0
Walkertown	0	0	\$0
Winston-Salem	30	112	\$1,462,861
Unincorporated Area	0	0	\$0
<b>Rockingham County</b>	<b>11</b>	<b>31</b>	<b>\$321,076</b>
Eden	9	27	\$299,029
Madison	0	0	\$0
Mayodan	0	0	\$0
Reidsville	0	0	\$0
Stoneville	0	0	\$0
Wentworth	0	0	\$0
Unincorporated Area	2	4	\$22,047
<b>Stokes County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Danbury	0	0	\$0
King	0	0	\$0
Walnut Cove	0	0	\$0
Unincorporated Area	0	0	\$0
<b>Surry County</b>	<b>7</b>	<b>20</b>	<b>\$963,446</b>
Dobson	--	--	--
Elkin	0	0	\$0
Mount Airy	6	16	\$906,037
Pilot Mountain	--	--	--
Unincorporated Area	1	4	\$57,409
<b>Yadkin County</b>	<b>0</b>	<b>0</b>	<b>\$0</b>
Boonville	--	--	--

## SECTION 6: VULNERABILITY ASSESSMENT

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Location	Number of Properties	Number of Losses	Total Payments
East Bend	--	--	--
Jonesville	0	0	\$0
Yadkinville	0	0	\$0
Unincorporated Area	0	0	\$0
<b>Northern Piedmont Regional Total</b>	<b>51</b>	<b>176</b>	<b>\$2,890,522</b>

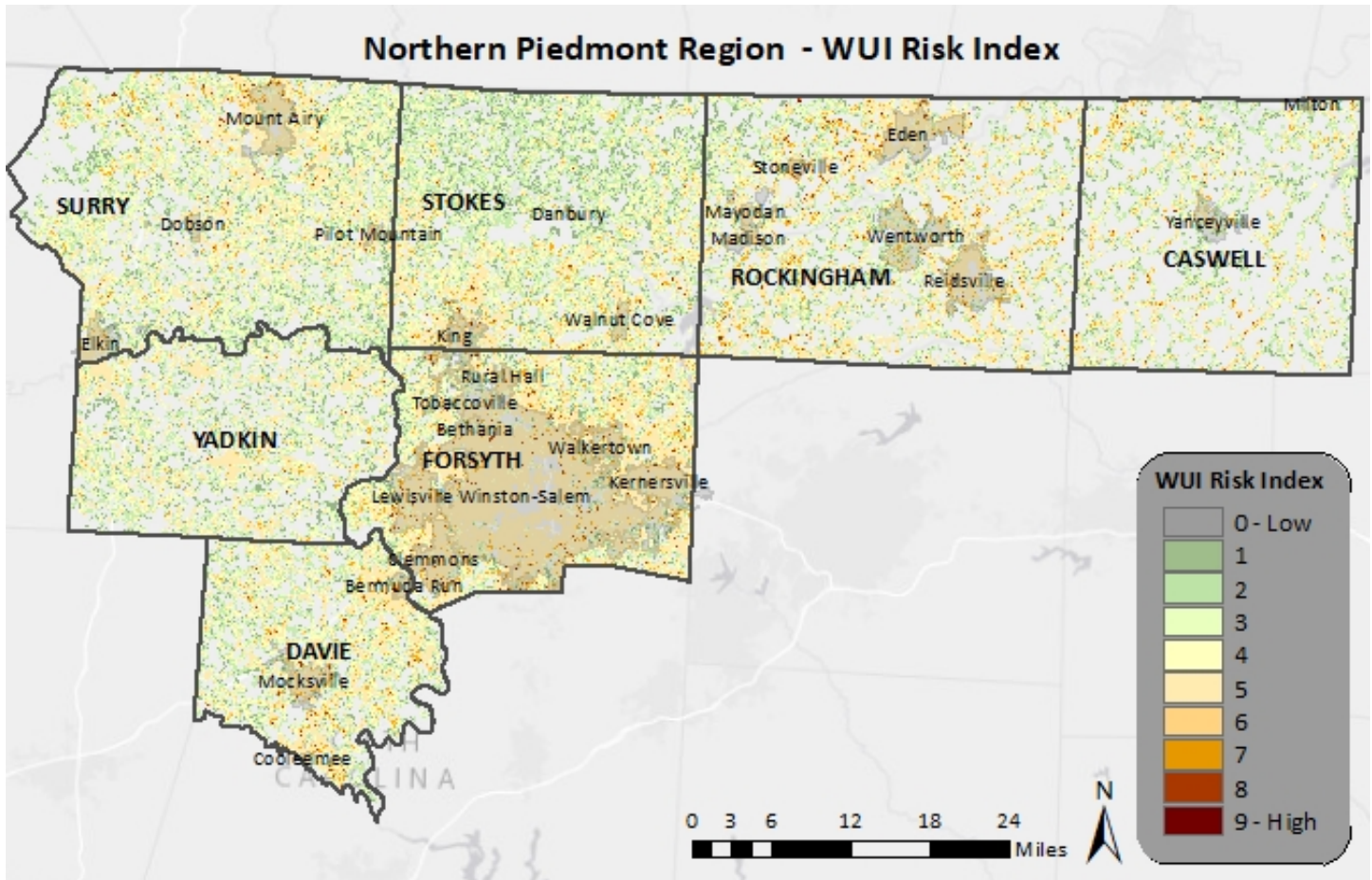
Source: National Flood Insurance Program

### 6.5.6 Wildfires

Although historical evidence indicates that the Northern Piedmont Region is susceptible to wildfire events, there are few reports of damage. Therefore, it is difficult to calculate a reliable annualized loss figure. Annualized loss is considered negligible though it should be noted that a single event could result in significant damages throughout the region.

To estimate exposure to wildfire, the Wildland Urban Interface (WUI) Risk Index for the region was obtained through the Southern Wildfire Risk Assessment. The WUI uses a Response Function modeling approach and rates the potential impact of a wildfire on people and their homes. The index ranges from -1 to -9, with -9 being the most negative impact. For example, an area with high housing density and high flame lengths are rated -9, while an area with low housing density and low flame lengths are rated -1. At-risk areas fall within the range of -7 to -9. This index was layered with parcel data using GIS analysis. **Figure 6.12** shows the WUI Risk Index for the region below.

**FIGURE 6.12: WILDLAND URBAN INTERFACE RISK INDEX**



Source: Southern Wildfire Risk Assessment

The region contains some lands where the value falls into the at-risk category, in particular Caswell County, while areas such as Forsyth County have less land labeled as at-risk. Overall, there is a medium wildfire ignition density risk index in the region which is somewhat higher than other areas in North Carolina.

**SOCIAL VULNERABILITY**

Even though not all areas have equal vulnerability, there is some susceptibility across the entire Northern Piedmont Region. It is assumed that the total population is at risk to the wildfire hazard. Determining the exact number of people in certain wildfire zones is difficult with existing data and could be misleading.

**CRITICAL FACILITIES**

Although no county had many critical facilities in the at-risk area (-7 or higher) for wildfires, Rockingham County had the most with 7 facilities. Caswell and Forsyth County had 3, Davie County had 4, and Stokes and Surry County each had 5. Yadkin County did not have any at-risk facilities.

Table 6.19 shows the results of the GIS analysis.

**TABLE 6.19: CRITICAL FACILITIES IN THE AT-RISK WUI RISK INDEX AREA**

Location	Number of At-Risk Critical Facilities
Caswell County	3
Davie County	4
Forsyth County	3
Rockingham County	7
Stokes County	5
Surry County	5
Yadkin County	0
<b>Northern Piedmont Regional Total</b>	<b>28</b>

Source: Southern Wildfire Risk Assessment, Local governments

Additional information was provided through the NCEM Risk Management Tool (RMT). This data can be seen in below in **Table 6.20** and **Table 6.21**.

**TABLE 6.20: BUILDING VULNERABILITY TO WILDFIRE HAZARDS**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
<b>Caswell County</b>	<b>582</b>	<b>540</b>	<b>\$64,973,884</b>	<b>31</b>	<b>\$24,206,992</b>	<b>11</b>	<b>\$19,990,567</b>	<b>582</b>	<b>\$109,171,443</b>
Milton	-	-	\$-	-	\$-	-	\$-	-	\$-
Yanceyville	-	-	\$-	-	\$-	-	\$-	-	\$-
Unincorporated Areas	582	540	\$64,973,884	31	\$24,206,992	11	\$19,990,567	582	\$109,171,443
<b>Davie County</b>	<b>1,494</b>	<b>2,195</b>	<b>\$341,605,914</b>	<b>148</b>	<b>\$153,087,723</b>	<b>31</b>	<b>\$35,806,212</b>	<b>2,374</b>	<b>\$530,499,849</b>
Bermuda Run	-	92	\$30,802,060	7	\$9,299,974	2	\$923,877	101	\$41,025,911
Cooleemee	20	14	\$1,816,470	2	\$14,287,683	4	\$4,667,233	20	\$20,771,386
Mocksville	42	40	\$9,887,290	2	\$4,030,696	-	\$-	42	\$13,917,986
Unincorporated Areas	1,432	2,049	\$299,100,094	137	\$125,469,370	25	\$30,215,102	2,211	\$454,784,566
<b>Forsyth County</b>	<b>2,267</b>	<b>5,812</b>	<b>\$754,825,325</b>	<b>160</b>	<b>\$326,909,132</b>	<b>79</b>	<b>\$145,225,853</b>	<b>6,051</b>	<b>\$1,226,960,309</b>
Bethania	1	-	\$-	-	\$-	1	\$473,924	1	\$473,924
Clemmons	71	438	\$62,011,954	14	\$28,747,595	19	\$19,359,143	471	\$110,118,693
Kernersville	161	192	\$20,994,032	8	\$36,993,352	12	\$9,739,958	212	\$67,727,342
Lewisville	326	1,195	\$195,466,965	52	\$49,823,500	10	\$11,831,257	1,257	\$257,121,721
Rural Hall	2	3	\$290,677	-	\$-	-	\$-	3	\$290,677
Tobaccoville	241	579	\$60,485,087	6	\$1,350,104	7	\$8,467,716	592	\$70,302,907
Walkertown	187	294	\$29,377,769	16	\$8,204,988	2	\$12,537,809	312	\$50,120,566
Winston-Salem	362	838	\$114,993,895	32	\$157,090,642	5	\$22,167,462	875	\$294,251,999
Unincorporated Area	916	2,273	\$271,204,946	32	\$44,698,951	23	\$60,648,584	2,328	\$376,552,480
<b>Rockingham County</b>	<b>1,055</b>	<b>1,046</b>	<b>\$117,831,609</b>	<b>144</b>	<b>\$89,475,791</b>	<b>32</b>	<b>\$31,779,811</b>	<b>1,222</b>	<b>\$239,087,212</b>
Eden	45	43	\$6,493,326	13	\$9,228,623	2	\$1,023,003	58	\$16,744,952

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Madison	6	-	\$-	6	\$2,033,204	-	\$-	6	\$2,033,204
Mayodan	3	4	\$452,503	-	\$-	-	\$-	4	\$452,503
Reidsville	7	8	\$1,622,643	1	\$136,034	-	\$-	9	\$1,758,677
Stoneville	-	-	\$-	-	\$-	-	\$-	-	\$-
Wentworth	-	-	\$-	-	\$-	-	\$-	-	\$-
Unincorporated Area	994	991	\$109,263,137	124	\$78,077,930	30	\$30,756,808	1,145	\$218,097,876
<b>Stokes County</b>	<b>2,286</b>	<b>1,828</b>	<b>\$220,282,414</b>	<b>443</b>	<b>\$97,612,432</b>	<b>18</b>	<b>\$24,368,048</b>	<b>2,289</b>	<b>\$342,262,893</b>
Danbury	-	-	\$-	-	\$-	-	\$-	-	\$-
King	860	759	\$101,144,200	97	\$41,938,027	7	\$11,030,426	863	\$154,112,653
Walnut Cove	-	-	\$-	-	\$-	-	\$-	-	\$-
Unincorporated Area	1,426	1,069	\$119,138,214	346	\$55,674,405	11	\$13,337,622	1,426	\$188,150,240
<b>Surry County</b>	<b>12,932</b>	<b>11,575</b>	<b>\$1,420,204,980</b>	<b>1,306</b>	<b>\$661,822,258</b>	<b>263</b>	<b>\$395,069,697</b>	<b>13,144</b>	<b>\$2,477,096,936</b>
Dobson	202	165	\$32,175,919	25	\$3,888,780	12	\$46,086,484	202	\$82,151,184
Elkin	17	26	\$1,829,949	7	\$36,122,226	2	\$49,493,949	35	\$87,446,124
Mount Airy	1,678	1,579	\$215,041,710	72	\$132,066,727	27	\$30,733,973	1,678	\$377,842,410
Pilot Mountain	320	290	\$59,866,850	19	\$38,694,935	11	\$29,980,809	320	\$128,542,594
Unincorporated Area	10,715	9,515	\$1,111,290,552	1,183	\$451,049,590	211	\$238,774,482	10,909	\$1,801,114,624
<b>Yadkin County</b>	<b>1,056</b>	<b>1,127</b>	<b>\$142,388,997</b>	<b>59</b>	<b>\$113,939,076</b>	<b>22</b>	<b>\$17,614,224</b>	<b>1,208</b>	<b>\$273,942,297</b>
Boonville	-	-	\$-	-	\$-	-	\$-	-	\$-
East Bend	-	-	\$-	-	\$-	-	\$-	-	\$-
Jonesville	-	1	\$336,722	-	\$-	-	\$-	1	\$336,722
Yadkinville	251	221	\$23,886,464	22	\$99,997,689	10	\$6,921,053	253	\$130,805,206
Unincorporated Area	805	905	\$118,165,811	37	\$13,941,387	12	\$10,693,171	954	\$142,800,369
<b>Northern Piedmont Regional Total</b>	<b>21,672</b>	<b>24,123</b>	<b>\$3,062,113,123</b>	<b>2,291</b>	<b>\$1,467,053,404</b>	<b>456</b>	<b>\$669,854,412</b>	<b>26,870</b>	<b>\$5,199,020,939</b>

Source: NCEM Risk Management Tool

**TABLE 6.21: POPULATION VULNERABILITY TO WILDFIRE HAZARD FOR THE NORTHERN PIEDMONT REGION**

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
<b>Caswell County</b>	<b>2,276</b>	<b>813</b>	<b>13,696</b>
Milton	1	1	8
Yanceyville	-	-	-
Unincorporated Areas	2,275	812	13,688
<b>Davie County</b>	<b>522</b>	<b>207</b>	<b>3,540</b>
Bermuda Run	115	60	888

**SECTION 6: VULNERABILITY ASSESSMENT**

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Cooleemee	68	36	527
Mocksville	1	-	8
Unincorporated Areas	338	111	2,117
<b>Forsyth County</b>	<b>730</b>	<b>302</b>	<b>5,032</b>
Bethania	116	36	729
Clemmons	-	-	-
Kernersville	13	5	81
Lewisville	9	3	54
Rural Hall	-	-	-
Tobaccoville	-	-	-
Walkertown	-	-	-
Winston-Salem	309	162	2,381
Unincorporated Area	283	96	1,787
<b>Rockingham County</b>	<b>1,101</b>	<b>533</b>	<b>8,112</b>
Eden	505	265	3,887
Madison	4	1	23
Mayodan	3	1	19
Reidsville	353	185	2,723
Stoneville	-	-	-
Wentworth	-	-	-
Unincorporated Area	236	81	1,460
<b>Stokes County</b>	<b>792</b>	<b>284</b>	<b>4,794</b>
Danbury	84	30	506
King	510	182	3,070
Walnut Cove	-	-	-
Unincorporated Area	198	72	1,218
<b>Surry County</b>	<b>734</b>	<b>282</b>	<b>4,688</b>
Dobson	76	28	466
Elkin	34	12	203
Mount Airy	471	162	2,841
Pilot Mountain	-	-	2
Unincorporated Area	153	80	1,176
<b>Yadkin County</b>	<b>149</b>	<b>65</b>	<b>1,019</b>
Boonville	70	37	538
East Bend	64	23	387
Jonesville	15	5	94
Yadkinville	-	-	-
Unincorporated Area	-	-	-
<b>Northern Piedmont Regional Total</b>	<b>6,304</b>	<b>2,486</b>	<b>40,881</b>

Source: NCEM Risk Management Tool



### 6.5.7 Hazardous Substances

Although historical evidence and existing Toxic Release Inventory sites indicate that the Northern Piedmont Region is susceptible to hazardous substance events, there are few reports of damage. Therefore, a calculated annualized loss figure may not be completely reliable.

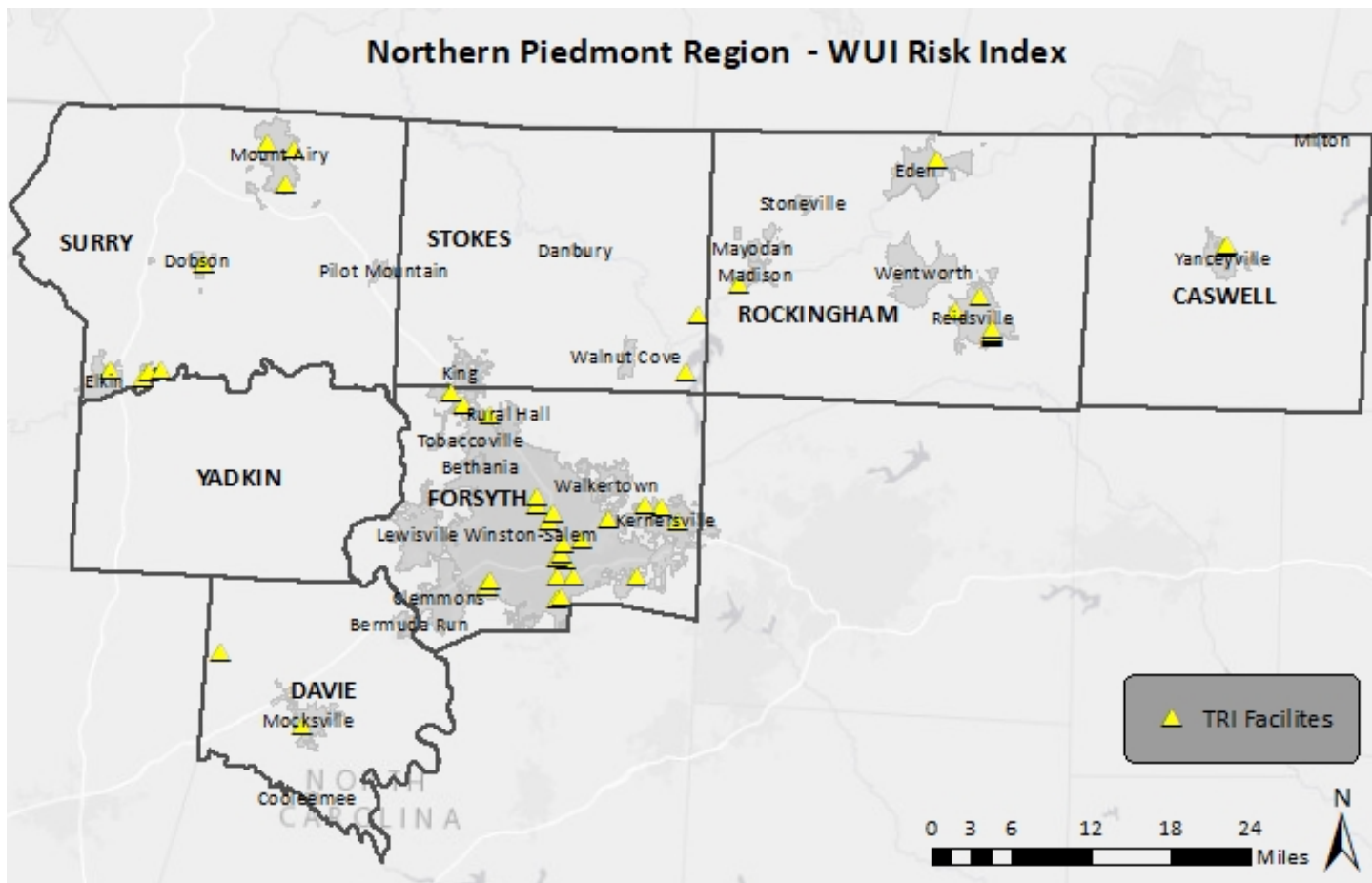
Most hazardous substance incidents that occur are contained and suppressed before destroying any property or threatening lives. However, they can have a significant negative impact. Such events can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. In a hazardous substance incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers. Weather conditions will directly affect how the hazard develops. Certain chemicals may travel through the air or water, affecting a much larger area than the point of the incidence itself. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features, can substantially increase the damage from a hazardous materials release. The duration of a hazardous materials incident can range from hours to days. Warning time is minimal to none.

In order to conduct the vulnerability assessment for this hazard, GIS intersection analysis was used for fixed and mobile areas and parcels<sup>5</sup>. In both scenarios, two sizes of buffers—0.5 mile and 1 mile—were used. These areas are assumed to respect the different levels of effect: immediate (primary) and secondary. Primary and secondary impact sites were selected based on guidance from FEMA 426, Reference Manual to Mitigate Potential Terrorist Attacks against Buildings and engineering judgment. For the fixed site analysis, geo-referenced TRI listed toxic sites in the Northern Piedmont Region, along with buffers, were used for analysis as shown in **Figure 6.13**. For the mobile analysis, the major roads (Interstate highway, U.S. highway, and State highway) and railroads, where hazardous materials are primarily transported that could adversely impact people and buildings, were used for the GIS buffer analysis. **Figure 6.14** shows the areas used for mobile toxic release buffer analysis. The results indicate the approximate number of parcels, improved value, as shown in **Table 6.22** (fixed sites), **Table 6.23** (mobile road sites) and **Table 6.24** (mobile railroad sites)<sup>6</sup>.

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<sup>5</sup> This type of analysis will likely yield inflated results (generally higher than what is actually reported after an actual event).

<sup>6</sup> Note that parcels included in the 1-mile analysis are also included in the 0.5-mile analysis.

**FIGURE 6.13: TOXIC RELEASE INVENTORY (TRI) FACILITIES IN THE NORTHERN PIEDMONT REGION**

Source: EPA

**TABLE 6.22: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (FIXED SITES) IN THE NORTHERN PIEDMONT REGION**

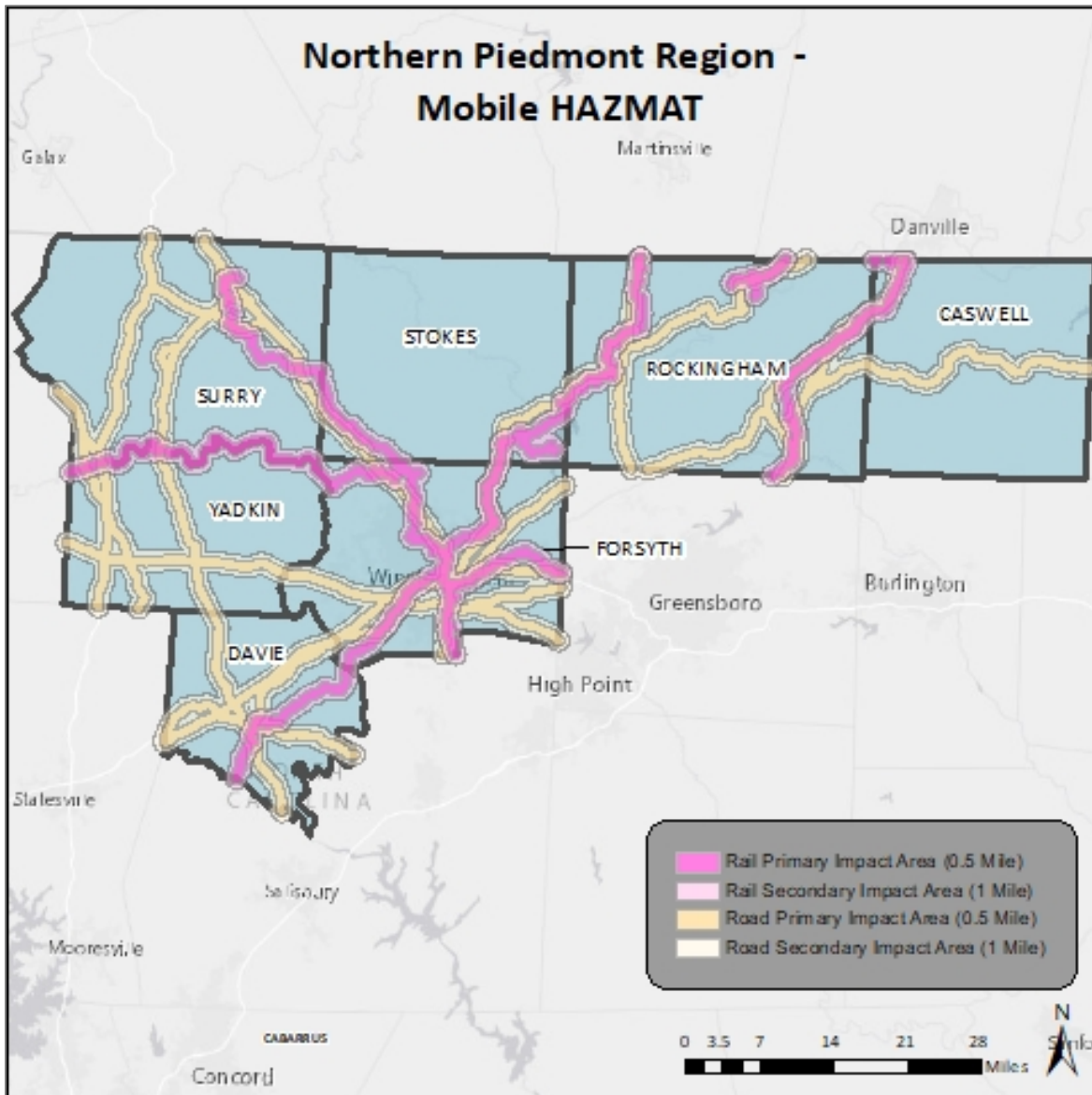
Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
<b>Caswell County</b>	84	50	\$15,068,161	371	259	\$51,712,804
Milton	-	-	\$-	-	-	\$-
Yanceyville	36	25	\$12,125,080	290	208	\$46,044,104
Unincorporated Area	48	25	\$2,943,081	81	51	\$5,668,700
<b>Davie County</b>	551	452	\$66,596,080	1,660	1,320	\$198,208,638
Bermuda Run	-	-	\$-	-	-	\$-
Cooleemee	-	-	\$-	-	-	\$-
Mocksville	476	399	\$56,592,530	1,330	1,086	\$149,177,710
Unincorporated Area	75	53	\$10,003,550	330	234	\$49,030,928
<b>Forsyth County</b>	9,399	7,608	\$1,500,030,400	30,808	25,250	\$4,330,350,000
Bethania	-	-	\$-	-	-	\$-

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Clemmons	-	-	\$-	-	-	\$-
Kernersville	1,527	1,326	\$242,941,600	4,698	4,080	\$711,070,000
Lewisville	-	-	\$-	-	-	\$-
Rural Hall	1	-	\$-	42	15	\$40,237,500
Tobaccoville	87	58	\$6,945,000	344	248	\$27,484,000
Walkertown	94	70	\$11,146,300	160	133	\$16,351,300
Winston-Salem	7,304	5,881	\$887,905,900	23,559	19,272	\$2,937,728,800
Unincorporated Area	386	273	\$351,091,600	2,005	1,502	\$597,478,400
<b>Rockingham County</b>	<b>1,943</b>	<b>1,459</b>	<b>\$243,511,835</b>	<b>6,538</b>	<b>4,901</b>	<b>\$712,725,628</b>
Eden	137	108	\$56,295,304	978	718	\$172,292,452
Madison	123	103	\$9,900,322	324	281	\$26,373,028
Mayodan	-	-	\$-	-	-	\$-
Reidsville	1,611	1,207	\$164,361,161	4,521	3,445	\$460,043,669
Stoneville	-	-	\$-	-	-	\$-
Wentworth	-	-	\$-	-	-	\$-
Unincorporated Area	72	41	\$12,955,048	715	457	\$54,016,479
<b>Stokes County</b>	<b>65</b>	<b>37</b>	<b>\$14,103,600</b>	<b>325</b>	<b>200</b>	<b>\$63,213,500</b>
Danbury	-	-	\$-	-	-	\$-
King	49	36	\$57,592,530	154	102	\$40,932,000
Walnut Cove	-	-	\$-	-	-	\$-
Unincorporated Area	16	1	\$(43,488,930)	171	98	\$22,281,500
<b>Surry County</b>	<b>1,083</b>	<b>791</b>	<b>\$281,313,926</b>	<b>5,278</b>	<b>4,113</b>	<b>\$835,217,498</b>
Dobson	107	81	\$16,749,410	-	-	\$-
Elkin	36	17	\$43,252,146	291	185	\$97,544,736
Mount Airy	576	399	\$56,592,530	2,744	2,260	\$401,355,192
Pilot Mountain	-	-	\$-	-	-	\$-
Unincorporated Area	364	294	\$164,719,840	2,243	1,668	\$336,317,570
<b>Yadkin County</b>	<b>8</b>	<b>4</b>	<b>\$778,296</b>	<b>41</b>	<b>26</b>	<b>\$1,764,281</b>
Boonville	-	-	\$-	-	-	\$-
East Bend	-	-	\$-	-	-	\$-
Jonesville	-	-	\$-	-	-	\$-
Yadkinville	-	-	\$-	-	-	\$-
Unincorporated Area	-	-	\$-	-	-	\$-
<b>Northern Piedmont Regional Total</b>	<b>13,133</b>	<b>10,401</b>	<b>\$2,121,402,298</b>	<b>45,021</b>	<b>36,069</b>	<b>\$6,193,192,349</b>

Source: EPA, Local governments

**FIGURE 6.14: MOBILE HAZMAT BUFFERS IN THE NORTHERN PIEDMONT REGION**



Source: NC Department of Transportation

**TABLE 6.23: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (MOBILE ANALYSIS – ROAD)**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
<b>Caswell County</b>	2,522	1,738	\$212,260,505	3,803	2,543	\$280,086,190
Milton	-	-	-	-	-	-
Yanceyville	769	576	\$100,735,932	889	638	\$106,040,069

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Unincorporated Area	1,753	1,162	\$111,524,573	2,914	1,905	\$174,046,121
<b>Davie County</b>	9,541	7,272	\$1,249,164,213	14,109	10,833	\$1,835,894,419
Bermuda Run	979	882	\$215,737,049	1,660	1,529	\$362,361,320
Cooleemee	-	-	-	-	-	-
Mocksville	1923	1562	\$225,982,937	2,469	2,020	\$283,835,744
Unincorporated Area	6,639	4,828	\$807,444,227	9,980	7,284	\$1,189,697,355
<b>Forsyth County</b>	53,352	43,563	\$10,497,362,011	92,143	11,106	\$15,544,863,676
Bethania	-	-	-	-	-	-
Clemmons	4113	3632	\$826,512,000	6,642	5,921	\$1,258,231,600
Kernersville	3186	2696	\$777,634,200	6,857	5,746	\$1,265,867,000
Lewisville	1062	898	\$179,950,000	2,484	2,176	\$434,362,500
Rural Hall	325	225	\$75,099,800	717	537	\$123,930,600
Tobaccoville	176	122	\$13,388,700	426	272	\$34,294,700
Walkertown	1751	1340	\$207,719,400	2,169	1,667	\$238,109,100
Winston-Salem	36900	30542	\$7,337,760,811	61,049	51,701	\$10,361,641,026
Unincorporated Area	5,839	4,108	\$1,079,297,100	11,799	(56,914)	\$1,828,427,150
<b>Rockingham County</b>	15,646	12,001	\$1,722,739,479	26,456	20,210	\$2,596,261,750
Eden	2399	1964	\$400,449,892	4,642	3,610	\$550,890,904
Madison	1352	1043	\$127,437,068	1,363	1,052	\$128,287,386
Mayodan	935	830	\$98,313,108	1,283	1,122	\$127,828,079
Reidsville	2532	1948	\$355,913,457	5,309	4,170	\$589,974,097
Stoneville	24	17	\$2,532,727	287	221	\$19,845,164
Wentworth	-	-	-	-	-	-
Unincorporated Area	8,404	6,199	\$738,093,227	13,572	10,035	\$1,179,436,120
<b>Stokes County</b>	2,888	1,865	\$258,158,104	5,557	3,725	\$463,151,504
Danbury	-	-	-	-	-	-
King	456	355	\$78,678,504	1,272	1,009	\$169,001,704
Walnut Cove	809	569	\$68,318,000	812	571	\$68,503,900
Unincorporated Area	1,623	941	\$111,161,600	3,473	2,145	\$225,645,900
<b>Surry County</b>	14,321	10,902	\$1,668,659,141	21,567	16,551	\$2,297,628,264
Dobson	597	451	\$98,387,410	606	458	\$100,161,660
Elkin	1592	1194	\$251,564,377	2,091	1,599	\$299,711,757
Mount Airy	4130	3406	\$537,462,555	4,910	4,040	\$660,385,735
Pilot Mountain	98	73	\$17,666,480	458	375	\$60,174,513
Unincorporated Area	7,904	5,778	\$763,578,319	13,502	10,079	\$1,177,194,599
<b>Yadkin County</b>	9,003	5,985	\$668,609,366	12,975	8,553	\$919,865,729
Boonville	590	455	\$43,161,100	622	480	\$44,882,406
East Bend	-	-	-	-	-	-
Jonesville	1202	938	\$88,541,570	1,367	1,045	\$96,935,983
Yadkinville	1115	888	\$138,991,468	1,371	1,108	\$166,354,405
Unincorporated Area	6,096	3,704	\$397,915,228	9,615	5,920	\$611,692,935

**SECTION 6: VULNERABILITY ASSESSMENT**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
<b>Northern Piedmont Regional Total</b>	<b>107,273</b>	<b>83,326</b>	<b>\$16,276,952,819</b>	<b>176,610</b>	<b>73,521</b>	<b>\$23,937,751,532</b>

Source: NC Department of Transportation, Local Governments

**TABLE 6.24: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (MOBILE ANALYSIS - RAILROAD)**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
<b>Caswell County</b>	<b>711</b>	<b>456</b>	<b>\$38,291,693</b>	<b>1,187</b>	<b>756</b>	<b>\$61,836,246</b>
Milton	-	-	-	-	-	-
Yanceyville	-	-	-	-	-	-
Unincorporated Area	711	456	\$38,291,693	1,187	756	\$61,836,246
<b>Davie County</b>	<b>3,261</b>	<b>2,465</b>	<b>\$366,486,208</b>	<b>5,630</b>	<b>4,284</b>	<b>\$629,760,399</b>
Bermuda Run	-	-	-	-	-	-
Cooleemee	-	-	-	-	-	-
Mocksville	1,619	1,271	\$162,407,497	2,335	1,875	\$243,709,727
Unincorporated Area	1,642	1,194	\$204,078,711	5,630	4,284	\$629,760,399
<b>Forsyth County</b>	<b>31,980</b>	<b>23,093</b>	<b>\$7,435,459,804</b>	<b>64,151</b>	<b>46,901</b>	<b>\$11,580,719,804</b>
Bethania	-	-	-	-	-	-
Clemmons	760	637	\$142,771,900	1,744	1,538	\$305,094,800
Kernersville	3,059	2,623	\$465,282,100	5,892	5,127	\$871,496,500
Lewisville	-	-	-	-	-	-
Rural Hall	1,188	970	\$162,131,800	1,481	1,155	\$197,174,300
Tobaccoville	310	241	\$24,740,700	527	409	\$42,071,600
Walkertown	820	614	\$77,428,800	1,669	1,278	\$154,828,900
Winston-Salem	21,468	17,363	\$5,895,694,310	44,483	37,394	\$8,786,739,610
Unincorporated Area	4,375	645	\$667,410,194	8,355	-	\$1,223,314,094
<b>Rockingham County</b>	<b>11,832</b>	<b>8,903</b>	<b>\$976,335,341</b>	<b>19,586</b>	<b>14,906</b>	<b>\$1,631,480,254</b>
Eden	3,041	2,346	\$260,182,589	5,339	4,225	\$450,772,266
Madison	1,032	813	\$102,832,660	1,355	1,046	\$127,744,426
Mayodan	808	715	\$69,262,702	1,274	1,116	\$124,982,193
Reidsville	3,295	2,522	\$300,468,399	5,246	4,067	\$484,828,403
Stoneville	567	444	\$42,719,087	653	510	\$50,931,602
Wentworth	-	-	-	-	-	-
Unincorporated Area	3,089	2,063	\$200,869,904	5,719	3,942	\$392,221,364
<b>Stokes County</b>	<b>4,096</b>	<b>2,789</b>	<b>\$317,238,400</b>	<b>7,228</b>	<b>5,029</b>	<b>\$603,370,604</b>
Danbury	-	-	-	-	-	-
King	1,159	913	\$124,517,900	2,599	2,158	\$297,354,404

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Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Walnut Cove	358	250	\$27,110,700	644	466	\$47,375,100
Unincorporated Area	2,579	1,626	\$165,609,800	3,985	2,405	\$258,641,100
<b>Surry County</b>	<b>5,760</b>	<b>4,390</b>	<b>\$676,753,308</b>	<b>10,625</b>	<b>8,093</b>	<b>\$1,194,456,058</b>
Dobson	-	-	-	-	-	-
Elkin	899	699	\$101,178,180	1,438	1,114	\$195,117,260
Mount Airy	2,265	1,872	\$344,369,445	3,817	3,162	\$526,530,405
Pilot Mountain	722	587	\$75,354,813	871	708	\$100,369,773
Unincorporated Area	1,874	1,232	\$155,850,870	4,499	3,109	\$372,438,620
<b>Yadkin County</b>	<b>778</b>	<b>474</b>	<b>\$36,961,017</b>	<b>2,448</b>	<b>1,586</b>	<b>\$131,097,919</b>
Boonville	-	-	-	-	-	-
East Bend	-	-	-	-	-	-
Jonesville	233	195	\$18,541,734	894	683	\$70,536,426
Yadkinville	-	-	-	-	-	-
Unincorporated Area	545	279	\$18,419,283	1,554	903	\$60,561,493
<b>Northern Piedmont Regional Total</b>	<b>58,418</b>	<b>42,570</b>	<b>\$9,847,525,771</b>	<b>110,855</b>	<b>81,555</b>	<b>\$15,832,721,284</b>

Source: NC Department of Transportation, Local Governments

### SOCIAL VULNERABILITY

Given high susceptibility across the entire Northern Piedmont Region, it is assumed that the total population is at risk to hazardous materials incidents. It should be noted that areas of population concentration may be at an elevated risk due to a greater burden to evacuate population quickly.

### CRITICAL FACILITIES

#### Fixed Site Analysis:

The critical facility analysis for fixed TRI sites revealed that there are 214 facilities located in a HAZMAT risk zone. The primary impact zone (0.5-mile buffer) includes 67 facilities throughout the region. Forsyth County has the most facilities in the primary impact zone with 34 facilities. Caswell County has 3, Davie County has 9, Rockingham County has 13, Stokes County has 2, and Surry County has 6, while Yadkin County has none. The remaining facilities are in the secondary, 1-mile zone. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

#### Mobile Analysis:

The critical facility analysis for road and railroad transportation corridors revealed that there are 573 critical facilities located in the primary (0.5 mile) mobile HAZMAT buffer areas for roads and railroads throughout the region. Although this is a worst-case scenario model, it indicates that most of the critical facilities in the Northern Piedmont region are vulnerable to a potential mobile HAZMAT incident. Additionally, there are 710 critical facilities located in the secondary (1 mile) buffer area of both roads and railroads, accounting for approximately 75 percent of the total number of critical facilities in the region. This may be the result of many critical facilities being located near major roadways for ease of access, but it is nonetheless important to recognize what a large percentage of critical facilities in the

## SECTION 6: VULNERABILITY ASSESSMENT

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region are located in the smaller buffer area. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a hazardous material incident has the potential to impact many existing and future buildings, critical facilities, and populations in the Northern Piedmont Region. Those areas in a primary buffer are at the highest risk, though all areas carry some vulnerability due to variations in conditions that could alter the impact area such direction and speed of wind, volume of release, etc.



## 6.6 CONCLUSIONS ON HAZARD VULNERABILITY

The results of this vulnerability assessment are useful in at least three ways:

- Improving our understanding of the risk associated with the natural hazards in the Northern Piedmont region through better understanding of the complexities and dynamics of risk, how levels of risk can be measured and compared, and the myriad of factors that influence risk. An understanding of these relationships is critical in making balanced and informed decisions on managing the risk.
- Providing a baseline for policy development and comparison of mitigation alternatives. The data used for this analysis presents a current picture of risk in the Northern Piedmont Region. Updating this risk “snapshot” with future data will enable comparison of the changes in risk with time. Baselines of this type can support the objective analysis of policy and program options for risk reduction in the region.
- Comparing the risk among the natural hazards addressed. The ability to quantify the risk to all these hazards relative to one another helps in a balanced, multi-hazard approach to risk management at each level of governing authority. This ranking provides a systematic framework to compare and prioritize the very disparate natural hazards that are present in the Northern Piedmont Region. This final step in the risk assessment provides the necessary information for local officials to craft a mitigation strategy to focus resources on only those hazards that pose the most threat to Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties.

Exposure to hazards can be an indicator of vulnerability. Economic exposure can be identified through locally assessed values for improvements (buildings), and social exposure can be identified by estimating the population exposed to each hazard. This information is especially important for decision-makers to use in planning for evacuation or other public safety related needs.

The types of assets included in these analyses include all building types in the participating jurisdictions. Specific information about the types of assets that are vulnerable to the identified hazards is included in each hazard subsection (for example, all building types are considered at risk to the winter storm hazard and commercial, residential, and government owned facilities are at risk to repetitive flooding, etc).

**Table 6.25** presents a summary of potential annualized loss estimates for each hazard in the Northern Piedmont Region. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level. If no historical occurrences were reported, an accurate annualized loss estimate could not be obtained. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the region.

**TABLE 6.25: POTENTIAL ANNUALIZED LOSSES FOR THE NORTHERN PIEDMONT REGION**

Hazard	Caswell County	Davie County	Forsyth County	Rockingham County	Stokes County	Surry County	Yadkin County	Total
Drought	\$761,667	Negligible	Negligible	\$626,528	\$590,277	\$589,916	\$476,257	\$3,044,645
Excessive Heat	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Hurricane and Coastal Hazards	\$4,339,280	\$8,572,098	\$27,798,992	\$17,624,340	\$4,502,290	\$10,036,913	\$4,409,788	\$1,481,892,995
Tornadoes/Thunderstorms	\$492,555	\$849,784	\$625,700	\$1,572,022	\$324,440	\$373,760	\$296,718	\$4,534,979
Severe Winter Weather	\$16,271	\$589,495	\$23,688	\$27,255	\$16,880	\$69,083	\$42,113	\$784,784
Earthquakes	\$66,240	\$225,696	\$832,816	\$357,653	\$114,986	\$318,876	\$111,730	\$2,027,998
Geological	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Dam Failure	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Flooding	\$40,681	\$147,303	\$121,113	\$306,191	\$999	\$385,351	\$3,245	\$1,004,883
Wildfires	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Infectious Disease	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Hazardous Substances	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Radiological Emergency	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Terrorism	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Cyber	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Electromagnetic Pulse	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

*\*In this table, the term "Negligible" is used to indicate that no records of dollar losses for the particular hazard were recorded. This could be the case either because there were no events that caused dollar damage or because documentation of that particular type of event is not well kept.*

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to natural hazards including drought, hurricane and coastal hazards, tornadoes/thunderstorms, and severe winter weather. Some buildings may be more vulnerable to these hazards based on locations, construction, and building type. **Table 6.25** shows the critical facilities vulnerable to additional hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an "X")

TABLE 6.26: AT-RISK CRITICAL FACILITIES

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
<b>Caswell County</b>																	
Caswell County Emergency Services	Other	X	X	X	X	X	X			X				X	X		
Caswell County Emergency Medical Services	Fire/EMS	X	X	X	X	X	X			X				X	X		
Anderson Township Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X										
Anderson Township Volunteer Fire Department Inc. Station 2	Fire/EMS	X	X	X	X	X	X			X							
Casville Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X				X	X		
Cherry Grove Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X							
Leasburg Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X				X	X		
Milton Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X							
Milton Volunteer Fire Department Inc. Station 2	Fire/EMS	X	X	X	X	X	X			X							
NC Division of Forest Resources District 11	Fire/EMS	X	X	X	X	X	X			X		X	X		X		
Pelham Volunteer Fire Department of Caswell County Inc.	Fire/EMS	X	X	X	X	X	X			X	X			X	X	X	X
Prospect Hill Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X										
Providence Fire and Rescue Inc.	Fire/EMS	X	X	X	X	X	X			X							
Semora Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X							
Yanceyville Fire Department Station 1	Fire/EMS	X	X	X	X	X	X			X				X	X		
Yanceyville Fire Department Station 2	Fire/EMS	X	X	X	X	X	X			X				X	X		
Caswell County Sheriffs' Department / Caswell County Jail	Law Enforcement	X	X	X	X	X	X			X				X	X		
NC State Highway Patrol Troop D - District IV - Substation	Law Enforcement	X	X	X	X	X	X			X		X	X		X		
Yanceyville Police Department - Headquarters	Law Enforcement	X	X	X	X	X	X			X				X	X		
Beverly Rucker Family Care Home #6	Medical Facility	X	X	X	X	X	X			X							
Beverly Rucker Family Care Home #7	Medical Facility	X	X	X	X	X	X			X							
Beverly Rucker Family Care Home #8	Medical Facility	X	X	X	X	X	X			X							
Beverly Rucker Family Care Home #9	Medical Facility	X	X	X	X	X	X			X							
Blackwell's Rest Home	Medical Facility	X	X	X	X	X	X			X							
Brian Center Health & Rehabilitation/Yanceyville	Medical Facility	X	X	X	X	X	X			X			X	X	X		
Carefocus	Medical Facility	X	X	X	X	X	X			X							
Carrie's Family Care Home	Medical Facility	X	X	X	X	X	X			X							

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FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Caswell County Home Health Agency	Medical Facility	X	X	X	X	X	X			X					X	X		
Corbett's Family Care Home	Medical Facility	X	X	X	X	X	X			X								
Corbett's Family Care Home #2	Medical Facility	X	X	X	X	X	X			X								
Currie House	Medical Facility	X	X	X	X	X	X											
D & H Family Care Home	Medical Facility	X	X	X	X	X	X			X								
D & H Family Care Home #2	Medical Facility	X	X	X	X	X	X			X								
Dogwood Forest #2	Medical Facility	X	X	X	X	X	X			X								
Dogwood Forest Family Care Home #1	Medical Facility	X	X	X	X	X	X			X				X	X			
Dogwood Forest Family Care Home #2	Medical Facility	X	X	X	X	X	X			X								
Double 's' And 'H' Family Care Home	Medical Facility	X	X	X	X	X	X			X				X	X			
Graves Family Care Home	Medical Facility	X	X	X	X	X	X			X								
Hamer Group Home	Medical Facility	X	X	X	X	X	X			X								
Hearthstone Youth And Family Services, Inc.	Medical Facility	X	X	X	X	X	X			X								
Jefferson Care Home	Medical Facility	X	X	X	X	X	X			X	X							
Jefferson Family Care Home #4	Medical Facility	X	X	X	X	X	X			X								
Jones Family Home #4	Medical Facility	X	X	X	X	X	X			X				X	X			
L & L Family Care	Medical Facility	X	X	X	X	X	X			X					X			X
Life Changes Counseling	Medical Facility	X	X	X	X	X	X			X				X	X			
Mitchell Family Care Home	Medical Facility	X	X	X	X	X	X			X								
New Beginnings	Medical Facility	X	X	X	X	X	X			X								
Parker's Family Care Home	Medical Facility	X	X	X	X	X	X											
Poole's Rest Home	Medical Facility	X	X	X	X	X	X			X								
Rudd Ridge Family Care	Medical Facility	X	X	X	X	X	X			X								
Seventh Avenue Group Home	Medical Facility	X	X	X	X	X	X			X			X	X	X			
Taylor Family Care Home #1	Medical Facility	X	X	X	X	X	X			X								
Taylor Family Care Home #2	Medical Facility	X	X	X	X	X	X			X								
Terry Care Home	Medical Facility	X	X	X	X	X	X			X								
The Ronald David Home	Medical Facility	X	X	X	X	X	X			X								
Bartlett Yancey High	Public School	X	X	X	X	X	X			X				X	X			
N L Dillard Middle	Public School	X	X	X	X	X	X			X					X			
North Elementary	Public School	X	X	X	X	X	X			X								
Oakwood Elementary	Public School	X	X	X	X	X	X			X	X	X			X			
South Elementary	Public School	X	X	X	X	X	X			X								
Stokesdale Elementary	Public School	X	X	X	X	X	X			X				X	X			
Stoney Creek Elementary	Public School	X	X	X	X	X	X			X	X							
<b>Davie County</b>																		
Davie County Emergency Management	Other	X	X	X	X	X	X							X	X	X		X
Davie County Emergency Medical Services Station 1	Fire/EMS	X	X	X	X	X	X							X	X	X		X

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FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Davie County Emergency Medical Services Station 2	Fire/EMS	X	X	X	X	X	X							X	X		
Davie County Emergency Medical Services Station 3	Fire/EMS	X	X	X	X	X	X							X	X		
Davie County Rescue Squad	Fire/EMS	X	X	X	X	X	X										
Advance Fire Department Station 12	Fire/EMS	X	X	X	X	X	X									X	X
Cooleemee Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X										
Cornatzer-Dulin Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X									X	X
County Line Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X		
Davie Center Volunteer Fire Department Station 13	Fire/EMS	X	X	X	X	X	X							X	X		
Farmington Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X										
Fork Volunteer Fire Department Station 15	Fire/EMS	X	X	X	X	X	X							X	X		
Jerusalem Township Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X		
Mocksville Fire Department	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X
NC Division of Forest Resources District 10	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X
Sheffield - CalahaIn Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X	X					
Smith Grove Fire Department	Fire/EMS	X	X	X	X	X	X						X	X			
William R Davie Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X						X	X			
Davie County Sheriffs Department	Law Enforcement	X	X	X	X	X	X				X	X	X	X	X	X	X
Mocksville Police Department	Law Enforcement	X	X	X	X	X	X					X	X	X	X	X	X
NC State Highway Patrol Troop E District III - Substation	Law Enforcement	X	X	X	X	X	X				X	X	X	X	X	X	X
Town of Cooleemee Police Department	Law Enforcement	X	X	X	X	X	X										
Autumn Care of Mocksville	Medical Facility	X	X	X	X	X	X				X	X	X	X	X	X	X
Bermuda Village Retirement Center	Medical Facility	X	X	X	X	X	X								X		
Boxwood Acres	Medical Facility	X	X	X	X	X	X						X	X			
Cedar Rock Assisted Living	Medical Facility	X	X	X	X	X	X						X	X			X
Davie County Group Home, Inc	Medical Facility	X	X	X	X	X	X				X	X	X	X			X
Davie County Home Health Agency	Medical Facility	X	X	X	X	X	X					X	X	X			X
Davie County Hospital	Medical Facility	X	X	X	X	X	X					X	X	X			X
Davie County Hospital/Cap	Medical Facility	X	X	X	X	X	X					X	X	X			X
Davie Medical Equipment, Inc.	Medical Facility	X	X	X	X	X	X						X	X	X	X	X
Davie Place Residential Care	Medical Facility	X	X	X	X	X	X						X	X	X		X
Magnolia Place	Medical Facility	X	X	X	X	X	X						X	X	X	X	X

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FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Meadowbrook Terrace Of Davie	Medical Facility	X	X	X	X	X	X								X	X		
Milling Manor, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Mocksville Outpatient Center	Medical Facility	X	X	X	X	X	X							X	X	X		X
New Beginning Family Services-Apt. 102	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services - Apt. 101	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services - Apt. 101-A	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services - Apt. 201-B	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services - Apt. 202	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services - Apt. 202-C	Medical Facility	X	X	X	X	X	X								X	X		X
New Beginnings Family Services-Apt. 201	Medical Facility	X	X	X	X	X	X								X	X		X
New Horizon Enterprises	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X
Pleasant Acres	Medical Facility	X	X	X	X	X	X								X	X		
Somerset Court Of Mocksville	Medical Facility	X	X	X	X	X	X							X	X	X	X	X
Twinbrooks	Medical Facility	X	X	X	X	X	X				X				X	X		X
Central Davie Academy	Public School	X	X	X	X	X	X								X	X	X	X
Cooleemee Elementary	Public School	X	X	X	X	X	X											
Cornatzer Elementary	Public School	X	X	X	X	X	X				X							X
Davie County Early College High	Public School	X	X	X	X	X	X								X	X	X	X
Davie County High	Public School	X	X	X	X	X	X								X	X	X	X
Mocksville Elementary	Public School	X	X	X	X	X	X								X	X		X
North Davie Middle	Public School	X	X	X	X	X	X								X	X		
Pinebrook Elementary	Public School	X	X	X	X	X	X								X	X		
Shady Grove Elementary	Public School	X	X	X	X	X	X										X	X
South Davie Middle	Public School	X	X	X	X	X	X				X	X	X	X	X	X		X
William Ellis Middle	Public School	X	X	X	X	X	X				X							
William R Davie Elementary	Public School	X	X	X	X	X	X								X	X		
<b>Forsyth County</b>																		
Forsyth County Emergency Management	Other	X	X	X	X	X	X								X	X	X	X
Cavalry Medical Transport	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Forsyth County Emergency Medical Services	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Kernersville Volunteer Rescue And Emergency Medical Services	Fire/EMS	X	X	X	X	X	X				X					X		X
Nucare Carolina Ambulance Inc.	Fire/EMS	X	X	X	X	X	X								X	X		
Special Operations Response Team	Fire/EMS	X	X	X	X	X	X				X	X				X	X	X
Winston Salem Rescue Squad	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X	X
Beeson Cross Roads Fire and Rescue	Fire/EMS	X	X	X	X	X	X				X					X		

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FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Belews Creek Volunteer Fire and Rescue	Fire/EMS	X	X	X	X	X	X											
City View Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Clemmons Fire Department Station 10	Fire/EMS	X	X	X	X	X	X								X	X		
Clemmons Fire Department Station 14	Fire/EMS	X	X	X	X	X	X								X	X		
Forsyth County Fire Department	Fire/EMS	X	X	X	X	X	X						X		X	X	X	X
Griffith Fire Department	Fire/EMS	X	X	X	X	X	X											
Horneytown Fire and Rescue	Fire/EMS	X	X	X	X	X	X			X					X			
Kernersville Fire Department Station 41 - Headquarters	Fire/EMS	X	X	X	X	X	X			X			X		X	X	X	X
Kernersville Fire Department Station 42	Fire/EMS	X	X	X	X	X	X			X			X		X			X
Kernersville Fire Department Station 43	Fire/EMS	X	X	X	X	X	X			X			X				X	X
Kernersville Fire Department Station 44	Fire/EMS	X	X	X	X	X	X			X				X	X			
Lewisville Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X							X	X			
Mineral Springs Volunteer Fire Department and Rescue Squad	Fire/EMS	X	X	X	X	X	X											
NC Division of Forest Resources District 10 - Forsyth	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X	X
Old Richmond Fire and Rescue Station 27	Fire/EMS	X	X	X	X	X	X											
Piney Grove Volunteer Fire and Rescue Department Inc.	Fire/EMS	X	X	X	X	X	X			X								
Rural Hall Fire and Rescue	Fire/EMS	X	X	X	X	X	X										X	X
Salem Chapel Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Talleys Crossing Fire Department Inc.	Fire/EMS	X	X	X	X	X	X			X		X	X				X	X
The Piney Grove Volunteer Fire and Rescue Department Inc.	Fire/EMS	X	X	X	X	X	X			X								
Union Cross Fire and Rescue	Fire/EMS	X	X	X	X	X	X			X				X	X			
Vienna Fire and Rescue Station 20	Fire/EMS	X	X	X	X	X	X											
Vienna Fire and Rescue Station 21	Fire/EMS	X	X	X	X	X	X											
Walkertown Fire and Rescue	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Ardmore Fire Station 6	Fire/EMS	X	X	X	X	X	X							X	X			X
Buena Vista Fire Station 7	Fire/EMS	X	X	X	X	X	X							X	X	X	X	X
Bullard Fire Station 1	Fire/EMS	X	X	X	X	X	X								X	X	X	X
WSFD - Country Club Road West Fire Station 10	Fire/EMS	X	X	X	X	X	X							X	X			
WSFD - Engine Company 19	Fire/EMS	X	X	X	X	X	X			X						X		
WSFD - Engine Company 20	Fire/EMS	X	X	X	X	X	X									X		X
WSFD - Lester E Ervin Junior Fire Station 4	Fire/EMS	X	X	X	X	X	X					X	X	X	X	X	X	X
WSFD - Liberty North Fire Station 3	Fire/EMS	X	X	X	X	X	X					X	X	X	X	X	X	X
WSFD - New Walkertown Road Fire Station 12	Fire/EMS	X	X	X	X	X	X							X	X			
WSFD - Ogburn Avenue Fire Station 9	Fire/EMS	X	X	X	X	X	X											

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
WSFD - Old Greensboro Road Fire Station 17	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X
WSFD - Oldtown Fire Station 15	Fire/EMS	X	X	X	X	X	X										
WSFD - Palmer Lane South Fire Station 5	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X
WSFD - Parkview Fire Station 11	Fire/EMS	X	X	X	X	X	X								X		
WSFD - Peace Haven Road Fire Station 18	Fire/EMS	X	X	X	X	X	X										
WSFD - Shattalon North Fire Station 14	Fire/EMS	X	X	X	X	X	X								X		X
WSFD - Southwest Fire Station 16	Fire/EMS	X	X	X	X	X	X										
WSFD - Stratford West Fire Station 2	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X
WSFD - Wake Forest Fire Station 8	Fire/EMS	X	X	X	X	X	X										
Alcoholic Beverage Control Law Enforcement	Law Enforcement	X	X	X	X	X	X				X	X	X	X	X	X	X
Forsyth County Sheriffs' Department	Law Enforcement	X	X	X	X	X	X							X	X	X	X
Forsyth Technical Community College Campus Police	Law Enforcement	X	X	X	X	X	X								X		
Kernersville Police Department	Law Enforcement	X	X	X	X	X	X			X	X	X	X	X	X	X	X
NC Forestry Ranger - Forsyth County	Law Enforcement	X	X	X	X	X	X						X	X	X	X	X
NC School of the Arts Police Department	Law Enforcement	X	X	X	X	X	X				X	X	X	X	X	X	X
NC State Highway Patrol - Central Criminal Interdiction Headquarters	Law Enforcement	X	X	X	X	X	X							X	X	X	X
North Carolina State Highway Patrol Troop E District Iv	Law Enforcement	X	X	X	X	X	X							X	X		
US ICE - Winston Salem Office of Investigation	Law Enforcement	X	X	X	X	X	X								X	X	X
US IRS Criminal Investigation Division - Winston Salem	Law Enforcement	X	X	X	X	X	X								X	X	X
US Marshals Service - Winston Salem	Law Enforcement	X	X	X	X	X	X								X	X	X
Wake Forest University Campus Police	Law Enforcement	X	X	X	X	X	X						X				X
Winston-Salem Police Department	Law Enforcement	X	X	X	X	X	X								X	X	X
Winston-Salem State University Campus Police	Law Enforcement	X	X	X	X	X	X				X	X	X	X	X	X	X
4 C's Program Inc. C-4 Site	Medical Facility	X	X	X	X	X	X			X	X	X	X	X			X
4C's Program Inc.	Medical Facility	X	X	X	X	X	X			X	X	X	X	X			X
Addiction Recovery Care Association (Arca)	Medical Facility	X	X	X	X	X	X								X		
Adult Partial Hospitalization Program	Medical Facility	X	X	X	X	X	X						X	X	X	X	X
Advanced Home Care	Medical Facility	X	X	X	X	X	X							X	X	X	X
Aldersgate Cottage	Medical Facility	X	X	X	X	X	X	X							X	X	X
Alpha Omega Health, Inc.	Medical Facility	X	X	X	X	X	X								X		
Alterra Clare Bridge of Winston-Salem	Medical Facility	X	X	X	X	X	X							X	X		
American Homepatient	Medical Facility	X	X	X	X	X	X						X		X	X	X



**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Amos Cottage Rehabilitation Hospital	Medical Facility	X	X	X	X	X	X							X	X		X
Arbor Acres United Methodist Retirement Community,	Medical Facility	X	X	X	X	X	X										
Ardsley Street Program	Medical Facility	X	X	X	X	X	X								X		
Babcock Home	Medical Facility	X	X	X	X	X	X						X		X	X	X
Bailey Home	Medical Facility	X	X	X	X	X	X										
Banner House	Medical Facility	X	X	X	X	X	X						X	X	X		X
Baptist Hospital Home Care	Medical Facility	X	X	X	X	X	X										
Baptist House at Bethabara	Medical Facility	X	X	X	X	X	X									X	X
Baptist Retirement Homes Of NC, Inc.	Medical Facility	X	X	X	X	X	X									X	X
Barnes Therapeutic Home	Medical Facility	X	X	X	X	X	X						X	X	X	X	X
Bayada Nurses Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X
Bayada Nurses, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X
Blumenthal Jewish Home	Medical Facility	X	X	X	X	X	X							X	X		
Bradford Village East, Inc.	Medical Facility	X	X	X	X	X	X			X		X	X		X	X	X
Bradford Village West, Inc.	Medical Facility	X	X	X	X	X	X			X			X			X	X
Brannon’s Family Care Home	Medical Facility	X	X	X	X	X	X						X				X
Brenda Shelton Home	Medical Facility	X	X	X	X	X	X									X	
Brent Program	Medical Facility	X	X	X	X	X	X									X	
Brian Center Health & Retirement/Winston Salem	Medical Facility	X	X	X	X	X	X									X	X
Brighton Gardens of Winston-Salem	Medical Facility	X	X	X	X	X	X										
Bristol Cottage	Medical Facility	X	X	X	X	X	X		X							X	X
Britthaven Forsyth	Medical Facility	X	X	X	X	X	X			X				X	X		
Britthaven Of Kernersville	Medical Facility	X	X	X	X	X	X			X							X
Brookstone Terrace	Medical Facility	X	X	X	X	X	X									X	X
Butler Home	Medical Facility	X	X	X	X	X	X			X				X	X		
C&W Alternative Family Living Facility	Medical Facility	X	X	X	X	X	X							X	X		
C.R.E.S.T. Treatment Program	Medical Facility	X	X	X	X	X	X	X	X				X		X		X
C.R.T. - Golden Lamb Rest Home	Medical Facility	X	X	X	X	X	X						X		X		X
Cambridge Hills Of Clemmons	Medical Facility	X	X	X	X	X	X							X	X		
Carolina Care, Llc	Medical Facility	X	X	X	X	X	X						X		X	X	X
Carter Home	Medical Facility	X	X	X	X	X	X						X	X	X	X	X
Cdm Counseling and Consulting	Medical Facility	X	X	X	X	X	X							X	X	X	X
Centerpoint Human Services	Medical Facility	X	X	X	X	X	X						X	X	X	X	X
Christian Care of Winston-Salem	Medical Facility	X	X	X	X	X	X									X	
Christian Home	Medical Facility	X	X	X	X	X	X										
Clemmons Village	Medical Facility	X	X	X	X	X	X							X	X		
Clemmons Village II	Medical Facility	X	X	X	X	X	X							X	X		
Cole Home	Medical Facility	X	X	X	X	X	X									X	

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Cooke Therapeutic Home	Medical Facility	X	X	X	X	X	X			X					X			
Coram Alternate Site Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Crawford’s Pointe Health Care Agency	Medical Facility	X	X	X	X	X	X								X	X	X	X
Creekside Manor	Medical Facility	X	X	X	X	X	X								X	X		
Crepe Myrtle Home	Medical Facility	X	X	X	X	X	X											
Crossroads Healthcare Services	Medical Facility	X	X	X	X	X	X											X
Davis Home	Medical Facility	X	X	X	X	X	X										X	X
Dogwood Family Care Home	Medical Facility	X	X	X	X	X	X									X		X
Dushane Family Care Home #2	Medical Facility	X	X	X	X	X	X								X	X		X
Easter Seals NC - Winston-Salem	Medical Facility	X	X	X	X	X	X						X				X	X
Eldercare of Winston-Salem	Medical Facility	X	X	X	X	X	X									X		
Elite Health Care, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Elms at Tanglewood	Medical Facility	X	X	X	X	X	X								X	X		
Epworth Cottage	Medical Facility	X	X	X	X	X	X		X							X	X	X
Fairway Home Care	Medical Facility	X	X	X	X	X	X								X	X	X	X
First Step Developmental Independent Care Services,	Medical Facility	X	X	X	X	X	X							X	X	X		X
Forsyth County Day Reporting Center	Medical Facility	X	X	X	X	X	X								X	X	X	X
Forsyth County Dss	Medical Facility	X	X	X	X	X	X							X	X	X	X	X
Forsyth County Icf/Mr Group Home	Medical Facility	X	X	X	X	X	X											
Forsyth Group Home #1	Medical Facility	X	X	X	X	X	X			X								X
Forsyth Group Home #2	Medical Facility	X	X	X	X	X	X											
Forsyth Home Care	Medical Facility	X	X	X	X	X	X						X				X	X
Forsyth Memorial Hospital	Medical Facility	X	X	X	X	X	X								X	X		X
Forsyth Village	Medical Facility	X	X	X	X	X	X										X	X
Friendship House	Medical Facility	X	X	X	X	X	X								X	X	X	X
Gales Program	Medical Facility	X	X	X	X	X	X									X		
Gentiva Health Services	Medical Facility	X	X	X	X	X	X								X	X	X	X
Glenn’s Assessment and Counseling Service	Medical Facility	X	X	X	X	X	X							X			X	X
Griswold Special Care	Medical Facility	X	X	X	X	X	X								X		X	X
Group Homes of Forsyth, Inc.- Ebert Street Home	Medical Facility	X	X	X	X	X	X											
Group Homes of Forsyth, Inc.-Brandywine Road	Medical Facility	X	X	X	X	X	X						X	X	X	X	X	X
Group Homes of Forsyth, Inc.- Independence Road	Medical Facility	X	X	X	X	X	X										X	X
Group Homes of Forsyth, Inc.-Pressman Drive Home	Medical Facility	X	X	X	X	X	X									X		X
Group Homes of Forsyth, Inc.-Stockton Street Home	Medical Facility	X	X	X	X	X	X								X	X	X	X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other								
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)	
Hason Home	Medical Facility	X	X	X	X	X	X												
Hawthorne Surgical Center	Medical Facility	X	X	X	X	X	X									X	X	X	X
Heritage Woods	Medical Facility	X	X	X	X	X	X									X	X	X	X
High Point Care Center	Medical Facility	X	X	X	X	X	X				X					X	X		
Hines Family Care Home	Medical Facility	X	X	X	X	X	X										X		X
Hines Family Care Home #3	Medical Facility	X	X	X	X	X	X						X	X	X	X	X	X	
Hines Family Care Home #4	Medical Facility	X	X	X	X	X	X								X	X			
Hines Family Care Home #5	Medical Facility	X	X	X	X	X	X					X	X			X	X	X	
Hines Mental Health Home #1	Medical Facility	X	X	X	X	X	X								X	X			
Hines Mental Health Home #2	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X	
Hinkle House At Bethabara	Medical Facility	X	X	X	X	X	X	X	X									X	X
Holly Haven	Medical Facility	X	X	X	X	X	X									X	X		X
Home Health Professionals	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X	
Homestead Hills Assisted Living	Medical Facility	X	X	X	X	X	X							X		X		X	
Hospice & Palliative Care Center	Medical Facility	X	X	X	X	X	X								X	X	X	X	
In Home Care, Inc.	Medical Facility	X	X	X	X	X	X							X					
Independence Place	Medical Facility	X	X	X	X	X	X												
Interim Healthcare of The Triad, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X	
J. L. Redford, Inc.	Medical Facility	X	X	X	X	X	X									X			
Jack and Jeanie Family Care Home	Medical Facility	X	X	X	X	X	X								X	X			
Jackson Family Care Home	Medical Facility	X	X	X	X	X	X						X	X	X	X	X	X	
James And Linda Wright Home	Medical Facility	X	X	X	X	X	X												
Jeffrey & Cheryl Morgan	Medical Facility	X	X	X	X	X	X												
Judy's Group Home	Medical Facility	X	X	X	X	X	X								X	X			
Juvenile Day Reporting Center	Medical Facility	X	X	X	X	X	X								X	X		X	
Kate B. Reynolds Hospice Home	Medical Facility	X	X	X	X	X	X								X	X		X	
Kelly Home Care Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X	
Kerner Ridge Assisted Living	Medical Facility	X	X	X	X	X	X				X				X	X			
Kernersville Vocational Center	Medical Facility	X	X	X	X	X	X				X				X	X	X	X	
Konnoak Group Home	Medical Facility	X	X	X	X	X	X						X	X	X			X	
Lawson Home	Medical Facility	X	X	X	X	X	X												
Lifeskills	Medical Facility	X	X	X	X	X	X						X		X			X	
Liggins Family Care Home of Kernersville	Medical Facility	X	X	X	X	X	X				X	X			X	X	X	X	
Lincare, Inc.	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X	
Lowery's Family Care	Medical Facility	X	X	X	X	X	X						X		X			X	
Lrw Home Care	Medical Facility	X	X	X	X	X	X								X	X	X	X	
Lutheran Home - Winston-Salem	Medical Facility	X	X	X	X	X	X									X	X	X	
Mathews Home	Medical Facility	X	X	X	X	X	X												
Maxim Healthcare Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X		X	

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural						Geo-logical		Other								
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Meadowbrook Manor of Clemmons	Medical Facility	X	X	X	X	X	X								X	X		
Meadowbrook Terrace/Winston-Salem	Medical Facility	X	X	X	X	X	X											
Medical Park Hospital, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Meriweather Home Nursing, Inc.	Medical Facility	X	X	X	X	X	X											
Michelle Wardlow Home	Medical Facility	X	X	X	X	X	X				X	X	X	X				X
Moore’s Retirement Home	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Murray Home	Medical Facility	X	X	X	X	X	X										X	X
New Beginnings Assisted Living Center	Medical Facility	X	X	X	X	X	X							X	X			
Norma Jean Lewis Home	Medical Facility	X	X	X	X	X	X									X		X
Nursefinders Medical Staffing Of Winston-Salem	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Nursing Providers Incorporation	Medical Facility	X	X	X	X	X	X											
Oxford Cottage	Medical Facility	X	X	X	X	X	X		X							X	X	X
Page Home	Medical Facility	X	X	X	X	X	X					X	X	X				X
Parkfield	Medical Facility	X	X	X	X	X	X							X	X			
Parkview Family Care Home	Medical Facility	X	X	X	X	X	X											X
Patterson Home	Medical Facility	X	X	X	X	X	X											
Peacehaven Home	Medical Facility	X	X	X	X	X	X											
Pediatric Services of America, Inc.	Medical Facility	X	X	X	X	X	X					X					X	X
Personal Care Services, Ltd.	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Piedmont Endoscopy Center, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Piedmont Homehealth Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Plastic Surgery Center Of NC, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Polo Ridge Assisted Living	Medical Facility	X	X	X	X	X	X											
Quality Personal Care, Inc.	Medical Facility	X	X	X	X	X	X										X	X
Quality Professional Multiservices, Llc	Medical Facility	X	X	X	X	X	X											X
Raven Ridge Group Home	Medical Facility	X	X	X	X	X	X		X		X			X	X			X
Rebecca Howell Home	Medical Facility	X	X	X	X	X	X											
Renigar Place	Medical Facility	X	X	X	X	X	X										X	X
Retirement Home Care, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Reynolda Park	Medical Facility	X	X	X	X	X	X											X
Rha Health Services, Inc.	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	
Rn’s And Allied Health Associates + Allied Nurses.	Medical Facility	X	X	X	X	X	X							X	X			X
Salem House	Medical Facility	X	X	X	X	X	X									X		
Salemtowne	Medical Facility	X	X	X	X	X	X										X	X
Sempercare Hospital of Winston-Salem, Inc.	Medical Facility	X	X	X	X	X	X							X	X			X
Senior Services, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X	X	
Shelbia Wiley Home	Medical Facility	X	X	X	X	X	X											

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Shipman Family Care, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Shuler Health Care Inc./Crane Villa	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Shuler Health Care Inc./Phillips Villa	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Shuler Health Care Inc./Pierce Villa	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Shuler Health Care Inc./Record Villa	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Shuler Health Care Inc./Storey Villa	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Silas Creek Manor	Medical Facility	X	X	X	X	X	X								X	X		X
Southfork	Medical Facility	X	X	X	X	X	X								X	X		
Springboard Care Services, Inc.	Medical Facility	X	X	X	X	X	X									X		
Springwood Care Center of Forsyth	Medical Facility	X	X	X	X	X	X									X		X
Step One	Medical Facility	X	X	X	X	X	X								X	X	X	X
Stepping Stones	Medical Facility	X	X	X	X	X	X								X	X	X	X
Sturmer House	Medical Facility	X	X	X	X	X	X									X		X
Summit House	Medical Facility	X	X	X	X	X	X									X	X	X
Tabitha Carter Therapeutic Home	Medical Facility	X	X	X	X	X	X										X	X
Tar Heel Home Health	Medical Facility	X	X	X	X	X	X								X	X	X	X
Teamcare, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Tender Care, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Tender Love Family Care Home	Medical Facility	X	X	X	X	X	X					X	X	X	X	X		X
The Arches-Horizons Residential Care Center	Medical Facility	X	X	X	X	X	X											X
The Ashley House	Medical Facility	X	X	X	X	X	X								X	X	X	X
The Children’s Home/Day Treatment Program	Medical Facility	X	X	X	X	X	X		X							X	X	X
The Enrichment Center	Medical Facility	X	X	X	X	X	X						X					X
The Fellowship Home	Medical Facility	X	X	X	X	X	X									X	X	X
The Homestead	Medical Facility	X	X	X	X	X	X									X		X
The North Carolina Baptist Hospitals, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
The Nursing Center at Oak Summit	Medical Facility	X	X	X	X	X	X											
The Oaks at Forsyth	Medical Facility	X	X	X	X	X	X								X	X	X	X
Therapeutic Classroom	Medical Facility	X	X	X	X	X	X							X			X	X
Tise Cottage	Medical Facility	X	X	X	X	X	X		X							X	X	X
Total Care, Inc.	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X
Touch by Angels Home Healthcare, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Trinity Healthcare of Winston Salem	Medical Facility	X	X	X	X	X	X					X	X	X	X	X	X	X
Trinity Healthcare Staffing Group, Inc.	Medical Facility	X	X	X	X	X	X						X		X			X
Twin City Counseling Center	Medical Facility	X	X	X	X	X	X				X		X	X	X	X	X	X
Twin City Counseling Center-Winston-Salem	Medical Facility	X	X	X	X	X	X									X	X	X
U.S. Nursing Network	Medical Facility	X	X	X	X	X	X								X	X		X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Umar-Clingman Home	Medical Facility	X	X	X	X	X	X											
Umar-Rider Group Home	Medical Facility	X	X	X	X	X	X											X
Umar-Waddell Group Home	Medical Facility	X	X	X	X	X	X											X
Vaughn Home	Medical Facility	X	X	X	X	X	X											
Vienna Village, Inc.	Medical Facility	X	X	X	X	X	X											
Village Trail	Medical Facility	X	X	X	X	X	X											X
Visiting Angels of Winston Salem	Medical Facility	X	X	X	X	X	X			X						X		
Wake Forest Cardiac Rehabilitation Program	Medical Facility	X	X	X	X	X	X											
Wake Forest University Baptist Behavioral Health, I	Medical Facility	X	X	X	X	X	X							X	X			X
Westwind	Medical Facility	X	X	X	X	X	X											
William’s Family Care Home #3	Medical Facility	X	X	X	X	X	X				X	X			X	X	X	X
Williams Home	Medical Facility	X	X	X	X	X	X							X	X	X	X	X
Wilson Smith Cottage	Medical Facility	X	X	X	X	X	X								X			
Winfrey Home	Medical Facility	X	X	X	X	X	X											
Winston-Salem Rehabilitation and Healthcare Center	Medical Facility	X	X	X	X	X	X							X	X	X	X	X
Wolfe’s Family Care Home	Medical Facility	X	X	X	X	X	X					X	X	X				X
YWCA-Hawley House	Medical Facility	X	X	X	X	X	X							X	X			X
Arts Based Elementary	Public School	X	X	X	X	X	X						X	X	X	X	X	X
Ashley Elementary	Public School	X	X	X	X	X	X						X		X			X
Atkins Academic & Technology High	Public School	X	X	X	X	X	X				X			X	X	X		X
Bolton Elementary	Public School	X	X	X	X	X	X								X			X
Brunson Elementary	Public School	X	X	X	X	X	X	X	X					X	X	X	X	X
Caleb’s Creek Elementary	Public School	X	X	X	X	X	X			X				X	X			
Career Center	Public School	X	X	X	X	X	X							X	X			
Carter G Woodson School	Public School	X	X	X	X	X	X						X	X	X	X	X	X
Carter High School	Public School	X	X	X	X	X	X						X	X	X			X
Carver High	Public School	X	X	X	X	X	X							X	X			
Cash Elementary	Public School	X	X	X	X	X	X			X			X			X	X	
Children’s Center	Public School	X	X	X	X	X	X											
Clemmons Elementary	Public School	X	X	X	X	X	X							X	X			
Clemmons Middle	Public School	X	X	X	X	X	X							X	X	X	X	X
Cook Elementary	Public School	X	X	X	X	X	X						X	X	X	X	X	X
Digslatham Elementary	Public School	X	X	X	X	X	X								X			
Early College of Forsyth Count	Public School	X	X	X	X	X	X							X	X			
East Forsyth High	Public School	X	X	X	X	X	X			X			X		X	X	X	X
East Forsyth Middle	Public School	X	X	X	X	X	X			X			X			X	X	
Easton Elementary	Public School	X	X	X	X	X	X				X	X	X	X	X	X	X	X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Flat Rock Middle	Public School	X	X	X	X	X	X											
Forest Park Elementary	Public School	X	X	X	X	X	X				X	X		X	X			
Forsyth Academy	Public School	X	X	X	X	X	X											X
Frank Morgan Elementary	Public School	X	X	X	X	X	X							X	X			
Gibson Elementary	Public School	X	X	X	X	X	X											
Griffith Elementary	Public School	X	X	X	X	X	X											
Hallwoodard Elementary	Public School	X	X	X	X	X	X									X		
Hanes Middle	Public School	X	X	X	X	X	X				X	X	X	X	X	X	X	X
Hospital/Homebound Ed Center	Public School	X	X	X	X	X	X					X		X				X
Ibrahim Elementary	Public School	X	X	X	X	X	X										X	X
J. F. Kennedy High	Public School	X	X	X	X	X	X					X		X				X
Jacket Academy at Carver High	Public School	X	X	X	X	X	X							X	X			
Jefferson Elementary	Public School	X	X	X	X	X	X											
Jefferson Middle	Public School	X	X	X	X	X	X											
Kernersville Elementary	Public School	X	X	X	X	X	X			X		X					X	X
Kernersville Middle	Public School	X	X	X	X	X	X			X		X					X	X
Kimberley Park Elementary	Public School	X	X	X	X	X	X					X						X
Kimmel Farm Elementary	Public School	X	X	X	X	X	X											
Kingswood School	Public School	X	X	X	X	X	X										X	X
Konnoak Elementary	Public School	X	X	X	X	X	X					X		X				X
Lewisville Elementary	Public School	X	X	X	X	X	X							X				
Lowrance Middle	Public School	X	X	X	X	X	X				X	X	X	X	X	X	X	X
Main Street Academy	Public School	X	X	X	X	X	X											
Meadowlark Elementary	Public School	X	X	X	X	X	X											
Meadowlark Middle	Public School	X	X	X	X	X	X											
Middle College of Forsyth County	Public School	X	X	X	X	X	X							X	X			
Middle Fork Elementary	Public School	X	X	X	X	X	X							X	X			
Mineral Springs Elementary	Public School	X	X	X	X	X	X								X			X
Mineral Springs Middle	Public School	X	X	X	X	X	X								X			X
Moore Elementary	Public School	X	X	X	X	X	X							X	X	X	X	X
Mount Tabor High	Public School	X	X	X	X	X	X											
North Forsyth High	Public School	X	X	X	X	X	X								X	X	X	X
North Hills Elementary	Public School	X	X	X	X	X	X					X	X	X	X	X	X	X
Northwest Middle	Public School	X	X	X	X	X	X											X
Old Richmond Elementary	Public School	X	X	X	X	X	X											
Old Town Elementary	Public School	X	X	X	X	X	X											
Paisley IB Magnet	Public School	X	X	X	X	X	X					X						X
Parkland High	Public School	X	X	X	X	X	X									X		
Petree Elementary	Public School	X	X	X	X	X	X							X	X			X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Philohill Magnet Academy	Public School	X	X	X	X	X	X						X		X		X
Piney Grove Elementary	Public School	X	X	X	X	X	X				X	X					
Quality Education Academy	Public School	X	X	X	X	X	X									X	X
R B Glenn High	Public School	X	X	X	X	X	X				X			X	X		
Reagan High	Public School	X	X	X	X	X	X										
Reynolds High	Public School	X	X	X	X	X	X								X	X	X
Rural Hall Elementary	Public School	X	X	X	X	X	X									X	X
Sedge Garden Elementary	Public School	X	X	X	X	X	X				X						
Sherwood Forest Elementary	Public School	X	X	X	X	X	X										
South Fork Elementary	Public School	X	X	X	X	X	X								X		
Southeast Middle	Public School	X	X	X	X	X	X				X			X	X		
Southwest Elementary	Public School	X	X	X	X	X	X								X		
Speas Elementary	Public School	X	X	X	X	X	X										
The Downtown School	Public School	X	X	X	X	X	X								X	X	X
The Special Children’s School	Public School	X	X	X	X	X	X										
The Steam Academy of Winston Salem	Public School	X	X	X	X	X	X							X	X	X	X
Union Cross Elementary	Public School	X	X	X	X	X	X				X		X	X	X		
Vienna Elementary	Public School	X	X	X	X	X	X										
Walkertown Elementary	Public School	X	X	X	X	X	X							X	X	X	X
Walkertown High	Public School	X	X	X	X	X	X							X	X	X	X
Walkertown Middle	Public School	X	X	X	X	X	X							X	X	X	X
Wallburg Elementary	Public School	X	X	X	X	X	X				X				X		
Ward Elementary	Public School	X	X	X	X	X	X							X	X	X	X
West Forsyth High	Public School	X	X	X	X	X	X								X		
Whitaker Elementary	Public School	X	X	X	X	X	X								X		
Wiley Middle	Public School	X	X	X	X	X	X							X	X	X	X
Winston-Salem Preparatory Academy	Public School	X	X	X	X	X	X							X	X		X
<b>Rockingham County</b>																	
Rockingham County 911 Center-Alternate	Other	X	X	X	X	X	X				X	X					
Rockingham County Emergency Services-Emergency Operations Center	Other	X	X	X	X	X	X				X						
Eden Rescue Squad	Fire/EMS	X	X	X	X	X	X							X	X	X	X
Madison-Rockingham Rescue Squad	Fire/EMS	X	X	X	X	X	X							X	X	X	X
Reidsville Rescue Squad	Fire/EMS	X	X	X	X	X	X				X		X			X	X
Bethany Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X						
Draper Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X							X	X	X	X
Eden City Fire Station 1	Fire/EMS	X	X	X	X	X	X										
Eden Fire Department Station 2	Fire/EMS	X	X	X	X	X	X							X	X	X	X
Eden Fire Department Station 3	Fire/EMS	X	X	X	X	X	X									X	X



**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Eden Fire Department Station 4	Fire/EMS	X	X	X	X	X	X								X	X		X
Huntsville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Jacobs Creek Fire Department	Fire/EMS	X	X	X	X	X	X				X							
Leaksville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Madison Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		X
Mayodan Fire Department	Fire/EMS	X	X	X	X	X	X									X		X
Monroeton Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X				X	X		
North Stoneyview Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X			X								
Northwest Rockingham Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Oregon Hill Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X							
Reidsville Fire Department	Fire/EMS	X	X	X	X	X	X				X			X			X	X
Reidsville Fire Department Station 2	Fire/EMS	X	X	X	X	X	X				X	X		X		X	X	X
Reidsville Fire Department Station 3	Fire/EMS	X	X	X	X	X	X				X			X	X	X		
Rockingham County Emergency Services	Fire/EMS	X	X	X	X	X	X				X							
Ruffin Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X				X	X	X	X
Shiloh Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Stoneville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X										X	X
Wentworth Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X							
Williamsburg Fire and Rescue	Fire/EMS	X	X	X	X	X	X				X							
Yanceyville Road Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X				X				X	X		
City of Reidsville Police Department	Law Enforcement	X	X	X	X	X	X				X	X	X			X	X	X
Eden Police Department	Law Enforcement	X	X	X	X	X	X								X	X		X
Madison Police Department	Law Enforcement	X	X	X	X	X	X								X	X	X	X
Mayodan Police Department	Law Enforcement	X	X	X	X	X	X								X	X	X	X
NC Division of Parks - Haw River State Park	Law Enforcement	X	X	X	X	X	X				X							
NC Division of Parks - Mayo River State Park	Law Enforcement	X	X	X	X	X	X								X	X	X	X
NC State Highway Patrol Troop D District Iii	Law Enforcement	X	X	X	X	X	X				X							
Rockingham County Sheriff's Department / Rockingham County Jail	Law Enforcement	X	X	X	X	X	X				X							
Stoneville Police Department	Law Enforcement	X	X	X	X	X	X										X	X
Addie's Adult Care Home	Medical Facility	X	X	X	X	X	X				X			X		X	X	X
Annie Penn Hospital	Medical Facility	X	X	X	X	X	X				X			X			X	X
Arc #3	Medical Facility	X	X	X	X	X	X				X				X			X
Arc #4	Medical Facility	X	X	X	X	X	X				X			X	X	X		
Avante At Reidsville	Medical Facility	X	X	X	X	X	X				X			X			X	X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Beverly Rucker Family Care Home #5	Medical Facility	X	X	X	X	X	X			X		X	X		X	X	X
Beverly Rucker's Family Care Home	Medical Facility	X	X	X	X	X	X			X							
Beverly Rucker's Family Care Home #2	Medical Facility	X	X	X	X	X	X			X		X	X		X	X	X
Beverly Rucker's Family Care Home #3	Medical Facility	X	X	X	X	X	X										X
Beverly Rucker's Family Care Home #4	Medical Facility	X	X	X	X	X	X			X	X						
Bibee Home	Medical Facility	X	X	X	X	X	X										
Branchwood Home	Medical Facility	X	X	X	X	X	X			X		X	X			X	X
Brian Center Health And Rehabilitation/Eden	Medical Facility	X	X	X	X	X	X										
Britthaven Of Madison	Medical Facility	X	X	X	X	X	X										
Carolina House Of Reidsville	Medical Facility	X	X	X	X	X	X			X		X	X	X	X		
Carolyn Carter And Associates, Inc.	Medical Facility	X	X	X	X	X	X			X			X			X	X
Cedar Place	Medical Facility	X	X	X	X	X	X										
Challenges #2	Medical Facility	X	X	X	X	X	X								X		
Challenges Group Home	Medical Facility	X	X	X	X	X	X										
Continuum Home Care Of Madison	Medical Facility	X	X	X	X	X	X										
Cornerstone Assisted Living	Medical Facility	X	X	X	X	X	X										X
Daphne's Adult Care #5	Medical Facility	X	X	X	X	X	X			X			X		X		X
Daphne's Adult Care Home Inc. #3	Medical Facility	X	X	X	X	X	X							X	X		
Daphne's Adult Care Home Inc. #4	Medical Facility	X	X	X	X	X	X							X	X		
Daphne's Adult Care Home, Inc. #1	Medical Facility	X	X	X	X	X	X			X	X						
Daphne's Adult Care Home, Inc. #2	Medical Facility	X	X	X	X	X	X							X	X		
Daystar Group Home # 1	Medical Facility	X	X	X	X	X	X								X		
Daystar Group Home #5	Medical Facility	X	X	X	X	X	X										
Daystar Group Home 2	Medical Facility	X	X	X	X	X	X							X	X	X	X
Daystar Group Home 3	Medical Facility	X	X	X	X	X	X										
Daystar Group Home 4	Medical Facility	X	X	X	X	X	X										
Eden Estates	Medical Facility	X	X	X	X	X	X							X	X		
Ellis Broadus	Medical Facility	X	X	X	X	X	X										
Ellison's Family Care Home	Medical Facility	X	X	X	X	X	X			X							
Ellison's Family Care Home #2	Medical Facility	X	X	X	X	X	X			X				X	X		
Greycliff House	Medical Facility	X	X	X	X	X	X							X	X	X	X
Highgrove Long Term Care Center, Inc	Medical Facility	X	X	X	X	X	X			X		X			X	X	X
Hodgkins Substance Abuse Services	Medical Facility	X	X	X	X	X	X							X	X		
Holt Family Care	Medical Facility	X	X	X	X	X	X										X
Hospice Of Rockingham County, Inc.	Medical Facility	X	X	X	X	X	X			X							
Jerry's Place	Medical Facility	X	X	X	X	X	X										
Kellam's Home	Medical Facility	X	X	X	X	X	X			X		X	X		X	X	X
Lawson Family Care Home #2	Medical Facility	X	X	X	X	X	X			X			X		X	X	X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Leaksville Rest Home	Medical Facility	X	X	X	X	X	X											
Leaksville Rest Home #2	Medical Facility	X	X	X	X	X	X											
Life Turn	Medical Facility	X	X	X	X	X	X				X							
Manley Street Home	Medical Facility	X	X	X	X	X	X											X
Mark's Family Care Home #1	Medical Facility	X	X	X	X	X	X				X							
Mark's Family Care Home #2	Medical Facility	X	X	X	X	X	X				X							
Morehead Memorial Hospital	Medical Facility	X	X	X	X	X	X							X	X			
Moyer's Rest Home	Medical Facility	X	X	X	X	X	X						X	X				
Nancy O. Turner Family Care Home I	Medical Facility	X	X	X	X	X	X				X			X	X	X	X	
Nancy O. Turner Family Care Home II	Medical Facility	X	X	X	X	X	X				X			X	X	X	X	
New Life Clubhouse	Medical Facility	X	X	X	X	X	X				X							
Norman Street	Medical Facility	X	X	X	X	X	X				X		X	X	X			X
Oakwood Family Care Home	Medical Facility	X	X	X	X	X	X				X							
Oakwood Family Care Home #2	Medical Facility	X	X	X	X	X	X				X							
Pierce's Family Care Home	Medical Facility	X	X	X	X	X	X	X	X						X	X	X	
Pine Forrest Home For The Aged	Medical Facility	X	X	X	X	X	X				X		X	X	X	X	X	
Pritchett's Family Care	Medical Facility	X	X	X	X	X	X				X	X	X	X	X	X	X	
Red Clay Road Supervised Living	Medical Facility	X	X	X	X	X	X											
Remmsco Men's Halfway House	Medical Facility	X	X	X	X	X	X				X	X	X	X	X	X	X	
Remmsco Women's House	Medical Facility	X	X	X	X	X	X				X	X	X	X	X	X	X	
Rockingham Arc # 6	Medical Facility	X	X	X	X	X	X						X	X				
Rockingham Arc #1	Medical Facility	X	X	X	X	X	X											X
Rockingham Arc #2	Medical Facility	X	X	X	X	X	X				X			X	X			
Rockingham Arc #5	Medical Facility	X	X	X	X	X	X					X	X	X	X			X
Rockingham County Area Mh/Dd/Sas	Medical Facility	X	X	X	X	X	X				X							
Rockingham County Council On Aging, Inc.	Medical Facility	X	X	X	X	X	X				X		X				X	X
Rockingham Family Health Psychological & Counseling	Medical Facility	X	X	X	X	X	X				X						X	X
Rockingham Opportunities Corporation	Medical Facility	X	X	X	X	X	X				X							
Rouse's Group Home #6	Medical Facility	X	X	X	X	X	X							X	X			
Rouse's Group Homes	Medical Facility	X	X	X	X	X	X							X	X			
Second Street	Medical Facility	X	X	X	X	X	X											
The East Adult Care Home #1	Medical Facility	X	X	X	X	X	X				X					X		
The East Adult Care Home #2	Medical Facility	X	X	X	X	X	X				X					X		
Thomas Therapeutic Home	Medical Facility	X	X	X	X	X	X				X	X	X	X	X	X	X	
Turner's Family Care Home	Medical Facility	X	X	X	X	X	X				X			X	X			X
Unified Home Care, LLC	Medical Facility	X	X	X	X	X	X				X	X						
Visions Adolescence Care Facility	Medical Facility	X	X	X	X	X	X				X		X	X	X	X	X	X
Webb Home	Medical Facility	X	X	X	X	X	X											

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Westerly Park Home	Medical Facility	X	X	X	X	X	X											
Youth Haven Services, Inc	Medical Facility	X	X	X	X	X	X			X				X	X			
Bethany Community Middle	Public School	X	X	X	X	X	X			X								
Bethany Elementary	Public School	X	X	X	X	X	X			X								
Central Elementary	Public School	X	X	X	X	X	X					X	X	X			X	
Dalton Mcmichael High	Public School	X	X	X	X	X	X						X	X			X	
Douglass Elementary	Public School	X	X	X	X	X	X											
Draper Elementary	Public School	X	X	X	X	X	X						X	X	X	X	X	
Huntsville Elementary	Public School	X	X	X	X	X	X			X			X	X				
J E Holmes Middle	Public School	X	X	X	X	X	X						X	X			X	
John M Morehead High	Public School	X	X	X	X	X	X						X	X			X	
John W Dillard Elementary	Public School	X	X	X	X	X	X						X	X			X	
Lawsonville Ave Elem	Public School	X	X	X	X	X	X			X		X			X	X		
Leaksvillespray Elementary	Public School	X	X	X	X	X	X							X			X	
Lincoln Elementary	Public School	X	X	X	X	X	X			X	X							
Monroeton Elementary	Public School	X	X	X	X	X	X			X			X	X				
Moss Street Elementary	Public School	X	X	X	X	X	X			X		X	X	X			X	
New Vision Sch.Of Math/Sci/Tec	Public School	X	X	X	X	X	X						X	X	X	X	X	
Reidsville High	Public School	X	X	X	X	X	X			X				X				
Reidsville Middle	Public School	X	X	X	X	X	X			X			X	X				
Rockingham Co Early College High	Public School	X	X	X	X	X	X			X								
Rockingham County High	Public School	X	X	X	X	X	X			X								
Rockingham County Middle	Public School	X	X	X	X	X	X			X	X							
South End Elementary	Public School	X	X	X	X	X	X			X							X	
Stoneville Elementary	Public School	X	X	X	X	X	X								X	X		
The Score Center	Public School	X	X	X	X	X	X			X								
Wentworth Elementary	Public School	X	X	X	X	X	X			X								
Western Rockingham Middle	Public School	X	X	X	X	X	X						X	X			X	
Williamsburg Elementary	Public School	X	X	X	X	X	X			X								
<b>Stokes County</b>																		
Stokes County Emergency Management	Emergency Operation Center	X	X	X	X	X	X											
Stokes County Emergency Medical Services - Unit 1	Fire/EMS	X	X	X	X	X	X						X	X			X	
Stokes County Emergency Medical Services - Unit 3 And 4	Fire/EMS	X	X	X	X	X	X							X	X		X	
Stokes County Emergency Medical Services - Unit 5	Fire/EMS	X	X	X	X	X	X											
City Of King Fire Department	Fire/EMS	X	X	X	X	X	X									X	X	
Danbury Fire And Rescue Department Inc.	Fire/EMS	X	X	X	X	X	X											

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Double Creek Volunteer Fire And Rescue	Fire/EMS	X	X	X	X	X	X											
Francisco Volunteer Fire And Rescue	Fire/EMS	X	X	X	X	X	X		X									
Lawsonville Fire And Rescue	Fire/EMS	X	X	X	X	X	X		X									
NC Division Of Forest Resources District 10 - Stokes County	Fire/EMS	X	X	X	X	X	X											
Northeast Stokes Volunteer Fire And Rescue	Fire/EMS	X	X	X	X	X	X		X									
Pinnacle Volunteer Fire And Rescue	Fire/EMS	X	X	X	X	X	X								X	X	X	
Sauratown Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
South Stokes Fire And Rescue	Fire/EMS	X	X	X	X	X	X											
South Stokes Volunteer Fire Department - Forest Hills Division	Fire/EMS	X	X	X	X	X	X											
Stokes-Rockingham Volunteer Fire Department And Rescue Squad Station 1 - Headquarters	Fire/EMS	X	X	X	X	X	X				X	X	X	X	X	X	X	
Stokes-Rockingham Volunteer Fire Department And Rescue Squad Station 2	Fire/EMS	X	X	X	X	X	X			X								
Walnut Cove Fire And Rescue	Fire/EMS	X	X	X	X	X	X							X	X			X
Hanging Rock State Park - Ranger Station	Law Enforcement	X	X	X	X	X	X											
King Police Department	Law Enforcement	X	X	X	X	X	X									X	X	
NC State Highway Patrol Troop E District Iv - Substation	Law Enforcement	X	X	X	X	X	X				X					X	X	
Stokes County Sheriffs Department	Law Enforcement	X	X	X	X	X	X				X							
Walnut Cove Police Department	Law Enforcement	X	X	X	X	X	X							X	X	X	X	
Graceland Living Center I	Medical Facility	X	X	X	X	X	X											
Graceland Living Center Ii	Medical Facility	X	X	X	X	X	X											
Group Homes Of Forsyth, Inc.-Mcgee Court Home	Medical Facility	X	X	X	X	X	X							X	X			X
Health Services Personnel, Inc.	Medical Facility	X	X	X	X	X	X									X	X	
Hospice Of Stokes County	Medical Facility	X	X	X	X	X	X											
King Substance Abuse Counseling	Medical Facility	X	X	X	X	X	X					X	X	X				
Mountain Valley Living Center	Medical Facility	X	X	X	X	X	X											
Overby Rest Home	Medical Facility	X	X	X	X	X	X											
Pincrest School	Medical Facility	X	X	X	X	X	X							X	X			
Pinnacle Homes #1	Medical Facility	X	X	X	X	X	X								X			
Pinnacle Homes Ii	Medical Facility	X	X	X	X	X	X								X			
Rose Tara Plantation, Inc.	Medical Facility	X	X	X	X	X	X							X	X			X
Serendipity House	Medical Facility	X	X	X	X	X	X							X	X	X	X	
Stokes County Department Of Social Services	Medical Facility	X	X	X	X	X	X											
Stokes County Hha	Medical Facility	X	X	X	X	X	X							X	X			

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Stokes County Icf/Mr Group Home	Medical Facility	X	X	X	X	X	X								X	X	X
Stokes Medical Center Park	Medical Facility	X	X	X	X	X	X										X
Stokes Opportunity Center	Medical Facility	X	X	X	X	X	X								X		
Stokes-Reynolds Memorial Hospital	Medical Facility	X	X	X	X	X	X										
Stokes-Reynolds Memorial Hospital, Inc.	Medical Facility	X	X	X	X	X	X										
Universal Health Care/King	Medical Facility	X	X	X	X	X	X								X	X	X
Village Care Of King	Medical Facility	X	X	X	X	X	X					X	X	X			
Walnut Cove Healthcare Center	Medical Facility	X	X	X	X	X	X						X	X			X
Walnut Ridge Assisted Living	Medical Facility	X	X	X	X	X	X						X	X			X
Chestnut Grove Middle	Public School	X	X	X	X	X	X										
Francisco Elementary	Public School	X	X	X	X	X	X		X								
Germanton Elementary	Public School	X	X	X	X	X	X										
King Elementary	Public School	X	X	X	X	X	X									X	X
Lawsonville Elementary	Public School	X	X	X	X	X	X		X	X							
London Elementary	Public School	X	X	X	X	X	X						X	X			X
Meadowbrook Academy	Public School	X	X	X	X	X	X						X	X			
Mount Olive Elementary	Public School	X	X	X	X	X	X										
Nancy Reynolds Elementary	Public School	X	X	X	X	X	X		X								
North Stokes High	Public School	X	X	X	X	X	X		X								
Pine Hall Elementary	Public School	X	X	X	X	X	X					X		X	X	X	
Piney Grove Middle	Public School	X	X	X	X	X	X		X								
Pinnacle Elementary	Public School	X	X	X	X	X	X							X	X	X	
Poplar Springs Elementary	Public School	X	X	X	X	X	X										
Sandy Ridge Elementary	Public School	X	X	X	X	X	X		X								
South Stokes High	Public School	X	X	X	X	X	X										
Southeastern Stokes Middle	Public School	X	X	X	X	X	X						X	X			
Stokes Early College High	Public School	X	X	X	X	X	X										
Walnut Cove Elementary	Public School	X	X	X	X	X	X							X			
West Stokes High	Public School	X	X	X	X	X	X										
<b>Surry County</b>																	
Surry County Emergency Management	Other	X	X	X	X	X	X		X			X	X	X	X	X	
Dobson Rescue Squad	Fire/EMS	X	X	X	X	X	X		X			X	X	X			
Elkin Rescue Squad	Fire/EMS	X	X	X	X	X	X		X				X	X			
Mount Airy Rescue Squad	Fire/EMS	X	X	X	X	X	X		X				X	X	X	X	
Pilot Mountain Rescue Squad And Emergency Medical Services Inc.	Fire/EMS	X	X	X	X	X	X									X	X
Surry County Emergency Services Station 2	Fire/EMS	X	X	X	X	X	X		X			X	X	X			X
Surry County Emergency Services Station 3	Fire/EMS	X	X	X	X	X	X		X				X	X			

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)
Surry County Emergency Services Station 4	Fire/EMS	X	X	X	X	X	X							X	X	X	X
Surry County Emergency Services Station 5	Fire/EMS	X	X	X	X	X	X		X				X	X	X		
Ararat Volunteer Fire Department Inc.	Fire/EMS	X	X	X	X	X	X		X							X	X
Bannertown Volunteer Fire Department - Holly Springs Station	Fire/EMS	X	X	X	X	X	X		X						X		
Bannertown Volunteer Fire Department Station 75 - Headquarters	Fire/EMS	X	X	X	X	X	X		X						X		
Cc Camp Volunteer Fire Department Station 65	Fire/EMS	X	X	X	X	X	X		X				X			X	X
Cc Camp Volunteer Fire Department Station 65A	Fire/EMS	X	X	X	X	X	X		X								
Central Surry Volunteer Fire Department Station 77 - Headquarters	Fire/EMS	X	X	X	X	X	X		X		X	X	X	X			
Central Surry Volunteer Fire Department Station 77A	Fire/EMS	X	X	X	X	X	X		X				X	X			
Dobson Fire Department	Fire/EMS	X	X	X	X	X	X		X			X	X	X			
Elkin Fire Department	Fire/EMS	X	X	X	X	X	X		X				X	X	X	X	X
Fourway Volunteer Fire Department - Wards Gap Station	Fire/EMS	X	X	X	X	X	X		X								
Fourway Volunteer Fire Department Station 68 - Headquarters	Fire/EMS	X	X	X	X	X	X		X								
Franklin Community Volunteer Fire Department Station 1	Fire/EMS	X	X	X	X	X	X		X						X		
Franklin Community Volunteer Fire Department Station 2	Fire/EMS	X	X	X	X	X	X		X				X	X			
Jot-Um-Down Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X		X					X			
Mount Airy Fire Department Station 1 - Headquarters	Fire/EMS	X	X	X	X	X	X		X				X	X	X	X	X
Mount Airy Fire Department Station 2	Fire/EMS	X	X	X	X	X	X		X			X	X	X	X	X	X
Mountain Park Rescue Squad And Fire Station	Fire/EMS	X	X	X	X	X	X		X								
NC Division Of Forest Resources District 10 - Surry County	Fire/EMS	X	X	X	X	X	X		X			X	X	X			
Pilot Knob Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X						X	X	X	X	X
Pine Ridge Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X		X				X	X			
Shoals Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X			X							
Skull Camp Volunteer Fire Department Station 72 - Headquarters	Fire/EMS	X	X	X	X	X	X		X								
Skull Camp Volunteer Fire Department Station 72A	Fire/EMS	X	X	X	X	X	X		X								

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
South Surry Volunteer Fire Department Station 74	Fire/EMS	X	X	X	X	X	X											
South Surry Volunteer Fire Department Station 74A - Headquarters	Fire/EMS	X	X	X	X	X	X		X									
Westfield Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X		X									
White Plains Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X		X							X		
Dobson Police Department	Law Enforcement	X	X	X	X	X	X		X				X	X	X			
Elkin Police Department	Law Enforcement	X	X	X	X	X	X		X					X	X	X	X	X
Mount Airy Police Department	Law Enforcement	X	X	X	X	X	X		X					X	X	X	X	X
NC State Highway Patrol Troop E District V	Law Enforcement	X	X	X	X	X	X		X					X	X			
NC State Highway Patrol Troop E District V - Substation	Law Enforcement	X	X	X	X	X	X		X		X	X	X	X	X			
Pilot Mountain Police Department	Law Enforcement	X	X	X	X	X	X									X	X	
Pilot Mountain State Park - Ranger Station	Law Enforcement	X	X	X	X	X	X							X	X			
Surry Community College Campus Police	Law Enforcement	X	X	X	X	X	X		X				X	X	X			
Surry County Sheriffs Department / Surry County Jail	Law Enforcement	X	X	X	X	X	X		X				X	X	X			
American Healthcare Services, Inc.	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	X
Behavioral Services, Inc.	Medical Facility	X	X	X	X	X	X		X					X	X			
Central Care, Inc.	Medical Facility	X	X	X	X	X	X		X									
Central Continuing Care	Medical Facility	X	X	X	X	X	X		X			X		X	X	X	X	
Colonial Care, Inc.	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	
Crossroads Behavioral Healthcare-Elkin	Medical Facility	X	X	X	X	X	X		X		X		X	X	X			
Crossroads Behavioral Healthcare-Riverside Drive	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	
David's House	Medical Facility	X	X	X	X	X	X		X									
Delphi Counseling Services	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	X
Dunmore Plantation	Medical Facility	X	X	X	X	X	X		X			X		X	X			
Easter Seals NC - Mt. Airy	Medical Facility	X	X	X	X	X	X		X					X	X			X
Elkin Group Home	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	
Elkin Healthcare Center	Medical Facility	X	X	X	X	X	X		X				X	X	X			X
Galax Trail Group Home	Medical Facility	X	X	X	X	X	X		X				X	X	X			X
Gilmer Street Group Home	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	
Heart-To-Heart	Medical Facility	X	X	X	X	X	X		X					X	X	X	X	
Heritage Care of Elkin	Medical Facility	X	X	X	X	X	X		X				X	X	X			
Hope Valley-Men's Division	Medical Facility	X	X	X	X	X	X		X						X			
Hope Valley-Women's Division	Medical Facility	X	X	X	X	X	X								X	X	X	
Hospice of Surry County, Inc	Medical Facility	X	X	X	X	X	X		X					X	X			
Hospice of Surry County, Inc.	Medical Facility	X	X	X	X	X	X		X				X	X	X	X	X	



**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Hugh Chatham Memorial Hospital Cardiac Rehab Program	Medical Facility	X	X	X	X	X	X			X				X	X	X		X
Hugh Chatham Memorial Hospital, Inc.	Medical Facility	X	X	X	X	X	X			X				X	X	X		X
Hunter House	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Lebanon House	Medical Facility	X	X	X	X	X	X			X				X	X	X		X
Lifespan Enrichment	Medical Facility	X	X	X	X	X	X			X								
Lifespan Ventures-Dobson	Medical Facility	X	X	X	X	X	X			X		X				X		
Lincare	Medical Facility	X	X	X	X	X	X			X					X	X		
Northern Home Care	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Northern Hospice	Medical Facility	X	X	X	X	X	X			X				X	X	X		
Northern Hospital of Surry County	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Park Drive Group Home	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Peace Lily #1	Medical Facility	X	X	X	X	X	X			X								
Peace Lily #2	Medical Facility	X	X	X	X	X	X			X								
Professional Assessment & Counseling Center	Medical Facility	X	X	X	X	X	X			X					X	X	X	X
Professional Assessment and Counseling Center	Medical Facility	X	X	X	X	X	X			X				X	X	X		
Ridge Crest Retirement, Llc	Medical Facility	X	X	X	X	X	X			X								
Ridgecrest Retirement Community	Medical Facility	X	X	X	X	X	X			X								
Senior Quality Care	Medical Facility	X	X	X	X	X	X								X	X	X	X
Spring Street Group Home	Medical Facility	X	X	X	X	X	X			X				X	X	X		X
Surry Community Nursing Center	Medical Facility	X	X	X	X	X	X			X				X	X	X		X
Surry County DSS	Medical Facility	X	X	X	X	X	X			X		X		X	X	X		
Surry County Friends of Seniors	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Surry County Home Health Agency	Medical Facility	X	X	X	X	X	X			X				X	X	X	X	X
Surry County Pretrial Release/Day Reporting Center	Medical Facility	X	X	X	X	X	X			X				X	X	X		
Sydnor Street Group Home	Medical Facility	X	X	X	X	X	X			X				X		X	X	X
Tender Touch Home Care, Inc.	Medical Facility	X	X	X	X	X	X			X					X	X	X	X
The Way Station	Medical Facility	X	X	X	X	X	X			X					X	X	X	X
Twelve Oaks	Medical Facility	X	X	X	X	X	X			X				X		X		
Bruce H Tharrington Elem	Public School	X	X	X	X	X	X			X				X	X	X		X
Cedar Ridge Elementary	Public School	X	X	X	X	X	X			X								
Central Middle	Public School	X	X	X	X	X	X			X						X		
Copeland Elementary	Public School	X	X	X	X	X	X			X								
Dobson Elementary	Public School	X	X	X	X	X	X			X				X	X	X		
East Surry High	Public School	X	X	X	X	X	X									X		X
Elkin Elementary	Public School	X	X	X	X	X	X			X					X	X	X	X
Elkin High	Public School	X	X	X	X	X	X			X					X	X	X	X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Elkin Middle	Public School	X	X	X	X	X	X			X					X	X	X	X
Emuntee	Public School	X	X	X	X	X	X			X								
Flat Rock Elementary	Public School	X	X	X	X	X	X			X								
Franklin Elementary	Public School	X	X	X	X	X	X			X						X		X
J Sam Gentry Middle	Public School	X	X	X	X	X	X			X								
Jones Elementary	Public School	X	X	X	X	X	X			X			X					
Meadowview Middle	Public School	X	X	X	X	X	X			X	X							
Millennium Charter Academy	Public School	X	X	X	X	X	X			X		X	X		X		X	
Mount Airy High	Public School	X	X	X	X	X	X			X				X	X	X	X	
Mount Airy Middle	Public School	X	X	X	X	X	X			X			X	X	X	X	X	
Mountain Park Elementary	Public School	X	X	X	X	X	X			X								
North Surry High	Public School	X	X	X	X	X	X			X								
Pilot Mountain Elementary	Public School	X	X	X	X	X	X										X	
Pilot Mountain Middle	Public School	X	X	X	X	X	X										X	
Rockford Elementary	Public School	X	X	X	X	X	X			X						X		
Shoals Elementary	Public School	X	X	X	X	X	X											
Surry Central High	Public School	X	X	X	X	X	X			X			X	X	X			
Surry Early College Hs Design	Public School	X	X	X	X	X	X			X			X	X	X			
Westfield Elementary	Public School	X	X	X	X	X	X			X				X	X			
White Plains Elementary	Public School	X	X	X	X	X	X			X				X	X			
<b>Yadkin County</b>																		
Yadkin County Emergency Management	Other	X	X	X	X	X	X								X	X		
Yadkin County Emergency Medical Services	Fire/EMS	X	X	X	X	X	X								X	X		
Yadkin County Rescue Squad and Emergency Medical Services Inc.	Fire/EMS	X	X	X	X	X	X									X		
Arlington Fire and Rescue	Fire/EMS	X	X	X	X	X	X			X					X	X		
Boonville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Buck Shoals Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Courtney Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
East Bend Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Fall Creek Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
Forbush Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X									X		
Jonesville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X			X					X	X		X
Lone Hickory Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X											
West Yadkin Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Yadkinville Volunteer Fire Department	Fire/EMS	X	X	X	X	X	X								X	X		
Boonville Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
East Bend Police Department	Law Enforcement	X	X	X	X	X	X											
Jonesville Police Department	Law Enforcement	X	X	X	X	X	X			X					X	X		X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Yadkin County Sheriff's Department	Law Enforcement	X	X	X	X	X	X								X	X		
Yadkinville Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
Advantage Home Care, Inc.	Medical Facility	X	X	X	X	X	X									X		
Boonville Group Home	Medical Facility	X	X	X	X	X	X								X	X		
Care South, Inc.	Medical Facility	X	X	X	X	X	X											
Carolina Companions, Inc.	Medical Facility	X	X	X	X	X	X		X						X	X		
Carolina Counseling and Court Services	Medical Facility	X	X	X	X	X	X								X	X		
Carolina Select Home Care, Llc	Medical Facility	X	X	X	X	X	X		X						X	X		
Crossroads Behavioral Healthcare-Boonville	Medical Facility	X	X	X	X	X	X									X		
Crossroads Behavioral Healthcare-Yadkinville	Medical Facility	X	X	X	X	X	X								X	X		
Health Services Unlimited, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Hoots Memorial Hospital, Inc.	Medical Facility	X	X	X	X	X	X									X		
Hospice of Yadkin County	Medical Facility	X	X	X	X	X	X								X	X		
Muncus Road Home	Medical Facility	X	X	X	X	X	X		X						X	X		X
Pathways	Medical Facility	X	X	X	X	X	X		X						X	X		
Piedmont Village at Yadkinville	Medical Facility	X	X	X	X	X	X								X	X		
Pinebrook Residential Center 1	Medical Facility	X	X	X	X	X	X								X	X		
Pinebrook Residential Center 2	Medical Facility	X	X	X	X	X	X								X	X		
Quality Care Senior Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
The Atrium/The Respite Center	Medical Facility	X	X	X	X	X	X								X	X		
The Magnolias Over Yadkin	Medical Facility	X	X	X	X	X	X									X		
Touched by Angels Home Healthcare, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Willowbrook Health Care Center	Medical Facility	X	X	X	X	X	X								X	X		
Yadkin County Adult Developmental Vocational Program	Medical Facility	X	X	X	X	X	X									X		
Yadkin County Council on Aging, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Yadkin I	Medical Facility	X	X	X	X	X	X								X	X		
Yadkin II & III	Medical Facility	X	X	X	X	X	X								X	X		
Yadkin Nursing Care Center	Medical Facility	X	X	X	X	X	X									X		
Yadkin Valley Home Health	Medical Facility	X	X	X	X	X	X		X						X	X	X	X
Boonville Elementary	Public School	X	X	X	X	X	X								X	X		
Courtney Elementary	Public School	X	X	X	X	X	X											
East Bend Elementary	Public School	X	X	X	X	X	X											
Fall Creek Elementary	Public School	X	X	X	X	X	X											
Forbush Elementary	Public School	X	X	X	X	X	X											
Forbush High	Public School	X	X	X	X	X	X											
Forbush Middle	Public School	X	X	X	X	X	X											
Jonesville Elementary	Public School	X	X	X	X	X	X		X						X	X		X

**SECTION 6: VULNERABILITY ASSESSMENT**

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Starmount High	Public School	X	X	X	X	X	X											
Starmount Middle	Public School	X	X	X	X	X	X											
West Yadkin Elementary	Public School	X	X	X	X	X	X								X	X		
Yadkin Early College	Public School	X	X	X	X	X	X								X	X		
Yadkin Success Academy	Public School	X	X	X	X	X	X								X	X		
Yadkinville Elementary	Public School	X	X	X	X	X	X								X	X		

# SECTION 7

## CAPABILITY ASSESSMENT

This section of the Plan discusses the capability of the communities in the Northern Piedmont Region to implement hazard mitigation activities. For the 2020 update of this plan, this section was revised to reflect most current conditions regarding the capabilities of the participating counties and municipalities.

This section consists of the following four subsections:

- 7.1 What is a Capability Assessment?
- 7.2 Conducting the Capability Assessment
- 7.3 Capability Assessment Findings
- 7.4 Conclusions on Local Capability

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### 7.1 WHAT IS A CAPABILITY ASSESSMENT?

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects<sup>1</sup>. As in any planning process, it is important to try to establish which goals, objectives, and/or actions are feasible based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical, and likely to be implemented over time, given a local government’s planning and regulatory framework, level of administrative and technical support, amount of fiscal resources, and current political climate.

A capability assessment has two primary components: 1) an inventory of a local jurisdiction’s relevant plans, ordinances, or programs already in place and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will detect any existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. A capability assessment also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The capability assessment completed for the Northern Piedmont Region serves as a critical planning step and an integral part of the foundation for designing an effective hazard mitigation strategy. Coupled with the Risk Assessment, the Capability Assessment helps identify and target meaningful mitigation actions for incorporation in the Mitigation Strategy portion of the Hazard Mitigation Plan. It

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<sup>1</sup> While the Final Rule for implementing the Disaster Mitigation Act of 2000 does not require a local capability assessment to be completed for local hazard mitigation plans, it is a critical step in developing a mitigation strategy that meets the needs of the region while taking into account their own unique abilities. The Rule does state that a community’s mitigation strategy should be “based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools” (44 CFR, Part 201.6(c)(3)).

not only helps establish the goals and objectives for the region to pursue under this Plan, but it also ensures that those goals and objectives are realistically achievable under given local conditions.

## **7.2 CONDUCTING THE CAPABILITY ASSESSMENT**

In order to facilitate the inventory and analysis of local government capabilities within the Northern Piedmont counties, a detailed Capability Assessment Survey was completed for each of the participating jurisdictions based on the information found in existing hazard mitigation plans and local government websites. The survey questionnaire compiled information on a variety of “capability indicators” such as existing local plans, policies, programs, or ordinances that contribute to and/or hinder the region’s ability to implement hazard mitigation actions. Other indicators included information related to the communities’ fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes. The current political climate, an important consideration for any local planning or decision making process, was also evaluated with respect to hazard mitigation.

At a minimum, survey results provide an extensive inventory of existing local plans, ordinances, programs, and resources that are in place or under development in addition to their overall effect on hazard loss reduction. However, the survey instrument can also serve to identify gaps, weaknesses, or conflicts that counties and local jurisdictions can recast as opportunities for specific actions to be proposed as part of the hazard mitigation strategy.

The information collected in the survey questionnaire was incorporated into a database for further analysis. A general scoring methodology was then applied to quantify each jurisdiction’s overall capability.<sup>2</sup> According to the scoring system, each capability indicator was assigned a point value based on its relevance to hazard mitigation.

Using this scoring methodology, a total score and an overall capability rating of “high,” “moderate,” or “limited” could be determined according to the total number of points received. These classifications are designed to provide nothing more than a general assessment of local government capability. The results of this capability assessment provide critical information for developing an effective and meaningful mitigation strategy.

## **7.3 CAPABILITY ASSESSMENT FINDINGS**

The findings of the capability assessment are summarized in this Plan to provide insight into the relevant capacity of the jurisdictions in the Northern Piedmont Region to implement hazard mitigation activities. All information is based upon the review of existing hazard mitigation plans and local government websites through the Capability Assessment Survey and input provided by local government officials during meetings of the Northern Piedmont Regional Hazard Mitigation Planning Team.

### **7.3.1 Planning and Regulatory Capability**

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction’s commitment to guiding and managing growth, development, and redevelopment in a responsible manner while maintaining the general welfare of the community. It

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<sup>2</sup>The scoring methodology used to quantify and rank the region’s capability can be found in Appendix B.

**SECTION 7: CAPABILITY ASSESSMENT**

includes emergency response and mitigation planning, comprehensive land use planning, and transportation planning; the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed and structures are built; as well as protecting environmental, historic, and cultural resources in the community. Although some conflicts can arise, these planning initiatives generally present significant opportunities to integrate hazard mitigation principles and practices into the local decision making process.

This assessment is designed to provide a general overview of the key planning and regulatory tools and programs that are in place or under development for the jurisdictions in the Northern Piedmont Region along with their potential effect on loss reduction. This information will help identify opportunities to address existing gaps, weaknesses, or conflicts with other initiatives in addition to integrating the implementation of this Plan with existing planning mechanisms where appropriate.

**Table 7.1** provides a summary of the relevant local plans, ordinances, and programs already in place or under development for the jurisdictions in the Northern Piedmont Region. A checkmark (✓) indicates that the given item is currently in place and being implemented. Each of these local plans, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the Northern Piedmont Regional Hazard Mitigation Plan.

**TABLE 7.1: RELEVANT PLANS, ORDINANCES, AND PROGRAMS**

Planning / Regulatory Tool	CASWELL COUNTY		DAVIE COUNTY				FORSYTH COUNTY				ROCKINGHAM COUNTY				STOKES COUNTY				SURREY COUNTY				YADKIN COUNTY							
	Milton	Yanceville	Bermuda Run	Cooleemee	Mocksville	Bethania	Clemmons	Kernersville	Lewisville	Rural Hall	Tobaccoville	Walkertown	Winston-Salem	Eden	Madison	Mavodan	Reidsville	Stoneville	Wentworth	Danbury	King	Walnut Cove	Dobson	Elkin	Mount Airy	Pilot Mountain	Boonville	East Bend	Jonesville	Yadkinville
Hazard Mitigation Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Comprehensive Land Use Plan	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓
Floodplain Management Plan																														
Open Space Management Plan (Parks & Recreation)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stormwater Management Plan/Ordinance						✓	✓	✓	✓	✓	✓	✓		✓		✓														
Natural Resource Protection Plan																														
Flood Response Plan																														
Emergency Operations Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Continuity of Operations Plan			✓			✓	✓			✓	✓									✓			✓							
Evacuation Plan																														
Disaster Recovery Plan																														
Capital Improvements Plan	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓		✓			✓	✓	✓	✓	✓			✓	✓			✓

Planning / Regulatory Tool	CASWELL COUNTY	Milton	Yanceville	DAVIE COUNTY	Bermuda Run	Cooleemee	Mocksville	FORSYTH COUNTY	Bethania	Clemmons	Kernersville	Lewisville	Rural Hall	Tobaccoville	Walkertown	Winston-Salem	ROCKINGHAM COUNTY	Eden	Madison	Mavodan	Reidsville	Stoneville	Wentworth	STOKES COUNTY	Danbury	King	Walnut Cove	SURRY COUNTY	Dobson	Elkin	Mount Airy	Pilot Mountain	YADKIN COUNTY	Boonville	East Bend	Jonesville	Yadkinville	
Economic Development Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Historic Preservation Plan																																						
Flood Damage Prevention Ordinance	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Zoning Ordinance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Subdivision Ordinance	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unified Development Ordinance	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																					
Post-Disaster Redevelopment																																						
Building Code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fire Code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
National Flood Insurance Program (NFIP)	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NFIP Community Rating System								✓								✓																						

A more detailed discussion on the region’s planning and regulatory capability follows.

### 7.3.2 Emergency Management

Hazard mitigation is widely recognized as one of the four primary phases of emergency management. The three other phases include preparedness, response, and recovery. In reality, each phase is interconnected with hazard mitigation, as **Figure 7.1** suggests. Opportunities to reduce potential losses through mitigation practices are most often implemented before disaster strikes, such as the elevation of flood prone structures or the continuous enforcement of policies that prevent and regulate development that is vulnerable to hazards due to its location, design, or other characteristics. Mitigation opportunities will also be presented during immediate preparedness or response activities, such as installing storm shutters in advance of a hurricane, and certainly during the long-term recovery and redevelopment process following a hazard event.



FIGURE 7.1: THE FOUR PHASES OF EMERGENCY MANAGEMENT



Planning for each phase is a critical part of a comprehensive emergency management program and a key to the successful implementation of hazard mitigation actions. As a result, the Capability Assessment Survey asked several questions across a range of emergency management plans in order to assess the Northern Piedmont Region's willingness to plan and their level of technical planning proficiency.

**Hazard Mitigation Plan:** A hazard mitigation plan represents a community's blueprint for how it intends to reduce the impact of natural and human-caused hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment, and mitigation strategy.

- Each of the seven counties participating in this multi-jurisdictional plan has previously adopted a hazard mitigation plan. Each participating municipality was included in their respective county's plan.

**Disaster Recovery Plan:** A disaster recovery plan serves to guide the physical, social, environmental, and economic recovery and reconstruction process following a disaster. In many instances, hazard mitigation principles and practices are incorporated into local disaster recovery plans with the intent of capitalizing on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.

- None of the counties or municipalities participating in this multi-jurisdictional plan have adopted a disaster recovery plan. They should consider developing a plan to guide the recovery and reconstruction process following a disaster.

**Emergency Operations Plan:** An emergency operations plan outlines responsibilities and the means by which resources are deployed during and following an emergency or disaster.

- Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin Counties each maintain emergency operations plans through their respective Emergency Management Departments. Each participating municipality is included in their respective county's emergency operations plan.

- The Village of Clemmons, City of Winston-Salem, and the Town of Elkin also each maintain a municipal-level emergency operations plan.

**Continuity of Operations Plan:** A continuity of operations plan establishes a chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster event.

- Stokes County Emergency Management and Surry County Emergency Services have each developed a county continuity of operations plan.
- Davie County Health Department and Forsyth County Public Health have also developed continuity of operations plans.

### 7.3.3 General Planning

The implementation of hazard mitigation activities often involves agencies and individuals beyond the emergency management profession. Stakeholders may include local planners, public works officials, economic development specialists, and others. In many instances, concurrent local planning efforts will help to achieve or complement hazard mitigation goals, even though they are not designed as such. Therefore, the Capability Assessment Survey also asked questions regarding general planning capabilities and the degree to which hazard mitigation is integrated into other on-going planning efforts in the Northern Piedmont Region.

**Comprehensive Land Use Plan:** A comprehensive land use plan establishes the overall vision for what a community wants to be and serves as a guide for future governmental decision making. Typically a comprehensive plan contains sections on demographic conditions, land use, transportation elements, and community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can enhance the likelihood of achieving risk reduction goals, objectives, and actions.

- Each of the seven participating counties has adopted a comprehensive land use plan. Several of the county plans cover participating municipalities, including Cooleemee and Bermuda Run in Davie County and all of the municipalities in Forsyth County.
- The following municipalities have each adopted a municipal-level land use plan: Mocksville, Clemmons, Kernersville, Lewisville, Winston-Salem, Eden, Madison, Reidsville, Stoneville, Wentworth, King, Dobson, Elkin, Mount Airy, Pilot Mountain, and Yadkinville.

**Capital Improvements Plan:** A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism for guiding future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments.

- Each of the seven participating counties has a capital improvement plan in place.
- The following municipalities also have a capital improvements plan: Yanceyville, Mocksville, Clemmons, Kernersville, Lewisville, Winston-Salem, Eden, Reidsville, King, Walnut Cove, Elkin, Boonville, and Yadkinville.

**Historic Preservation Plan:** A historic preservation plan is intended to preserve historic structures or districts within a community. An often overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards and the identification of ways to reduce future damages. This may involve retrofitting or relocation techniques that account for the need to protect buildings that do not meet current building standards or are within a historic district that cannot easily be relocated out of harm's way.

- None of the counties or municipalities participating in this multi-jurisdictional plan have a historic preservation plan.

**Zoning Ordinance:** Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety, and welfare of those in a given jurisdiction that maintains zoning authority. A zoning ordinance is the mechanism through which zoning is typically implemented. Since zoning regulations enable municipal governments to limit the type and density of development, a zoning ordinance can serve as a powerful tool when applied in identified hazard areas.

- Each of the seven participating counties has adopted a zoning ordinance. Caswell, Forsyth, and Rockingham Counties include zoning regulations as part of their local unified development ordinance. The remaining counties have adopted stand-alone zoning ordinances.
- All of the participating municipalities have zoning ordinances in place, except East Bend. All of the municipalities in Forsyth County include zoning regulations as part of their local unified development ordinance. The remaining municipalities have adopted stand-alone zoning ordinances.

**Subdivision Ordinance:** A subdivision ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development.

- Each of the seven participating counties has adopted subdivision regulations. Caswell, Forsyth, and Rockingham Counties include subdivision regulations as part of their local unified development ordinance. The remaining counties have adopted stand-alone subdivision ordinances.
- All of the participating municipalities have subdivision regulations in place, except Milton, Stoneville, Boonville, and East Bend. All of the municipalities in Forsyth County include subdivision regulations as part of their local unified development ordinance. The remaining municipalities with subdivision regulations have adopted stand-alone subdivision ordinances.

**Building Codes, Permitting, and Inspections:** Building codes regulate construction standards. In many communities, permits and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of hazard risk faced by a community.

- North Carolina has a state compulsory building code, which applies throughout the state; however, jurisdictions may adopt codes if approved as providing adequate minimum standards. All of the participating counties and municipalities have adopted a building code.
- Many of the counties provide building code enforcement for municipalities under inter-local agreement. These municipalities include, Milton, Yanceyville, Bermuda Run, Cooleemee, Mocksville, Mayodan, Stoneville, Wentworth, Danbury, Dobson, Elkin, Mount Airy, Pilot Mountain, Boonville, East Bend, Jonesville, and Yadkinville.
- Winston-Salem and Forsyth County have a joint city-county planning and development services agency that includes a building inspections division. The Inspections Division administers and enforces the state building code in Forsyth County and Winston-Salem as well as all of the other municipalities in the county except Kernersville.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program developed by the Insurance Services Office, Inc. (ISO).<sup>3</sup> In North Carolina, the North Carolina Department of Insurance assesses the building codes in effect in a particular community and how the community enforces its building codes *with special emphasis on mitigation of losses from natural hazards*. The results of BCEGS assessments are routinely provided to ISO's member private insurance companies, which in turn may offer ratings credits for new buildings constructed in communities with strong BCEGS classifications. The concept is that communities with well-enforced, up-to-date codes should experience fewer disaster-related losses and, as a result, should have lower insurance rates.

In conducting the assessment, ISO collects information related to personnel qualification and continuing education as well as the number of inspections performed per day. This type of information combined with local building codes is used to determine a grade for that jurisdiction. The grades range from 1 to 10 with a BCEGS grade of 1 representing exemplary commitment to building code enforcement and a grade of 10 indicating less than minimum recognized protection.

### 7.3.4 Floodplain Management

Flooding represents the greatest natural hazard facing the nation. At the same time, the tools available to reduce the impacts associated with flooding are among the most developed when compared to other hazard-specific mitigation techniques. In addition to approaches that cut across hazards such as education, outreach, and the training of local officials, the *National Flood Insurance Program (NFIP)* contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments; however, program participation is strongly encouraged by FEMA as a first step for implementing and sustaining an effective hazard mitigation program. It is therefore used as part of this assessment as a key indicator for measuring local capability.

In order for a county or municipality to participate in the NFIP, they must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing

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<sup>3</sup> Participation in BCEGS is voluntary and may be declined by local governments if they do not wish to have their local building codes evaluated.

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buildings will be protected from damage by a 100-year flood event and that new development in the floodplain will not exacerbate existing flood problems or increase damage to other properties.

A key service provided by the NFIP is the mapping of identified flood hazard areas. Once completed, the Flood Insurance Rate Maps (FIRMs) are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community.

**Table 7.2** provides NFIP policy and claim information for each participating jurisdiction in the Northern Piedmont Region.

**TABLE 7.2: NFIP POLICY AND CLAIM INFORMATION**

Jurisdiction	Date Joined NFIP	Current Effective Map Date	NFIP Policies in Force	Insurance in Force	Closed Claims	Total Payments to Date
<b>CASWELL COUNTY†</b>	09/28/07	11/17/17	4	\$938,000	0	\$0
Milton*	--	--	--	--	--	--
Yanceyville	09/28/07	09/28/07	0	\$0	0	\$0
<b>DAVIE COUNTY†</b>	03/21/80	06/16/09	56	\$14,277,500	4	\$27,597
Bermuda Run	01/22/09	06/16/09	18	\$5,129,100	0	\$0
Cooleemee	10/01/10	06/16/09	0	\$0	0	\$0
Mocksville	09/17/08	06/16/09	2	\$490,000	0	\$0
<b>FORSYTH COUNTY†</b>	09/01/72	08/18/09	153	\$40,007,100	57	\$606,843
Bethania	04/24/02	08/18/09	0	\$0	0	\$0
Clemmons	06/27/00	08/18/09	26	\$6,478,900	1	\$27,364
Kernersville	06/27/00	08/18/09	37	\$10,180,500	2	\$44,080
Lewisville	09/28/09	08/18/09	15	\$4,192,000	1	\$351
Rural Hall	04/25/02	08/18/09	2	\$455,000	0	\$0
Tobaccoville	08/13/02	08/18/09	1	\$350,000	0	\$0
Walkertown	09/24/02	08/18/09	3	\$448,000	0	\$0
Winston-Salem	08/31/73	08/18/09	533	\$122,374,400	189	\$2,189,420
<b>ROCKINGHAM COUNTY†</b>	05/15/91	01/02/09	23	\$5,365,600	8	\$73,434
Eden	01/05/78	01/02/09	27	\$4,417,900	38	\$311,615
Madison	11/16/77	01/02/09	12	\$2,454,100	13	\$100,065

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<b>Jurisdiction</b>	<b>Date Joined NFIP</b>	<b>Current Effective Map Date</b>	<b>NFIP Policies in Force</b>	<b>Insurance in Force</b>	<b>Closed Claims</b>	<b>Total Payments to Date</b>
Mayodan	07/18/77	01/02/09	3	\$826,100	8	\$295,063
Reidsville	09/29/78	09/28/07	25	\$5,196,600	3	\$10,487
Stoneville	07/03/07	01/02/09	0	\$0	0	\$0
Wentworth	10/01/10	01/02/09	2	\$490,000	0	\$0
<b>STOKES COUNTY†</b>	09/30/88	08/18/09	14	\$3,264,700	8	\$185,099
Danbury	07/16/87	08/18/09	0	\$0	1	\$3,828
King	07/04/89	08/18/09	12	\$1,588,200	0	\$0
Walnut Cove	06/03/86	08/18/09	2	\$405,000	1	\$6,669
<b>SURRY COUNTY†</b>	12/01/81	11/18/16	20	\$7,395,100	17	\$355,747
Dobson*	--	--	--	--	--	--
Elkin	08/15/78	12/03/09	--	--	1	\$3,582
Mount Airy	12/01/81	11/18/16	33	\$9,786,600	39	\$1,047,033
Pilot Mountain	04/10/19	08/18/09	--	--	--	--
<b>YADKIN COUNTY†</b>	06/22/05	08/18/09	7	\$1,772,700	1	\$2,110
Boonville*	--	--	--	--	--	--
East Bend*	--	--	--	--	--	--
Jonesville	07/01/87	08/18/09	3	\$931,500	0	\$0
Yadkinville	01/07/11	08/18/09	0	\$0	0	\$0

†Includes unincorporated areas of county only

\*Community does not participate in the NFIP

Source: NFIP Community Status information as of 10/3/2019; NFIP claims and policy information as of 04/30/2019

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing a number of strategies. For example, the jurisdictions will coordinate with NCEM and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

The Towns of Dobson, Pilot Mountain, Boonville, and East Bend do not participate in the NFIP because they have no land area (or a very small amount of land area) currently located within the floodplain.

The Town of Milton does not participate in the NFIP due to lack of available funding and political support.

**Community Rating System:** An additional indicator of floodplain management capability is the active participation of local jurisdictions in the Community Rating System (CRS). The CRS is an incentive-based program that encourages counties and municipalities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP by adding extra local measures to provide protection from flooding. All of the 18 creditable CRS mitigation activities are assigned a range of point values. As points are accumulated and reach identified thresholds, communities can apply for an improved CRS class rating. Class ratings, which range from 10 to 1, are tied to flood insurance premium reductions as shown in **Table 7.3**. As class rating improves (the lower the number the better), the percent reduction in flood insurance premiums for NFIP policyholders in that community increases.

**TABLE 7.3: CRS PREMIUM DISCOUNTS, BY CLASS**

CRS Class	Premium Reduction
1	45%
2	40%
3	35%
4	30%
5	25%
6	20%
7	15%
8	10%
9	5%
10	0

Source: FEMA

Community participation in the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10. The CRS application process has been greatly simplified over the past several years based on community comments. Changes were made with the intent to make the CRS more user-friendly and make extensive technical assistance available for communities who request it.

- Forsyth County (Class 8) and the City of Winston-Salem (Class 8) are the only two jurisdictions that currently participate in the CRS. Participation in the CRS program should be considered as a mitigation action by the other counties and municipalities. The program would be most beneficial to Davie County, the Town of Kernersville, and the City of Mount Airy, which have 56, 37, and 33 NFIP policies, respectively.

**Flood Damage Prevention Ordinance:** A flood damage prevention ordinance establishes minimum building standards in the floodplain with the intent to minimize public and private losses due to flood conditions.

- All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. All counties and municipalities participating in this hazard mitigation plan, with the

exception of Milton, Dobson, Elkin, Pilot Mountain, Boonville, and East Bend, also participate in the NFIP and they all have adopted flood damage prevention regulations.

**Floodplain Management Plan:** A floodplain management plan (or a flood mitigation plan) provides a framework for action regarding corrective and preventative measures to reduce flood-related impacts.

- None of the counties or municipalities participating in this multi-jurisdictional plan have adopted floodplain management plans.

**Open Space Management Plan:** An open space management plan is designed to preserve, protect, and restore largely undeveloped lands in their natural state and to expand or connect areas in the public domain such as parks, greenways, and other outdoor recreation areas. In many instances, open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state in perpetuity.

- Each of the participating counties has participated in the development of the Piedmont Triad Regional Open Space Strategy which identifies a wide variety of key conservation opportunities across the region as well as a strategy meant to serve as the foundation for future conservation planning efforts within each county.
- Several counties and municipalities have developed jurisdiction-level parks, recreation, open space, and/or greenway master plans, including Davie County, Mocksville, Forsyth County, Kernersville, Lewisville, Winston-Salem, Rockingham County, Madison, Mayodan, Reidsville, Stokes County, King, Walnut Cove, Surry County, Dobson, Elkin, Mount Airy, and Yadkin County.

**Stormwater Management Plan:** A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of more frequently occurring minor urban flooding.

- Although none of the participating counties or municipalities have stormwater management plans in place, the following jurisdictions have adopted stormwater management regulations through local unified development or stormwater ordinances: Forsyth County, Bethania, Clemmons, Kernersville, Lewisville, Rural Hall, Tobaccoville, Walkertown, Winston-Salem, Eden, and Reidsville.
- Many of the other participating jurisdictions have adopted stormwater regulations through various local ordinances (such as a zoning or subdivision ordinance), including Caswell County, Davie County, Bermuda Run, Cooleemee, Mocksville, Rockingham County, Madison, Stokes County, Danbury, King, Walnut Cove, Dobson, Pilot Mountain, Yadkin County, Jonesville, and Yadkinville.

### 7.3.5 Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of



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intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can generally be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using Geographic Information Systems (GIS) to analyze and assess community hazard vulnerability. The Capability Assessment Survey was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

**Table 7.4** provides a summary of the capability assessment results for the Northern Piedmont Region with regard to relevant staff and personnel resources. A checkmark (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill.

**TABLE 7.4: RELEVANT STAFF / PERSONNEL RESOURCES**

Staff / Personnel Resource	CASWELL COUNTY	Milton	Yanceville	DAVIE COUNTY	Bermuda Run	Cooleemee	MCKEITHEN COUNTY	Bethania	Clemmons	Kernersville	Lewisville	Rural Hall	Tobaccoville	Walkertown	Winston-Salem	ROCKINGHAM COUNTY	Eden	Madison	Moravian	Reidsville	Stoneville	Wentworth	STOKES COUNTY	Danbury	King	Walnut Cove	SURRY COUNTY	Dobson	Elkin	Mount Airy	Pilot Mountain	YADKIN COUNTY	Boonville	East Bend	Jonesville	Yadkinville			
Planners with knowledge of land development / land management practices	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓				✓			✓	✓	✓									
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Planners or engineers with an understanding of natural and/or human-caused hazards	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Emergency Manager	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Floodplain Manager	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					✓		✓	✓	
Land Surveyors									✓	✓					✓																								
Scientists familiar with the hazards of the community	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Staff with education or expertise to assess the community's vulnerability to hazards	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Personnel skilled in GIS and/or Hazus	✓			✓			✓	✓	✓	✓	✓	✓		✓	✓			✓	✓			✓			✓		✓	✓		✓									
Resource development staff or grant writers								✓			✓			✓																									

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community’s vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan’s planning committee.

### 7.3.6 Fiscal Capability

The ability of a local government to take action is often closely associated with the amount of money available to implement policies and projects. This may take the form of outside grant funding awards or locally-based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project, such as the acquisition of flood-prone homes, which can require a substantial commitment from local, state, and federal funding sources.

The Capability Assessment Survey was used to capture information on the region’s fiscal capability through the identification of locally available financial resources.

**Table 7.5** provides a summary of the results for the Northern Piedmont Region with regard to relevant fiscal resources. A checkmark (✓) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds) according to the previous county hazard mitigation plans.

**TABLE 7.5: RELEVANT FISCAL RESOURCES**

Fiscal Tool / Resource	CASWELL COUNTY	Milton	Yanceville	DAVIE COUNTY	Bermuda Run	Cooleemee	MOCKSVILLE	FORSYTH COUNTY	Bethania	Clemmons	Kernersville	Lewisville	Rural Hall	Tobaccoville	Walkertown	Winston-Salem	ROCKINGHAM COUNTY	Eden	Madison	Mavodan	Reidsville	Stoneville	Wentworth	STOKES COUNTY	Danbury	King	Walnut Cove	SURRY COUNTY	Dobson	Elkin	Mount Airy	Pilot Mountain	YADKIN COUNTY	Boonville	East Bend	Jonesville	Yadkinville	
Capital Improvement Programming	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community Development Block Grants (CDBG)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Special Purpose Taxes (or taxing districts)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gas / Electric Utility Fees																																						
Water / Sewer Fees																✓																						
Stormwater Utility Fees									✓	✓						✓																						
Development Impact Fees																																						

Fiscal Tool / Resource	CASWELL COUNTY	Milton	Yanceyville	DAVIE COUNTY	Bermuda Run	Cooleseemee	Mocksville	FORSYTH COUNTY	Bethania	Clemmons	Kernersville	Lewisville	Rural Hall	Tobaccoville	Walkertown	Winston-Salem	ROCKINGHAM COUNTY	Eden	Madison	Mavodan	Reidsville	Stoneville	Wentworth	STOKES COUNTY	Danbury	King	Walnut Cove	SURRY COUNTY	Dobson	Elkin	Mount Airy	Pilot Mountain	YADKIN COUNTY	Boonville	East Bend	Jonesville	Yadkinville				
General Obligation, Revenue, and/or Special Tax Bonds																																									
Partnering Arrangements or Intergovernmental Agreements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other: PDM, FMAP, HMGP, PA, SBA, other state, local, and non-governmental funding sources, etc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### 7.3.7 Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of future hazard events. Hazard mitigation may not be a local priority or may conflict with or be seen as an impediment to other goals of the community, such as growth and economic development. Therefore, the local political climate must be considered in designing mitigation strategies as it could be the most difficult hurdle to overcome in accomplishing their adoption and implementation.

The Capability Assessment Survey was used to capture information on political capability of the Northern Piedmont Region. For the development of this regional plan in 2014, the previous county-level hazard mitigation plans were reviewed for general examples of local political capability, such as guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum state or federal requirements (i.e., building codes, floodplain management, etc.).

- Caswell County and its municipalities have experienced the devastating effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county and towns are committed to implementing a hazard mitigation plan in order to reduce community vulnerability. The Caswell County Board of Commissioners, Milton Town Council, Yanceyville Town Council, the professional staff, and the citizens of the county are continually striving to make Caswell County a safer community in which to live, work, and play. The county recognizes that implementation of a hazard mitigation plan is an essential component in helping to achieve these goals.
- Davie County has experienced the devastating effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county are committed to implementing a hazard mitigation plan in order to reduce community vulnerability. The Davie County Board of Commissioners, the professional staff, and the citizens of the county are continually striving to make Davie County a safer community in which to live,

work, and play. The county recognizes that implementation of a hazard mitigation plan is an essential component in helping to achieve these goals.

- Forsyth County has experienced the devastating effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county are committed to implementing a hazard mitigation plan in order to reduce community vulnerability and impact. The Forsyth County Board of Commissioners, the professional staff, and the citizens of the county are continually striving to make Forsyth County a safer community in which to live, work, and play. The county recognizes that implementation of a hazard mitigation plan is an essential component in helping to achieve these goals.
- Rockingham County has experienced the devastating effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county are committed to implementing a hazard mitigation plan in order to reduce community vulnerability. The Rockingham County Board of Commissioners, the professional staff, and the citizens of the county are continually striving to make Rockingham County a safer community in which to live, work, and play. The county recognizes that implementation of a hazard mitigation plan is an essential component in helping to achieve these goals.
- Stokes County has experienced the effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county are committed to implementing a hazard mitigation plan in order to reduce community vulnerability. The Stokes County Board of Commissioners, the City/Town Councils/Boards, the professional staff, and the citizens of the county are continually striving to make Stokes County a safer community in which to live, work, and play. The county and municipalities recognize that implementation of a hazard mitigation plan is an essential component in helping to achieve these goals.
- Surry County and the four municipalities are separated into five distinctive political jurisdictions. Each operates under the manager-board of commissioners' form of government. In regards to carrying out the goals dealing with mitigating hazards identified within this plan, it is the consensus of governing body to work collectively for the greater good of Surry County as a whole. This is evident with the joint cooperation on developing and adopting the previous hazard mitigation plan.
- Yadkin County has experienced the devastating effects of natural hazards (i.e., recent hurricanes and ice storms). The citizens, property owners, business owners, and elected officials of the county are committed to implementing a hazard mitigation plan in order to reduce community vulnerability. The Yadkin County Board of Commissioners, the professional staff, and the citizens of the county are continually striving to make Yadkin County a safer community in which to live, work, and play. The county recognizes that implementation of hazard mitigation plan is an essential component in helping to achieve these goals.

## 7.4 CONCLUSIONS ON LOCAL CAPABILITY

In order to form meaningful conclusions on the assessment of local capability, a quantitative scoring methodology was designed and applied to results of the Capability Assessment Survey. This methodology, further described in Appendix B, attempts to assess the overall level of capability of the Northern Piedmont Region to implement hazard mitigation actions.

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The overall capability to implement hazard mitigation actions varies among the participating jurisdictions. For planning and regulatory capability, the majority of the jurisdictions are in the limited to moderate range. There is also variation in the administrative and technical capability among the jurisdictions with larger jurisdictions generally having greater staff and technical resources. Almost all of jurisdictions are in the limited range for fiscal capability.

**Table 7.6** shows the results of the capability assessment using the designed scoring methodology. The capability score is based solely on the information found in existing hazard mitigation plans and readily available on the jurisdictions’ government websites. According to the assessment, the average local capability score for all jurisdictions is 31.0, which falls into the moderate capability ranking.

**TABLE 7.6: CAPABILITY ASSESSMENT RESULTS**

Jurisdiction	Overall Capability Score	Overall Capability Rating
<b>CASWELL COUNTY</b>	40	High
Milton	16	Limited
Yanceyville	25	Moderate
<b>DAVIE COUNTY</b>	41	High
Bermuda Run	27	Moderate
Cooleemee	25	Moderate
Mocksville	31	Moderate
<b>FORSYTH COUNTY</b>	47	High
Bethania	28	Moderate
Clemmons	38	Moderate
Kernersville	40	High
Lewsville	34	Moderate
Rural Hall	28	Moderate
Tobaccoville	28	Moderate
Walkertown	29	Moderate
Winston-Salem	47	High
<b>ROCKINGHAM COUNTY</b>	40	High
Eden	35	Moderate
Madison	31	Moderate

Jurisdiction	Overall Capability Score	Overall Capability Rating
Mayodan	26	Moderate
Reidsville	37	Moderate
Stoneville	26	Moderate
Wentworth	26	Moderate
<b>STOKES COUNTY</b>	41	High
Danbury	23	Moderate
King	35	Moderate
Walnut Cove	26	Moderate
<b>SURRY COUNTY</b>	41	High
Dobson	23	Moderate
Elkin	32	Moderate
Mount Airy	33	Moderate
Pilot Mountain	21	Moderate
<b>YADKIN COUNTY</b>	39	Moderate
Boonville	18	Limited
East Bend	16	Limited
Jonesville	25	Moderate
Yadkinville	29	Moderate

As previously discussed, one of the reasons for conducting a Capability Assessment is to examine local capabilities to detect any existing gaps or weaknesses within ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. These gaps or weaknesses have been identified for each jurisdiction in the tables found throughout this section. The participating jurisdictions used the Capability Assessment as part of the basis for the Mitigation Actions that are identified in Section 9; therefore, each jurisdiction addresses their ability to expand on and improve their existing capabilities through the identification of their Mitigation Actions.

### **7.4.1 Linking the Capability Assessment with the Risk Assessment and the Mitigation Strategy**

The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the regional planning committee considered not only each jurisdiction's level of hazard risk, but also their existing capability to minimize or eliminate that risk.

# SECTION 8

## MITIGATION STRATEGY

This section of the Plan provides the blueprint for the participating jurisdictions in the Northern Piedmont Region to follow in order to become less vulnerable to its identified hazards. It is based on general consensus of the Northern Piedmont Regional Hazard Mitigation Planning Team and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

- 8.1 Introduction
- 8.2 Mitigation Goals
- 8.3 Identification and Analysis of Mitigation Techniques
- 8.4 Selection of Mitigation Techniques for the Northern Piedmont Region
- 8.5 Plan Update Requirement

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### 8.1 INTRODUCTION

The intent of the Mitigation Strategy is to provide the communities in the Northern Piedmont Region with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- In being *functional*, each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific mitigation actions. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation



measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for the Northern Piedmont Region (provided separately in Section 9: *Mitigation Action Plan*). Each county and participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is considered to be the most essential outcome of the mitigation planning process.

The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for the Northern Piedmont counties and their municipal jurisdictions to complete. Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Regional Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for the Northern Piedmont Region, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

### 8.1.1 Mitigation Action Prioritization

In the previous versions of the participating jurisdictions' hazard mitigation plans, not all actions were prioritized. In addition, there needed to be consistency among the counties and jurisdiction regarding how they prioritized their actions. Therefore, for the 2014 Northern Piedmont Regional Plan, the Regional Hazard Mitigation Planning Team members were tasked with establishing a priority for each action at the second Regional Hazard Mitigation Planning Team meeting. Prioritization of the proposed mitigation actions was based on the following six factors:

- Effect on overall risk to life and property
- Ease of implementation
- Political and community support
- A general economic cost/benefit review<sup>1</sup>

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<sup>1</sup> Only a general economic cost/benefit review was considered by the Regional Hazard Mitigation Planning Committee through the process of selecting and prioritizing mitigation actions. Mitigation actions with "high" priority were determined to be the most cost effective and most compatible with the participating jurisdictions' unique needs. Actions with a "moderate" priority were determined to be cost-effective and compatible with jurisdictional needs, but may be more challenging to complete administratively or fiscally than "high" priority actions. Actions with a "low" priority were determined to be important community needs, but the community likely identified several potential challenges in terms of

## SECTION 8: MITIGATION STRATEGY

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- Funding availability
- Continued compliance with the NFIP

The point of contact for each county helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the six factors listed above.

Using these criteria, actions were classified as high, moderate, or low priority by the participating jurisdiction officials.

### 8.2 MITIGATION GOALS

#### 44 CFR Requirement

**44 CFR Part 201.6(c)(3)(i):** The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The primary goal of all local governments is to promote the public health, safety, and welfare of its citizens. In keeping with this standard, Northern Piedmont counties and the participating municipalities have developed seven goal statements for local hazard mitigation planning in the region. In developing these goals, the previous seven county hazard mitigation plans were reviewed to determine areas of consistency. The project consultant reviewed the goals from each of the seven existing plans that were combined to form this regional plan. Many of the goals were similar and regional goals were formulated based on commonalities found between the goals in each plan.

During the development of the initial regional plan for the region, the proposed regional goals were presented, reviewed, voted on, and accepted by the Planning Team at the second Regional Hazard Mitigation Planning Team meeting. This process of combining goals from the previous plans served to highlight the planning process that had occurred in each county prior to joining this regional planning effort. Each goal, purposefully broad in nature, serves to establish parameters that were used in developing more mitigation actions. The Northern Piedmont Regional Mitigation Goals are presented in **Table 8.1**. Consistent implementation of actions over time will ensure that community goals are achieved.

As part of the development of the 2020 update of this plan, the goals found in Table 8.1 were reviewed and discussed at the 5/30/19 meeting of the Regional Hazard Mitigation Planning Committee. It was determined that the goals are still applicable for the region.

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implementation (e.g. lack of funding, technical obstacles). A more detailed cost/benefit analysis will be applied to particular projects prior to the application for or obligation of funding, as appropriate.

**TABLE 8.1: NORTHERN PIEDMONT REGIONAL MITIGATION GOALS**

Goal	
Goal #1	Protect the public health, safety, and welfare by increasing public awareness of hazards and by encouraging collective and individual responsibility for mitigating hazard risks.
Goal #2	Improve technical capability to respond to hazards and to improve the effectiveness of hazard mitigation actions.
Goal #3	Enhance existing or create new policies and ordinances that will help reduce the damaging effects of natural hazards.
Goal #4	Protect the most vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.
Goal #5	Decrease the community's vulnerability to future hazard events.
Goal #6	Increase the community's resiliency so that recovery can be quicker and less costly.
Goal #7	Reduce hazard risks to citizens' lives and property.

## 8.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

### 44 CFR Requirement

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

In formulating the Mitigation Strategy for the Northern Piedmont Region, a wide range of activities were considered in order to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. These activities were discussed during the Northern Piedmont Regional Hazard Mitigation Planning Team meetings. In general, all activities considered by the Regional Hazard Mitigation Planning Team can be classified under one of the following six broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

### 8.1.2 Prevention

Preventative activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Riverine / fault zone setbacks

### 8.1.3 Property Protection

Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., windproofing, floodproofing, seismic design techniques, etc.)

- Safe rooms, shutters, shatter-resistant glass
- Insurance

#### 8.1.4 Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- Floodplain protection
- Watershed management
- Riparian buffers
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

#### 8.1.5 Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams / levees / dikes / floodwalls
- Diversions / detention / retention
- Channel modification
- Storm sewers

#### 8.1.6 Emergency Services

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

### 8.1.7 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series / demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children educational programs
- Hazard expositions

## 8.4 SELECTION OF MITIGATION TECHNIQUES FOR THE NORTHERN PIEDMONT REGION

In order to determine the most appropriate mitigation techniques for the communities in the Northern Piedmont Region, the Regional Hazard Mitigation Planning Team members thoroughly reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary).

## 8.5 PLAN UPDATE REQUIREMENT

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous regional plan were evaluated to determine their 2020 implementation status. Updates on the implementation status of each action are provided. Any changes to the relative priority of the actions are noted as well. The mitigation actions provided in Section 9: Mitigation Action Plan include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the 2020 planning process. Actions identified as completed in the 2014 version of the plan have been moved to Appendix E.

# SECTION 9

## MITIGATION ACTION PLAN

This section includes the listing of the mitigation actions proposed by the participating jurisdictions in the Northern Piedmont Region. It consists of the following two subsections:

- 9.1 Overview
- 9.2 Mitigation Action Plans

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### 44 CFR Requirement

**44 CFR Part 201.6(c)(3)(iii):** The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.

## 9.1 OVERVIEW

As described in the previous section, the Mitigation Action Plan, or MAP, provides a functional plan of action for each jurisdiction. It is designed to achieve the mitigation goals established in Section 8: *Mitigation Strategy* and will be maintained on a regular basis according to the plan maintenance procedures established in Section 10: *Plan Maintenance*.

Each proposed mitigation action has been identified as an effective measure (policy or project) to reduce hazard risk for the Northern Piedmont Region. Each action is listed in the MAP in conjunction with background information such as hazard(s) addressed, relative priority, and estimated cost. Other information provided in the MAP includes potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding). Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out as well as a timeframe for its completion. These implementation mechanisms ensure that the Northern Piedmont Regional Hazard Mitigation Plan remains a functional document that can be monitored for progress over time. The proposed actions are not listed in priority order, though each has been assigned a priority level of “high,” “moderate,” or “low” as described below and in Section 8 (page 8.2).

The Mitigation Action Plan is organized by mitigation strategy category (Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, or Public Education and Awareness). The following are the key elements described in the Mitigation Action Plan:

- Hazard(s) Addressed—Hazard which the action addresses.
- Relative Priority—High, moderate, or low priority as assigned by the jurisdiction.
- Lead Agency/Department—Department responsible for undertaking the action.

**SECTION 9: MITIGATION ACTION PLAN**

- Potential Funding Sources—Local, State, or Federal sources of funds are noted here, where applicable.
- Implementation Schedule—Date by which the action the action should be completed. More information is provided when possible.
- Implementation Status (2020)—Indication of completion, progress, deferment, or no change since the previous plan. If the action is new, that will be noted here.

**9.2 MITIGATION ACTION PLANS**

The mitigation actions proposed by each of the participating jurisdictions are listed in 37 individual MAPs on the following pages. **Table 9.1** shows the location of each jurisdiction’s MAP within this section as well as the number of mitigation actions proposed by each jurisdiction.

**TABLE 9.1: INDIVIDUAL MAP LOCATIONS**

Location	Page	Number of Mitigation Actions
<b>Caswell County</b>	<b>9:4</b>	<b>15</b>
Milton	9:9	15
Yanceyville	9:14	14
<b>Davie County</b>	<b>9:19</b>	<b>13</b>
Bermuda Run	9:25	13
Cooleemee	9:32	13
Mocksville	9:39	13
<b>Forsyth County</b>	<b>9:45</b>	<b>9</b>
Bethania	9:50	8
Clemmons	9:54	7
Kernersville	9:58	8
Lewisville	9:62	8
Rural Hall	9:66	7
Tobaccoville	9:69	8
Walkertown	9:73	8
Winston-Salem	9:77	9
<b>Rockingham County</b>	<b>9:82</b>	<b>8</b>
Eden	9:86	8
Madison	9:90	8
Mayodan	9:94	8
Reidsville	9:98	8
Stoneville	9:102	8
Wentworth	9:107	8
<b>Stokes County</b>	<b>9:111</b>	<b>7</b>
Danbury	9:113	7
King	9:115	7
Walnut Cove	9:117	7
<b>Surry County</b>	<b>9:119</b>	<b>42</b>



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<b>Location</b>	<b>Page</b>	<b>Number of Mitigation Actions</b>
Dobson	9:128	40
Elkin	9:137	29
Mount Airy	9:142	42
Pilot Mountain	9:150	40
<b>Yadkin County</b>	<b>9:159</b>	<b>12</b>
Boonville	9:164	12
East Bend	9:168	12
Jonesville	9:172	12
Yadkinville	9:176	12

**SECTION 9: MITIGATION ACTION PLAN**

**Caswell County Mitigation Action Plan**

Action	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well.
P-2	The Towns of Milton and Yanceyville will adopt Resolutions to participate in the NFIP and request that an Inter-Local Agreement be reached with the County to provide Administrative Services over this program	All	High	Town Manager Milton, Town Manager of Yanceyville	Local	2025	The Town of Yanceyville is now a participant in the NFIP. The Town of Milton will continue to evaluate the feasibility of joining the NFIP.
P-3	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Caswell County Planning and Zoning	Local	2025	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Subdivision Ordinance, but additional integration would be beneficial.
P-5	Update the Watershed Ordinance by reviewing and incorporating hazard mitigation objectives	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Watershed Ordinance, but additional integration would be beneficial.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented inspections of flood damaged structures in the past utilizing the method outlined. This action will continue to be implemented going forward as required when flooding damages structures. When this occurs, the policy will be re-evaluated to determine if changes are necessary.
P-8	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Caswell County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place.
P-10	Create layers of GIS data to maintain accurate and up to date information about critical facilities, hazard event history, Flood Plains, etc.	All	High	Caswell County Planning and Zoning, Caswell County GIS	Local	2025	GIS layers have been created for critical facilities and to delineate floodplains. These layers will need to be updated in the future as new information becomes available.
<b>Property Protection</b>							
PP-1	Develop a formal process for identifying potential hazard mitigation issues as a result of new development	All	Moderate	Caswell County Planning and Zoning	Local	2025	The county has identified potential hazard issues that have resulted from new development but there is not a formal process for identifying mitigation opportunities so this will need to be developed.
PP-2	Develop a Redevelopment Plan for Severe Repetitive Loss areas within the County and Towns.	All	Low	Caswell County Planning and Zoning	Local	2025	The county has not developed a Redevelopment Plan for SRL areas. This will need to be completed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Caswell County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Caswell County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued.
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Caswell County public library system.	All	High	Caswell County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Ensure that the Planning Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Caswell County Manger, Caswell County Planning and Zoning	Local	2025, Annual site visits	The Caswell County Planning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Milton Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well.
P-2	The Towns of Milton and Yanceyville will adopt Resolutions to participate in the NFIP and request that an Inter-Local Agreement be reached with the County to provide Administrative Services over this program	Flooding	High	Town Manager Milton, Town Manager of Yanceyville	Local	2025	The Town of Milton will evaluate joining the NFIP.
P-3	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Caswell County Planning and Zoning	Local	2025	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Subdivision Ordinance, but additional integration would be beneficial.
P-5	Update the Watershed Ordinance by reviewing and incorporating hazard mitigation objectives	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Watershed Ordinance, but additional integration would be beneficial.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented inspections of flood damaged structures in the past utilizing the method outlined. This action will continue to be implemented going forward as required when flooding damages structures. When this occurs, the policy will be re-evaluated to determine if changes are necessary.
P-8	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.



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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Caswell County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place.
P-10	Create layers of GIS data to maintain accurate and up to date information about critical facilities, hazard event history, Flood Plains, etc.	All	High	Caswell County Planning and Zoning, Caswell County GIS	Local	2025	GIS layers have been created for critical facilities and to delineate floodplains. These layers will need to be updated in the future as new information becomes available.
<b>Property Protection</b>							
PP-1	Develop a formal process for identifying potential hazard mitigation issues as a result of new development	All	Moderate	Caswell County Planning and Zoning	Local	2025	The county has identified potential hazard issues that have resulted from new development but there is not a formal process for identifying mitigation opportunities so this will need to be developed.
PP-2	Develop a Redevelopment Plan for Severe Repetitive Loss areas within the County and Towns.	All	Low	Caswell County Planning and Zoning	Local	2025	The county has not developed a Redevelopment Plan for SRL areas. This will need to be completed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Caswell County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Caswell County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued.
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Caswell County public library system.	All	High	Caswell County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	The Caswell County Planning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Caswell County Manger, Caswell County Planning and Zoning	Local	2025, Annual site visits	The Caswell County Planning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Yanceyville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well.
P-3	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Caswell County Planning and Zoning	Local	2025	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Subdivision Ordinance, but additional integration would be beneficial.
P-5	Update the Watershed Ordinance by reviewing and incorporating hazard mitigation objectives	All	Moderate	Caswell County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Watershed Ordinance, but additional integration would be beneficial.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented inspections of flood damaged structures in the past utilizing the method outlined. This action will continue to be implemented going forward as required when flooding damages structures. When this occurs, the policy will be re-evaluated to determine if changes are necessary.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Caswell County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Caswell County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place.
P-10	Create layers of GIS data to maintain accurate and up to date information about critical facilities, hazard event history, Flood Plains, etc.	All	High	Caswell County Planning and Zoning, Caswell County GIS	Local	2025	GIS layers have been created for critical facilities and to delineate floodplains. These layers will need to be updated in the future as new information becomes available.
<b>Property Protection</b>							
PP-1	Develop a formal process for identifying potential hazard mitigation issues as a result of new development	All	Moderate	Caswell County Planning and Zoning	Local	2025	The county has identified potential hazard issues that have resulted from new development but there is not a formal process for identifying mitigation opportunities so this will need to be developed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-2	Develop a Redevelopment Plan for Severe Repetitive Loss areas within the County and Towns.	All	Low	Caswell County Planning and Zoning	Local	2025	The county has not developed a Redevelopment Plan for SRL areas. This will need to be completed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Caswell County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Caswell County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued.
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Caswell County public library system.	All	High	Caswell County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	The Caswell County Planning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Caswell County Manger, Caswell County Planning and Zoning	Local	2025, Annual site visits	The Caswell County Planning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.



**SECTION 9: MITIGATION ACTION PLAN**

**Davie County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Davie County Planning and Zoning	Local	Completed	Davie County updates the land use plan as needed and includes hazard mitigation strategies as a routine part of this process. This action will be removed from the plan during the 2025 update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Davie County Planning and Zoning	Local	Completed	Through the planning and zoning process Davie County ensures that there is a low impact from structures that may be in the 100 year flood plain by denying or restricting structures in these areas. This action will be removed from the plan during the 2025 update.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Davie County Planning and Zoning	Local	Completed	Hazard mitigation is a high priority and strategies have been integrated and enforced through local ordinances. This action will be removed from the plan during the 2025 update.
P-5	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Davie County Planning and Zoning	Local	Completed	Davie County has continued to encourage cluster development. This action will be removed from the plan during the 2025 update.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	Revise and update the regulatory floodplain maps.	Flooding	High	Davie County Planning and Zoning	Federal, State	Completed	Davie County Floodplain maps are updated regularly by the State/FEMA. This action will be removed from the plan during the 2025 update.
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property.</p> <p>Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Davie County Building Inspections	Local	Action to be deleted at next update.	This is the process that Davie County uses to inspect flood damaged structures. This is not a mitigation action and will be removed during the 2025 plan update.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Davie County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. As of 2019, the previous actions are still utilized. Additional notifications are made through the Everbridge program and on the County webpage.
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Davie County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place. As of 2019, the digital mapping is up to date and available to the public.
<b>Property Protection</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Davie County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised. As of 2019, the current list of repetitive loss properties is updated as needed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Davie County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward. As of 2019, the County utilizes Everbridge, local media resources and the County website to provide this information.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Davie County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued. Additional generators and transfer switches have been added to facilities since 2014.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Davie County public library system.	All	High	Davie County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored. As of 2019, Davie County continues to follow this process.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Ensure that the Development Services Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Davie County Development Services Director, Davie County Planning and Zoning	Local	2025, Annually	The Davie County Development Services Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department. As of 2019, Davie County continues to follow this process.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Bermuda Run Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	Completed	Davie County updates the land use plan as needed and includes hazard mitigation strategies as a routine part of this process. This action will be removed from the plan during the 2025 update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	2025	Through the planning and zoning process, Davie County ensures that there is a low impact from structures that may be in the 100-year floodplain by denying or restricting structures in these areas.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	2025	Hazard mitigation is a high priority and strategies have been integrated and enforced through local ordinances.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	2025	Although clustering of development is allowed through the watershed protection chapter of the land usage article, the county will work to further encourage cluster development in the future. As of 2019 Davie County has continued to encourage cluster development.
P-6	Revise and update the regulatory floodplain maps.	Flooding	High	Bermuda Run, Davie County Planning and Zoning	Federal, State	2025	Davie County Floodplain maps are updated regularly by the State/FEMA. This action will be removed from the plan during the 2025 update.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Bermuda Run, Davie County Building Inspections	Local	Action to be deleted during the 2025 update.	This is the process that Davie County uses to inspect flood damaged structures. This is not a mitigation action and will be removed during the 2025 plan update.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Bermuda Run, Davie County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. As of 2019 the previous actions are still utilized. Additional notifications are made through the Everbridge program and on the County webpage.
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Bermuda Run, Davie County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place. As of 2019, the digital mapping is up to date and available to the public.

**SECTION 9: MITIGATION ACTION PLAN**

<b>Property Protection</b>							
<b>Action #</b>	<b>Description</b>	<b>Hazard(s) Addressed</b>	<b>Relative Priority</b>	<b>Lead Agency/ Department</b>	<b>Potential Funding Sources</b>	<b>Implementation Schedule</b>	<b>Implementation Status (2020)</b>
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised. As of 2019 the current list of repetitive loss properties is updated as needed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Bermuda Run, Davie County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward. As of 2019, the County uses Everbridge, local media resources and the County website to provide this information.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Bermuda Run, Davie County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued. As of 2019, additional generators and transfer switches have been added to facilities since 2014.
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Davie County public library system.	All	High	Bermuda Run, Davie County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored. As of 2019, the County still follows this process.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Ensure that the Development Services Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Bermuda Run, Davie County Development Services Director, Davie County Planning and Zoning	Local	2025, Annually	The Davie County Development Services Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department. As of 2019, the County continues to follow this process.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Cooleemee Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Cooleemee, Davie County Planning and Zoning	Local	Completed	Davie County updates the land use plan as needed and includes hazard mitigation strategies as a routine part of this process. This action will be removed from the plan during the 2025 update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Cooleemee, Davie County Planning and Zoning	Local	2025	Through the planning and zoning process, Davie County ensures that there is a low impact from structures that may be in the 100-year floodplain by denying or restricting structures in these areas.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Cooleemee, Davie County Planning and Zoning	Local	2025	Hazard mitigation is a high priority and strategies have been integrated and enforced through local ordinances.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Cooleemee, Davie County Planning and Zoning	Local	2025	Although clustering of development is allowed through the watershed protection chapter of the land usage article, the county will work to further encourage cluster development in the future. As of 2019 Davie County has continued to encourage cluster development.
P-6	Revise and update the regulatory floodplain maps.	Flooding	High	Cooleemee, Davie County Planning and Zoning	Federal, State	2025	Davie County Floodplain maps are updated regularly by the State/FEMA. This action will be removed from the plan during the 2025 update.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Cooleemee, Davie County Building Inspections	Local	Action to be deleted during the 2025 plan update.	This is the process that Davie County uses to inspect flood damaged structures. This is not a mitigation action and will be removed during the 2025 plan update.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Cooleemee, Davie County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. As of 2019 the previous actions are still utilized. Additional notifications are made through the Everbridge program and on the County webpage.
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Cooleemee, Davie County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place. As of 2019, the digital mapping is up to date and available to the public.
<b>Property Protection</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Cooleemee, Davie County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised. As of 2019 the current list of repetitive loss properties is updated as needed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Cooleemee, Davie County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward. As of 2019, the County uses Everbridge, local media resources and the County website to provide this information.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Cooleemee, Davie County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued. As of 2019, additional generators and transfer switches have been added to facilities since 2014.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Davie County public library system.	All	High	Cooleemee, Davie County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored. As of 2019, the County still follows this process.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Ensure that the Development Services Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Cooleemee, Davie County Development Services Director, Davie County Planning and Zoning	Local	2025, Annually	The Davie County Development Services Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department. As of 2019, the County continues to follow this process.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Mocksville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Mocksville, Davie County Planning and Zoning	Local	2025	Davie County updates the land use plan as needed and includes hazard mitigation strategies as a routine part of this process. This action will be removed from the plan during the 2025 update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Mocksville, Davie County Planning and Zoning	Local	2025	Through the planning and zoning process, Davie County ensures that there is a low impact from structures that may be in the 100-year floodplain by denying or restricting structures in these areas.
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Mocksville, Davie County Planning and Zoning	Local	2025	Hazard mitigation is a high priority and strategies have been integrated and enforced through local ordinances.
P-5	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Mocksville, Davie County Planning and Zoning	Local	2025	Although clustering of development is allowed through the watershed protection chapter of the land usage article, the county will work to further encourage cluster development in the future. As of 2019 Davie County has continued to encourage cluster development.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	Revise and update the regulatory floodplain maps.	Flooding	High	Mocksville, Davie County Planning and Zoning	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Mocksville, Davie County Building Inspections	Local	2025, Review and update post-event	This is the process that Davie County uses to inspect flood damaged structures. This is not a mitigation action and will be removed during the 2025 plan update.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Mocksville, Davie County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. As of 2019 the previous actions are still utilized. Additional notifications are made through the Everbridge program and on the County webpage.
P-9	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Mocksville, Davie County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place. As of 2019, the digital mapping is up to date and available to the public.
<b>Property Protection</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Mocksville, Davie County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised. As of 2019 the current list of repetitive loss properties is updated as needed.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Mocksville, Davie County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward. As of 2019, the County uses Everbridge, local media resources and the County website to provide this information.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Mocksville, Davie County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued. As of 2019, additional generators and transfer switches have been added to facilities since 2014.
<b>Public Education and Awareness</b>							



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-1	Place flood protection and other hazard education materials in all branches of the Davie County public library system.	All	High	Mocksville, Davie County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored. As of 2019, the County still follows this process.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Ensure that the Development Services Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Mocksville, Davie County Development Services Director, Davie County Planning and Zoning	Local	2025, Annually	The Davie County Development Services Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department. As of 2019, the County continues to follow this process.

**SECTION 9: MITIGATION ACTION PLAN**

**Forsyth County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-2	To acquire and remove or elevate homes in flood prone areas.	Flooding	High	Winston-Salem Stormwater Division	Federal grants, property owner cost share	2025	The City of Winston-Salem has multiple flood prone areas and NFIP Repetitive Loss properties. In 2009 and 2010, 2 repetitive flood loss properties were acquired by the City of Winston-Salem. They were demolished and removed from the floodplain with flood mitigation grant monies from NCEM and FEMA, which was coordinated by the City of Winston-Salem Stormwater Department. No structures were acquired in 2011 due to applications not reaching the repetitive flood loss threshold criteria established by FEMA. In 2012, a mitigation grant was obtained to acquire and demolish a repetitive flood loss structure in the City. The City has applied for 2 more grants to removed flood-ravaged structures at 2 additional locations during the next grant cycle.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include severe winter weather and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to support this activity.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	Current – 2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Bethania Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Bethania, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Town of Bethania, Winston-Salem Stormwater Division	Federal, State, Local	Present – December 2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.
<b>Emergency Services</b>							



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include severe winter weather and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to support this activity.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Village of Clemmons Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Village of Clemmons, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to support this activity.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Kernersville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Kernersville, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Town of Kernersville, Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Lewisville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Lewisville, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Town of Lewisville, Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to

**SECTION 9: MITIGATION ACTION PLAN**

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Rural Hall Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Rural Hall, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Village of Tobaccoville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Village of Tobaccoville, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Village of Tobaccoville, Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Walkertown Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Walkertown, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	Town of Walkertown, Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**City of Winston-Salem Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	City of Winston-Salem, Winston-Salem/Forsyth County Planning	Local	2025	Many hazard mitigation objectives have been included in the Land Use Plan Update already but, in conjunction with its efforts to improve its CRS rating, the county will look at including actions to increase the amount of open space it has and prevent infrastructure expansion in flood prone areas.
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flooding	High	City of Winston-Salem, Winston-Salem Stormwater Division	Federal, State, Local	2025	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-2	To acquire and remove or elevate homes in flood prone areas.	Flooding	High	Winston-Salem Stormwater Division	Federal grants, property owner cost share	2025	The City of Winston-Salem has multiple flood prone areas and NFIP Repetitive Loss properties. In 2009 and 2010, 2 repetitive flood loss properties were acquired by the City of Winston-Salem. They were demolished and removed from the floodplain with flood mitigation grant monies from NCEM and FEMA, which was coordinated by the City of Winston-Salem Stormwater Department. No structures were acquired in 2011 due to applications not reaching the repetitive flood loss threshold criteria established by FEMA. In 2012, a mitigation grant was obtained to acquire and demolish a repetitive flood loss structure in the City. The City has applied for 2 more grants to removed flood-ravaged structures at 2 additional locations during the next grant cycle.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-2	Equip an emergency shelter with an alternate power source.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal grant, Local staff costs	2025	Displacement of individuals and families during emergencies require local governments to provide emergency shelter. Past Forsyth County events include Severe Winter Weathers and tropical systems, but shelters may be used for other types of emergencies. These emergencies often result in widespread power outages that affect shelter locations. Shelter locations include Winston-Salem/Forsyth County Schools. This action is estimated to cost \$50,000. As of 2019, no monies have become available to

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-6	Install stream gauges along flood prone streams for flood warning and alerting purposes.	Flooding	Moderate	Winston-Salem Stormwater Division	Federal, Local, Local staff costs	2025	Gauges will be added at Muddy Creek at Highway 67/Reynolds Road and Salem Creek at Fraternity Church Road to monitor streams that contribute to flood prone areas and NFIP Repetitive Loss properties. Muddy Creek and Salem Creek meander through urban areas and the gauges would provide more accurate flash flood and river flood warning services as well as data related to pollutant loading. USGS Gauges will cost \$75,000 (not including annual maintenance) at each location. NCEM gauges will cost \$10,000 (not including annual maintenance) at each location but record water level only.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7a	Acquisition of WebEOC (resource management and communications software).	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Complete	This software was purchased in 2015 by the city of Winston-Salem and is available via an annual subscription to emergency management partners throughout the county.
ES-8	Create maps indicating flood inundation areas during high hazard dam failure.	Dam Failures	High	Map Forsyth	Local staff time	2025	All high hazard dams have been identified, mapped in individual PDFs and placed on WebEOC.
<b>Public Education and Awareness</b>							
PEA-1	Update flood protection, emergency preparedness, and other hazard education materials in Forsyth County Public Library.	All	High	Winston-Salem/Forsyth County Emergency Management	Local Library System, FEMA publications	Complete	Complete
PEA-5	Update and maintain ReadyFORSYTH website, ReadyFORSYTH social media, and ReadyFORSYTH web application for mobile devices on a daily basis.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	2025	This activity is updated on a daily basis. The Ready FORSYTH website will be undergoing an upgrade and ADA/508 compliant by December 2019.

**SECTION 9: MITIGATION ACTION PLAN**

**Rockingham County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning	Local	2025, Reviewed Annually	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**City of Eden Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, City of Eden	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding /Dam Failures	Moderate	Rockingham County Planning and Zoning, City of Eden	Local	Reviewed Annually	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding/Dam Failures	High	Rockingham County Planning and Zoning, City of Eden	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, City of Eden	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, City of Eden	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, City of Eden	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, City of Eden	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Madison Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, Town of Madison	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Madison	Local	Reviewed Annually	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning, Town of Madison	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, Town of Madison	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, Town of Madison	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Madison	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, Town of Madison	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Mayodan Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, Town of Mayodan	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Mayodan	Local	2025, Reviewed Annually	Generally there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning, Town of Mayodan	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, Town of Mayodan	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, Town of Mayodan	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Mayodan	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, Town of Mayodan	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**City of Reidsville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, City of Reidsville	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, City of Reidsville	Local	2025, Reviewed Annually	Generally there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning, City of Reidsville	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, City of Reidsville	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, City of Reidsville	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, City of Reidsville	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, City of Reidsville	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Stoneville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, Town of Stoneville	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Stoneville	Local	2025, Reviewed Annually	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning, Town of Stoneville	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, Town of Stoneville	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, Town of Stoneville	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Stoneville	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, Town of Stoneville	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.



**SECTION 9: MITIGATION ACTION PLAN**

**Town of Wentworth Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Rockingham County Planning and Zoning, Town of Wentworth	Local	2025, Reviewed Annually	Although hazard mitigation objectives were reviewed at the last Land Use Plan update, they will need to be integrated again at the next update as well. Reviewed annually in December.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Wentworth	Local	2025, Reviewed Annually	Generally, there are policies in place to minimize new structures being located in the floodplain. However, additional regulations may further reduce the number of structures at flood risk, so these will be considered going forward.
P-3	Revise and update the regulatory floodplain maps.	Flooding / Dam Failures	High	Rockingham County Planning and Zoning, Town of Wentworth	Federal, State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-4	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding / Dam Failures	High	Rockingham County Building Inspections, Town of Wentworth	Local	2025	Completed and ongoing. 5 structures have been inspected, bought out and removed since 2005. Planning, Zoning and Inspection will assess buildings on an ongoing basis as needed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Rockingham County Building Inspections, Town of Wentworth	Local	2025	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary. Damage Assessment policy updated 5/2013.
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding / Dam Failures	Moderate	Rockingham County Planning and Zoning, Town of Wentworth	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Identify alternate Emergency Operations Center locations.	All	High	Rockingham County Emergency Services	Local	2025	Backup EOC facility located, should be operational July 2015.
<b>Public Education and Awareness</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-1	Ensure that the Public Information/County Engineer is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding / Dam Failures	High	Rockingham County Public Information/ County Engineer, Rockingham County Planning and Zoning, Town of Wentworth	Local	2025, Annually	The Rockingham County Public Information/County Engineer will receive training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Stokes County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Review and include hazard mitigation objectives that are applicable into zoning ordinances.	All	Moderate	Stokes County Planning and Community Development	Local	2025	Although some mitigation-related objectives have been included in the zoning ordinance, there are still additional improvements that can be made during the next ordinance update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Stokes County Planning and Community Development	Local	2025	The county discourages development in the 100-year floodplain and therefore discourages public infrastructure improvements in those areas as well. The county will work to develop this policy going forward.
P-5	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Stokes County Geographical Information System	Local	2025	We currently have a GIS link on the county website
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Stokes County Planning and Community Development	Local	2025, Annual Evaluation	During the update of this plan, the county compiled a list of repetitive loss properties. County staff will perform annual evaluations of properties to ensure that it is working to mitigate any repetitive loss properties.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Stokes County Emergency Services	Local	2025, Annual Evaluation	Code Red warning system in place
ES-2	Improve shelter capacities with alternate power/heat sources.	All	High	Stokes County Emergency Services	Local	2025	We currently have shelter sites in the county that have generator back up and this year will be adding 2 additional shelters with generator back up in King, Danbury
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Stokes County public library system.	All	High	Stokes County Planning and Community Development	Local	2025	In the past, hazard education materials have been placed in all branches of the Stokes County public library system. However, these materials will need to be reviewed and updated, so this action will remain in the plan.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Danbury Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Review and include hazard mitigation objectives that are applicable into zoning ordinances.	All	Moderate	Town of Danbury Land Use Administrator	Local	2025	Although some mitigation-related objectives have been included in the zoning ordinance, there are still additional improvements that can be made during the next ordinance update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Town of Danbury Land Use Administrator	Local	2025	Thus far, the county has not developed a policy to minimize public services to new structures that will be located in the floodplain. The county will work to develop this policy going forward.
P-5	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Stokes County Geographical Information System	Local	2025	County website has GIS link
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Stokes County Planning and Community Development	Local	2025, Annual Evaluation	During the update of this plan, the county compiled a list of repetitive loss properties. County staff will perform annual evaluations of properties to ensure that it is working to mitigate any repetitive loss properties.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-1	Ensure adequate evaluation warning in case of major hazard event.	All	High	Stokes County Emergency Services	Local	2025, Annual Evaluation	Code Red warning system in place
ES-2	Improve shelter capacities with alternate power/heat sources.	All	High	Stokes County Emergency Services	Local	2025	New shelter will be available in Danbury this year by the end of 2019
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Stokes County public library system.	All	High	Stokes County Planning and Community Development	Local	2025	In the past, hazard education materials have been placed in all branches of the Stokes County public library system. However, these materials will need to be reviewed and updated, so this action will remain in the plan.



**SECTION 9: MITIGATION ACTION PLAN**

**City of King Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Review and include hazard mitigation objectives that are applicable into zoning ordinances.	All	Moderate	City of King Planning Department	Local	2025	Although some mitigation-related objectives have been included in the zoning ordinance, there are still additional improvements that can be made during the next ordinance update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	City of King Planning Department	Local	2025	Thus far, the county has not developed a policy to minimize public services to new structures that will be located in the floodplain. The county will work to develop this policy going forward.
P-5	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Stokes County Geographical Information System	Local	2025	County website has GIS link
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	City of King Planning Department	Local	2025, Annual Evaluation	During the update of this plan, the county compiled a list of repetitive loss properties. County staff will perform annual evaluations of properties to ensure that it is working to mitigate any repetitive loss properties.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-1	Ensure adequate evaluation warning in case of major hazard event.	All	High	Stokes County Emergency Services	Local	2025, Annual Evaluation	Code Red warning system in place
ES-2	Improve shelter capacities with alternate power/heat sources.	All	High	Stokes County Emergency Services	Local	2025	Adding a shelter in King by the end of 2019
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Stokes County public library system.	All	High	City of King Planning Department	Local	2025	In the past, hazard education materials have been placed in all branches of the Stokes County public library system. However, these materials will need to be reviewed and updated, so this action will remain in the plan.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Walnut Cove Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Review and include hazard mitigation objectives that are applicable into zoning ordinances.	All	Moderate	Town of Walnut Cove Town Manager	Local	2025	Although some mitigation-related objectives have been included in the zoning ordinance, there are still additional improvements that can be made during the next ordinance update.
P-2	Develop a policy to minimize public services to proposed new structures that will be located in 100-year floodplain areas.	Flooding	Moderate	Town of Walnut Cove Town Manager	Local	2025	Thus far, the county has not developed a policy to minimize public services to new structures that will be located in the floodplain. The county will work to develop this policy going forward.
P-5	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Stokes County Geographical Information System	Local	2025	County website has GIS link
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Town of Walnut Cove Town Manager	Local	2025, Annual Evaluation	During the update of this plan, the county compiled a list of repetitive loss properties. County staff will perform annual evaluations of properties to ensure that it is working to mitigate any repetitive loss properties.
<b>Emergency Services</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-1	Ensure adequate evaluation warning in case of major hazard event.	All	High	Stokes County Emergency Services	Local	2025, Annual Evaluation	Code Red warning system in place
ES-2	Improve shelter capacities with alternate power/heat sources.	All	High	Stokes County Emergency Services	Local	2025	Adding a shelter in King and Danbury to the additional shelter locations in the county
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Stokes County public library system.	All	High	Town of Walnut Cove Town Manager	Local	2025	In the past, hazard education materials have been placed in all branches of the Stokes County public library system. However, these materials will need to be reviewed and updated, so this action will remain in the plan.

**SECTION 9: MITIGATION ACTION PLAN**

**Surry County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Consider a community ratings system evaluation to continue compliance with NFIP.	Flooding, Geological Hazards (Landslides)	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025, Annually review	The county does not currently participate in the CRS, but it will continue to consider pursuing this, especially as it implements floodplain management actions that will contribute to points in the CRS.
P-2	Develop a comprehensive Capital Improvements Plan.	All	High	Surry County Planning and Development	Surry County Planning and Development	2025	The county has not yet developed a comprehensive CIP, although it has undertaken some capital projects. The county will continue to work to develop a comprehensive CIP going forward.
P-3	Adopt a Storm Water Management Ordinance or Plan	Flooding, Geological Hazards (Landslides)	High	Board of County Commissioners	Surry County Planning and Development	2025	The county has not yet adopted a Stormwater Management Ordinance or Plan. This will continue to be a goal in the future.
P-5	Require that structural features are manufactured and installed in such a way that the hazardous effect of wind-borne debris is limited.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Building Inspections	Surry County Planning and Development	2025	The county has attempted to identify structures that are constructed in a way that contributes to wind borne debris. Although many cases have been identified and rectified, there is still significant work to be completed on this action.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	Develop a wildfire management plan including clear objectives. The plan should include degree of fire risk and wildfire history of county.	Wildfires	Moderate	NCDFR, USFS, Surry County Fire Marshal's Office	NCDFR, USFS, Surry County Fire Marshal's Office	2025	A wildfire management plan is in progress of being developed but the plan is not complete, so additional work will need to be completed.
P-7	Make available all necessary resources for fire management planning at all levels.	Wildfires	Moderate	Surry County Emergency Management	Local, State, Federal	2025	Although many resources are available for fire management planning, additional resources would be useful and an ongoing task will be to pursue more resources.
<b>Property Protection</b>							
PP-1	Encourage low-interest loans to farmers from the State to assist with the effects of a drought.	Drought	Low	Board of County Commissioners	Surry County Government	2025	The county has encouraged low interest loans from the state and will continue to advocate for those to be available during/after a drought event.
PP-2	Address properties that are vulnerable to flood damage, especially those that are repetitive loss properties to continue compliance with NFIP.	Flooding, Geological Hazards (Landslides)	High	Surry County Planning and Development, Surry County Parks and Recreation	Local, State, Federal	2025	The county will continue to attempt to implement mitigation action for repetitive loss properties and other high risk properties.
PP-3	Review of public and private services for improvements while relocating infrastructure away from flood prone areas.	Flooding, Geological Hazards (Landslides)	High	Surry County Planning and Development	Local	2025	Generally, the county has worked to relocate infrastructure away from flood prone areas. However, there are still areas where infrastructure is located in flood prone areas and the county will work to address those areas.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-4	Ensure manufactured homes are properly installed and secured.		Moderate	Surry County Building Inspections	Surry County Planning and Development	2025	The county performs inspections on manufactured homes to ensure they are properly installed. This action will need to be continued going forward.
PP-5	Ensure all residential construction conforms with latest wind-resistance standards.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Building Inspections	Surry County Planning and Development	2025	The county is working to ensure that all residential construction is consistent with the latest wind standards. County officials will continue to identify structures that are in non-conformance and work with citizens to ensure compliance.
PP-6	Retrofit emergency operations centers and critical facilities.	All	High	Surry County	Surry County	2025	Some critical facilities have been retrofitted to protect against hazards, but many critical facilities remain unmitigated and will need to be addressed.
<b>Emergency Services</b>							
ES-1	Coordinate efforts in regards to equipment and manpower to unload hay and other agriculture products delivered by aircraft, trucks, and trains.	Drought	Moderate	NC Cooperative Extension, Surry County Emergency Management	NC Cooperative Extension	2025	The county has coordinated efforts on equipment in the past and will continue that effort in the event of a drought.
ES-2	Procure water trailers for communities with dry or contaminated wells.	Drought	Moderate	Surry County Emergency Management, Surry County Health and Nutrition	Surry County Emergency Management, Surry County Health and Nutrition	2025	In the past, water trailers were procured when needed to address dry/contaminate wells. This will continue to be the case going forward.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-3	Decrease the time for evacuation.	All	High	Surry County Emergency Management, Law Enforcement	Surry County Emergency Management, Law Enforcement	2025	The county has attempted to decrease evacuation times in the past, but this is an effort that will continue to be pursued to reduce times even further.
ES-4	Improve areas where evacuation may be impeded.	All	High	Surry County Emergency Management, Law Enforcement	Surry County Emergency Management	2025	The county has taken action in some locations where bottlenecks might occur and has worked to develop a plan to keep evacuation moving smoothly. However, as in E-3, the county will continue to try to reduce its evacuation times.
ES-5	Coordinate early warning flash flood systems with Virginia counties that are upstream of County tributaries.	All	Moderate	Surry County Emergency Management	Surry County Emergency Management, NCDEM	2025	The county has worked with upstream VA counties to provide advanced flash flood warnings. Continued coordination will be required on this and the county will work to improve warning systems overall.
ES-6	Make sure that all community warning sirens and warning systems are in proper working condition.	All	High	Surry County Emergency Management	Surry County Emergency Management	2025	The county regularly inspects all warning sirens and systems to ensure they will be ready for a disaster event. The city will continue inspect these systems going forward.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-7	Communicate with other cities/counties to facilitate emergency response and recovery.	All	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025	The county has taken the lead in the past to coordinate on response and recovery activities with municipalities and it is in constant coordination with other counties. This will continue to be a priority in the future.
ES-8	Train fire fighters with the latest fire fighting techniques and equip them with the most up to date equipment.	Wildfires	Moderate	Surry County Fire Marshal's Office, NCDFR	Local	2025	Although firefighters have been well trained and equipped in the past, there is a constant need for additional training and resources, so this will be pursued going forward.
ES-9	Establish a housing numbering system and ensure that the numbers are visible from the road.	Wildfires	Low	Surry County Emergency Management	Surry County Emergency Management	2025, Annual review and update	The county completed its re-addressing in 2000 but it will need to be updated on a consistent basis and re-evaluated for an update in the future.
ES-10	Coordinate responses between each of the county's fire departments.	Wildfires	Moderate	Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	2025	The county has coordinated response within each of its fire departments and will continue to ensure coordination is maintained.
ES-11	Post warning signs in communities during times when wildfire danger may be imminent.	Wildfires	Moderate	NCDFR	NCDFR	2025	When wildfire risk has been high in the past, the county has posted warning signs to let residents know their risk level. This action will be continued in the future.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-12	Monitor future wildfires so that response times are evaluated and determine the amount of progress made during each fire.	Wildfires	Low	Surry County Emergency Management	Surry County Emergency Management	2025	The county has monitored past fires which has helped them determine response times. This information will continue to be collected and will be integrated to help make better judgments in the future.
ES-13	Keep primary transportation routes clear for emergency traffic and needs.	Severe Winter Weather	High	NCDOT, Law Enforcement	NCDOT, Law Enforcement	2025	The county has worked to keep primary transportation routes cleared in case they are needed for emergency traffic. This action will continue to be pursued by the county.
ES-14	Equip all essential County emergency or non-emergency vehicles with proper equipment to navigate severe winter weather events.	Severe Winter Weather	Moderate	Each Surry County Department is responsible for its vehicles	Each Surry County Department is responsible for its vehicles	2025	The county has equipped many of its vehicles with the necessary equipment to navigate severe winter weather. However, some vehicles are not fully equipped and the county will work to ensure adequate resources.
<b>Public Education and Awareness</b>							
PEA-1	Distribute educational material to the public to stimulate hazard awareness through both public locations and online.	All	Moderate	NC Cooperative Extension, Surry County Planning and Development, Surry County Public Works	NC Cooperative Extension, Surry County Planning and Development	2025	The county has developed a number of educational materials and brochures for the public to utilize, but these may need to be updated and will need to be reviewed so this action will remain in the plan.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-2	Increase awareness through all hazards awareness program at cooperative extension office and distribution of materials at government centers.	All	Moderate	NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension, Surry County Planning and Development	2025	The county has worked to increase awareness through programs at the cooperative extension and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-3	Create a mandatory water conservation ordinance to enforce, if necessary.	Drought	Moderate	Surry County Planning and Development, Surry County Health and Nutrition	Surry County Planning and Development, Disaster Declaration Funding	2025, implement when drought conditions require	The county has implemented a mandatory water conservation ordinance in the past when drought conditions persisted. The county will continue to do this when required.
PEA-5	Increase awareness through flood awareness program at local schools and distribution of materials at government centers.	Flooding, Geological Hazards (Landslides)	Moderate	NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension	2025	The county has worked to increase awareness through programs at the local schools and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-6	Increase awareness through high wind awareness program at local schools and distribution of materials at government centers.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025	The county has worked to increase awareness through programs at the local schools and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-7	Monitor and evaluate public response to high wind information.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025	Integrate with PEA-1 and see Implementation Status above
PEA-8	Distribute educational material to the public to stimulate wildfire awareness and prevention.	Wildfires	Moderate	Surry County Fire Marshal's Office, Surry County Emergency Management	Surry County Fire Marshal's Office, Surry County Emergency Management	2025	Integrate with PEA-1 and see Implementation Status above
PEA-9	Increase awareness through wildfire awareness program at local schools and distribution of materials at government centers.	Wildfires	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025	The county has worked to increase awareness through programs at the local schools and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-10	Monitor and evaluate public response to wildfire information.	Wildfires	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-11	Educate on proper winterizing of homes.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-12	Educate on proper emergency heating equipment.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-13	Educate on winter weather disaster supplies.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-14	Educate on several days' supply of non-perishable food.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-15	Educate on checking smoke alarms and fire extinguishers.	Severe Winter Weather	Moderate	Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-16	Inform and educate the citizens by providing hazard and mitigation information in public buildings and websites.	Earthquakes	Moderate	Surry County	Surry County	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-17	Educate via classes on proper retrofitting equipment.	Earthquakes	Moderate	Surry County	Surry County	2025	The county has provided some education on earthquake retrofitting, but it would like to encourage more of this and so it will work to hold more classes going forward.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Dobson Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-2	Develop a comprehensive Capital Improvements Plan.	All	High	Town of Dobson, Surry County Planning and Development	Surry County Planning and Development	2025	The county has not yet developed a comprehensive CIP, although it has undertaken some capital projects. The county will continue to work to develop a comprehensive CIP going forward.
P-3	Adopt a Storm Water Management Ordinance or Plan	Flooding, Geological Hazards (Landslides)	High	Town of Dobson, Board of County Commissioners	Surry County Planning and Development	2025	The county has not yet adopted a Stormwater Management Ordinance or Plan. This will continue to be a goal in the future.
P-5	Require that structural features are manufactured and installed in such a way that the hazardous effect of wind borne debris is limited.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Dobson, Surry County Building Inspections	Surry County Planning and Development	2025	The county has attempted to identify structures that are constructed in a way that contributes to wind borne debris. Although many cases have been identified and rectified, there is still significant work to be completed on this action.
P-6	Develop a wildfire management plan including clear objectives. The plan should include degree of fire risk and wildfire history of county.	Wildfires	Moderate	Town of Dobson, NCDFR, USFS, Surry County Fire Marshal's Office	NCDFR, USFS, Surry County Fire Marshal's Office	2025	A wildfire management plan is in progress of being developed but the plan is not complete, so additional work will need to be completed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	Make available all necessary resources for fire management planning at all levels.	Wildfires	Moderate	Town of Dobson, Surry County Emergency Management	Local, State, Federal	2025	Although many resources are available for fire management planning, additional resources would be useful and an ongoing task will be to pursue more resources.
<b>Property Protection</b>							
PP-1	Encourage low-interest loans to farmers from the State to assist with the effects of a drought.	Drought	Low	Town of Dobson, Board of County Commissioners	Surry County Government	2025	The county has encouraged low interest loans from the state and will continue to advocate for those to be available during/after a drought event.
PP-3	Review of public and private services for improvements while relocating infrastructure away from flood prone areas.	Flooding, Geological Hazards (Landslides)	High	Town of Dobson, Surry County Planning and Development	Local	2025	Generally, the county has worked to relocate infrastructure away from flood prone areas. However, there are still areas where infrastructure is located in flood prone areas and the county will work to address those areas.
PP-4	Ensure manufactured homes are property installed and secured.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Dobson, Surry County Building Inspections	Surry County Planning and Development	2025	The county performs inspections on manufactured homes to ensure they are properly installed. This action will need to be continued going forward.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-5	Ensure all residential construction conforms with latest wind-resistance standards.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Dobson, Surry County Building Inspections	Surry County Planning and Development	2025	The county is working to ensure that all residential construction is consistent with the latest wind standards. County officials will continue to identify structures that are in non-conformance and work with citizens to ensure compliance.
PP-6	Retrofit emergency operations centers and critical facilities.	All	High	Town of Dobson, Surry County	Surry County	2025	Some critical facilities have been retrofitted to protect against hazards, but many critical facilities remain unmitigated and will need to be addressed.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Emergency Services</b>							
ES-1	Coordinate efforts in regards to equipment and manpower to unload hay and other agriculture products delivered by aircraft, trucks, and trains.	Drought	Moderate	Town of Dobson, NC Cooperative Extension, Surry County Emergency Management	NC Cooperative Extension	2025	The county has coordinated efforts on equipment in the past and will continue that effort in the event of a drought.
ES-2	Procure water trailers for communities with dry or contaminated wells.	Drought	Moderate	Town of Dobson, Surry County Emergency Management, Surry County Health and Nutrition	Surry County Emergency Management, Surry County Health and Nutrition	2025	In the past, water trailers were procured when needed to address dry/contaminate wells. This will continue to be the case going forward.
ES-3	Decrease the time for evacuation.	All	High	Town of Dobson, Surry County Emergency Management, Law Enforcement	Surry County Emergency Management, Law Enforcement	2025	The county has attempted to decrease evacuation times in the past, but this is an effort that will continue to be pursued to reduce times even further.
ES-4	Improve areas where evacuation may be impeded.	All	High	Town of Dobson, Surry County Emergency Management, Law Enforcement	Surry County Emergency Management	2025	The county has taken action in some locations where bottlenecks might occur and has worked to develop a plan to keep evacuation moving smoothly. However, as in E-3, the county will continue to try to reduce its evacuation times.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-5	Coordinate early warning flash flood systems with Virginia counties that are upstream of County tributaries.	All	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management, NCDDEM	2025	The county has worked with upstream VA counties to provide advanced flash flood warnings. Continued coordination will be required on this and the county will work to improve warning systems overall.
ES-6	Make sure that all community warning sirens and warning systems are in proper working condition.	All	High	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	2025	The county regularly inspects all warning sirens and systems to ensure they will be ready for a disaster event. The city will continue inspect these systems going forward.
ES-7	Communicate with other cities/counties to facilitate emergency response and recovery.	All	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	2025	The county has taken the lead in the past to coordinate on response and recovery activities with municipalities and it is in constant coordination with other counties. This will continue to be a priority in the future.
ES-8	Train fire fighters with the latest fire fighting techniques and equip them with the most up to date equipment.	Wildfires	Moderate	Town of Dobson, Surry County Fire Marshal's Office, NCDFR	Local	2025	Although firefighters have been well trained and equipped in the past, there is a constant need for additional training and resources, so this will be pursued going forward.
ES-9	Establish a housing numbering system and ensure that the numbers are visible from the road.	Wildfires	Low	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	2025, Annual review and update	The county completed its re-addressing in 2000 but it will need to be updated on a consistent basis and re-evaluated for an update in the future.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-10	Coordinate responses between each of the county's fire departments.	Wildfire	Moderate	Town of Dobson, Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	2025	The county has coordinated response within each of its fire departments and will continue to ensure coordination is maintained.
ES-11	Post warning signs in communities during times when wildfire danger may be imminent.	Wildfire	Moderate	NCDFR	NCDFR	2025	When wildfire risk has been high in the past, the county has posted warning signs to let residents know their risk level. This action will be continued in the future.
ES-12	Monitor future wildfires so that response times are evaluated and determine the amount of progress made during each fire.	Wildfire	Low	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	2025	The county has monitored past fires which has helped them determine response times. This information will continue to be collected and will be integrated to help make better judgments in the future.
ES-13	Keep primary transportation routes clear for emergency traffic and needs.	Severe Winter Weather	High	NCDOT, Law Enforcement	NCDOT, Law Enforcement	2025	The county has worked to keep primary transportation routes cleared in case they are needed for emergency traffic. This action will continue to be pursued by the county.
ES-14	Equip all essential County emergency or non-emergency vehicles with proper equipment to navigate severe winter weather events.	Severe Winter Weather	Moderate	Town of Dobson, Each Surry County Department is responsible for its vehicles	Each Surry County Department is responsible for its vehicles	2025	The county has equipped many of its vehicles with the necessary equipment to navigate severe winter weather. However, some vehicles are not fully equipped and the county will work to ensure adequate resources.

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Distribute educational material to the public to stimulate hazard awareness through both public locations and online.	All	Moderate	Town of Dobson, NC Cooperative Extension, Surry County Planning and Development, Surry County Public Works	NC Cooperative Extension, Surry County Planning and Development	2025	The county has developed a number of educational materials and brochures for the public to utilize, but these may need to be updated and will need to be reviewed so this action will remain in the plan.
PEA-2	Increase awareness through all hazards awareness program at cooperative extension office and distribution of materials at government centers.	All	Moderate	Town of Dobson, NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension, Surry County Planning and Development	2025	The county has worked to increase awareness through programs at the cooperative extension and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-3	Create a mandatory water conservation ordinance to enforce, if necessary.	Drought	Moderate	Town of Dobson, Surry County Planning and Development, Surry County Health and Nutrition	Surry County Planning and Development, Disaster Declaration Funding	2025, implement when drought conditions require	The county has implemented a mandatory water conservation ordinance in the past when drought conditions persisted. The county will continue to do this when required.
PEA-5	Increase awareness through flood awareness program at local schools and distribution of materials at government centers.	Flooding, Geological Hazards (Landslides)	Moderate	Town of Dobson, NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-6	Increase awareness through high wind awareness program at local schools and distribution of materials at government centers.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above
PEA-7	Monitor and evaluate public response to high wind information.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-8	Distribute educational material to the public to simulate wildfire awareness and prevention.	Wildfires	Moderate	Town of Dobson, Surry County Fire Marshal's Office, Surry County Emergency Management	Surry County Fire Marshal's Office, Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-9	Increase awareness through wildfire awareness program at local schools and distribution of materials at government centers.	Wildfires	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above
PEA-10	Monitor and evaluate public response to wildfire information.	Wildfires	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-11	Educate on proper winterizing of homes.	Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-12	Educate on proper emergency heating equipment.	Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-13	Educate on winter weather disaster supplies.	Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-14	Educate on several days' supply of non-perishable food.	Severe Winter Weather	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-15	Educate on checking smoke alarms and fire extinguishers.	Severe Winter Weather	Moderate	Town of Dobson, Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-16	Inform and educate the citizens by providing hazard and mitigation information in public buildings and websites.	Earthquakes	Moderate	Town of Dobson, Surry County	Surry County	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-17	Educate via classes on proper retrofitting equipment.	Earthquakes	Moderate	Town of Dobson, Surry County	Surry County	2025	The county has provided some education on earthquake retrofitting, but it would like to encourage more of this and so it will work to hold more classes going forward.

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**Town of Elkin Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Comply with the Town’s “Water Supply Shortage Ordinance” and the “Emergency Water Shortage Response Handbook for the Town of Elkin Water Supply System.”	Drought	Moderate	Town of Elkin	Town of Elkin	2025	The town has complied with its water shortage response plans and will continue to abide by these going forward.
P-2	Evaluate the Town’s eligibility to re-enter NFIP.	Flooding, Geological Hazards (Landslides)	Moderate	Town of Elkin	Town of Elkin	2025	The town is not a member of the NFIP. It will continue to evaluate the value of joining the program.
P-3	Work with the Surry County to conduct a community ratings systems evaluation.	Flooding, Geological Hazards (Landslides)	Moderate	Town of Elkin, Surry County Planning and Development	Town of Elkin	2025, Annually review	The county does not currently participate in the CRS, but it will continue to consider pursuing this, especially as it implements floodplain management actions that will contribute to points in the CRS.
P-4	Re-enter the National Flood Insurance Program	Flooding, Geological Hazards (Landslides)	Moderate	Town of Elkin	Town of Elkin	2025	The town is not a member of the NFIP. It will continue to evaluate the value of joining the program.
P-5	Adopt a Storm Water Management Ordinance or Plan	Flooding, Geological Hazards (Landslides)	High	Town of Elkin	Town of Elkin	2025	The county has not yet adopted a Stormwater Management Ordinance or Plan. This will continue to be a goal in the future.
P-6	Adopt Surry County Wildfire Management Plan.	Wildfires	Moderate	Town of Elkin	Town of Elkin	2025	A wildfire management plan is in progress of being developed but the plan is not complete, so additional work will need to be completed.
<b>Property Protection</b>							

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-1	Ensure manufactured homes are properly installed and secured.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Building Inspectors	Surry County Planning and Development	2025	The county performs inspections on manufactured homes to ensure they are properly installed. This action will need to be continued going forward.
PP-2	Ensure all residential construction conforms with latest wind-resistance standards.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Building Inspectors	Surry County Planning and Development	2025	The county is working to ensure that all residential construction is consistent with the latest wind standards. County officials will continue to identify structures that are in non-conformance and work with citizens to ensure compliance.
PP-3	Retrofit emergency operations centers and critical facilities.	All	High	Town of Elkin	Town of Elkin	2025	Some critical facilities have been retrofitted to protect against hazards, but many critical facilities remain unmitigated and will need to be addressed.
<b>Emergency Services</b>							
ES-1	Train fire fighters with the latest fire fighting techniques and equip them with the most up to date equipment.	Wildfire	Moderate	Elkin Fire Department	Elkin Fire Department	2025	Although firefighters have been well trained and equipped in the past, there is a constant need for additional training and resources, so this will be pursued going forward.
ES-2	Keep primary transportation routes clear for emergency traffic and needs.	Severe Winter Weather	High	Town of Elkin	Town of Elkin	2025	The county has worked to keep primary transportation routes cleared in case they are needed for emergency traffic. This action will continue to be pursued by the county.



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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-3	Equip all essential City emergency or non-emergency vehicles with proper equipment to navigate severe winter weather events.	Severe Winter Weather	Moderate	Town of Elkin	Town of Elkin	2025	The town has equipped many of its vehicles with the necessary equipment to navigate a severe winter weather. However, some vehicles are not fully equipped and the county will work to ensure adequate resources.
<b>Public Education and Awareness</b>							
PEA-1	Inform and educate the citizens by providing hazard and mitigation information in public buildings.	All	High	Town of Elkin	Town of Elkin	2025	The town has developed a number of educational materials and brochures for the public to utilize, but these may need to be updated and will need to be reviewed so this action will remain in the plan.
PEA-2	Educate residents about the importance of storm water management.	Flooding, Geological Hazards (Landslides)	Moderate	Town of Elkin	Town of Elkin	2025	The town has provided significant education on the importance of stormwater management to its citizens, but additional work needs to be completed.
PEA-3	Work with Surry County to increase public awareness of all hazards and potential mitigation.	All	Moderate	Town of Elkin, Surry County Emergency Management	Town of Elkin	2025	The town has worked to increase awareness through programs at the cooperative extension and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-4	Inform and educate citizens by providing hazard and mitigation information in public buildings.	Flooding, Geological Hazards (Landslides)	Moderate	Town of Elkin	Town of Elkin	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-5	Educate residents on all hazards associated with high winds and how to reduce exposure to damage.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Elkin, Surry County Emergency Management	Town of Elkin	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-6	Educate residents on wildfire prevention and awareness.	Wildfire	Moderate	Town of Elkin, Surry County Emergency Management	Town of Elkin	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-7	Assist Surry County with increasing public awareness of wildfire mitigation.	Wildfire	Moderate	Town of Elkin, Surry County Emergency Management	Town of Elkin	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-8	Make home and business owners aware of potential hazards of collapse from heavy snowfall and inform them of structural retrofitting options.	Severe Winter Weather	Moderate	Surry County Planning and Development	Surry County Planning and Development	2025	To some extent, members of the public have been informed of structural retrofitting techniques, but additional education is required so this will remain an action.
PEA-9	Educate on proper winterizing of homes.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-10	Educate on proper emergency heating equipment.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-11	Educate on winter weather disaster supplies.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-12	Educate on several days' supply of non-perishable food.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-13	Educate on checking smoke alarms and fire extinguishers.	Severe Winter Weather	Moderate	Elkin Fire Department	Elkin Fire Department	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-15	Provide home devices which directly access National Weather Service frequencies to the hearing impaired.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	2025	Although some home weather devices have been provided, the town would like to continue to make an effort to distribute these to a broader population.
PEA-16	Place severe winter weather mitigation information on the city website.	Severe Winter Weather	Moderate	Town of Elkin	Town of Elkin	See schedule for PEA-3	Coordinate with PEA-3 and see Implementation Status above
PEA-17	Inform and educate the citizens by providing hazard and mitigation information in public buildings and websites.	Earthquake	Moderate	Town of Elkin	Town of Elkin	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-18	Educate via classes on proper retrofitting equipment.	Earthquake	Moderate	Town of Elkin	Town of Elkin	2025	The county has provided some education on earthquake retrofitting, but it would like to encourage more of this and so it will work to hold more classes going forward.

**SECTION 9: MITIGATION ACTION PLAN**

**City of Mount Airy Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	Conduct a community ratings system evaluation to continue compliance with NFIP.	Flooding, Geological Hazards (Landslides)	Moderate	Surry County Planning and Development	Surry County Planning and Development	2025, Annually review	The city does not currently participate in the CRS, but it will continue to consider pursuing this, especially as it implements floodplain management actions that will contribute to points in the CRS.
P-2	Develop a comprehensive Capital Improvements Plan.	All	High	Mt. Airy Public Services Department	Mt. Airy Public Services Department	2025	The city has not yet developed a comprehensive CIP, although it has undertaken some capital projects. The county will continue to work to develop a comprehensive CIP going forward.
P-3	Adopt a Storm Water Management Ordinance or Plan	Flooding, Geological Hazards (Landslides)	High	Mt. Airy Public Services Department	Mt. Airy Public Services Department	2025	The city has not yet adopted a Stormwater Management Ordinance or Plan. This will continue to be a goal in the future.
P-5	Require that structural features are manufactured and installed in such a way that the hazardous effect of wind borne debris is limited.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Planning and Development	Surry County Planning and Development	2025	The city has attempted to identify structures that are constructed in a way that contributes to wind borne debris. Although many cases have been identified and rectified, there is still significant work to be completed on this action.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	Make available all necessary resources for fire management planning at all levels.	Wildfire	Moderate	Mt. Airy Fire Department	Mt. Airy Fire Department	2025	Although many resources are available for fire management planning, additional resources would be useful and an ongoing task will be to pursue more resources.
<b>Property Protection</b>							
PP-1	Encourage low-interest loans to farmers from the State to assist with the effects of a drought.	Drought	Low	Board of Commissioners	Surry County Government	2025	The county has encouraged low interest loans from the state and will continue to advocate for those to be available during/after a drought event.
PP-2	Identify and acquire properties that are vulnerable to flood damage.	Flooding, Geological Hazards (Landslides)	High	Planning, Parks and Recreation	Local, State, Federal	2025	The county will continue to attempt to implement mitigation action for repetitive loss properties and other high-risk properties.
PP-3	Review of public and private services for improvements while relocating infrastructure away from flood prone areas.	Flooding, Geological Hazards (Landslides)	High	Mt. Airy Planning	Local	2025	Generally, the county has worked to relocate infrastructure away from flood prone areas. However, there are still areas where infrastructure is located in flood prone areas and the county will work to address those areas.
PP-4	Installation of manufactured homes are property installed and secured.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Building Inspections	Surry County Planning and Development	2025	The county performs inspections on manufactured homes to ensure they are properly installed. This action will need to be continued going forward.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-5	Ensure all residential construction conforms with latest wind-resistance standards.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Building Inspections	Surry County Planning and Development	2025	The county is working to ensure that all residential construction is consistent with the latest wind standards. County officials will continue to identify structures that are in non-conformance and work with citizens to ensure compliance.
PP-6	Retrofit emergency operations centers and critical facilities.	All	High	City of Mt. Airy	City of Mt. Airy	2025	Some critical facilities have been retrofitted to protect against hazards, but many critical facilities remain unmitigated and will need to be addressed.
<b>Emergency Services</b>							
ES-1	Coordinate efforts in regards to equipment and manpower to unload hay and other agriculture products delivered by aircraft, trucks, and trains.	Drought	Moderate	NC Cooperative Extension, Surry County Emergency Management	NC Cooperative Extension	2025	The county has coordinated efforts on equipment in the past and will continue that effort in the event of a drought.
ES-2	Procure water trailers for communities with dry or contaminated wells.	Drought	Moderate	Mt. Airy Public Services Department, Surry County Health and Nutrition	Mt. Airy Public Services Department, Surry County Health and Nutrition	2025	In the past, water trailers were procured when needed to address dry/contaminate wells. This will continue to be the case going forward.
ES-3	Decrease the time for evacuation.	All	High	Surry County Emergency Management, Law Enforcement, Mt. Airy Public Services Department	City of Mt. Airy	2025	The county has attempted to decrease evacuation times in the past, but this is an effort that will continue to be pursued to reduce times even further.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-4	Improve areas where evacuation may be impeded.	All	High	Surry County Emergency Management, Law Enforcement, Mt. Airy Public Services Department	City of Mt. Airy	2025	The county has taken action in some locations where bottlenecks might occur and has worked to develop a plan to keep evacuation moving smoothly. However, as in E-3, the county will continue to try to reduce its evacuation times.
ES-5	Coordinate early warning flash flood systems with Virginia counties that are upstream of County tributaries.	All	Moderate	Surry County Emergency Management	Surry County Emergency Management, NCDEM	2025	The county has worked with upstream VA counties to provide advanced flash flood warnings. Continued coordination will be required on this and the county will work to improve warning systems overall.
ES-6	Monitor and evaluated response time of critical facilities and emergency vehicles.	Flooding, Geological Hazards (Landslides)		Mt. Airy Public Services Department	Mt. Airy Public Services Department	2025	The city has monitored response time of critical facilities and emergency vehicles and will continue to look at ways to improve these going forward.
ES-7	Install and frequently update precipitation gauges and flood monitoring equipment along tributaries.	Flooding, Geological Hazards (Landslides)		Surry County Emergency Management	Surry County Emergency Management	2025	The city constantly monitors precipitation gauges but it will look to invest in greater infrastructure going forward.
ES-8	Make sure that all community warning sirens and warning systems are in proper working condition.	All	High	Surry County Emergency Management	Surry County Emergency Management	2025	The county regularly inspects all warning sirens and systems to ensure they will be ready for a disaster event. The city will continue inspect these systems going forward.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-9	Communicate with other cities/counties to facilitate emergency response and recovery.	All	Moderate	Surry County Emergency Management, Mt. Airy Public Services Department	Surry County Emergency Management, Mt. Airy Public Services Department	2025	The county has taken the lead in the past to coordinate on response and recovery activities with municipalities and it is in constant coordination with other counties. This will continue to be a priority in the future.
ES-10	Train fire fighters with the latest fire fighting techniques and equip them with the most up to date equipment.	Wildfire	Moderate	Mt. Airy Fire Department	Mt. Airy Fire Department	2025	Although firefighters have been well trained and equipped in the past, there is a constant need for additional training and resources, so this will be pursued going forward.
ES-11	Establish a housing numbering system and ensure that the numbers are visible from the road.	Wildfire	Low	E-911 Program	Surry County Emergency Management	2025, Annual review and update	The county completed its re-addressing in 2000 but it will need to be updated on a consistent basis and re-evaluated for an update in the future.
ES-12	Coordinate responses between each of the city's fire departments.	Wildfire	Moderate	Mt. Airy Fire Department	Mt. Airy Fire Department	2025	The county has coordinated response within each of its fire departments and will continue to ensure coordination is maintained.
ES-13	Post warning signs in communities during times when wildfire danger may be imminent.	Wildfire	Moderate	NCDFR	NCDFR	2025	When wildfire risk has been high in the past, the county has posted warning signs to let residents know their risk level. This action will be continued in the future.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-14	Monitor future wildfires so that response times are evaluated and determine the amount of progress made during each fire.	Wildfire	Low	Surry County Emergency Management	Surry County Emergency Management	2025	The county has monitored past fires which has helped them determine response times. This information will continue to be collected and will be integrated to help make better judgments in the future.
ES-15	Keep primary transportation routes clear for emergency traffic and needs.	Severe Winter Weather	High	Mt. Airy Public Services Department	Mt. Airy Public Services Department	2025	The county has worked to keep primary transportation routes cleared in case they are needed for emergency traffic. This action will continue to be pursued by the county.
ES-16	Equip all essential City emergency or non-emergency vehicles with proper equipment to navigate severe winter weather events.	Severe Winter Weather	Moderate	Mt. Airy Public Services Department	Mt. Airy Public Services Department	2025	The county has equipped many of its vehicles with the necessary equipment to navigate severe winter weather. However, some vehicles are not fully equipped and the county will work to ensure adequate resources.
<b>Public Education and Awareness</b>							
PEA-1	Create a mandatory water conservation ordinance to enforce, if necessary.	Drought	Moderate	Surry County Planning and Development, Surry County Health and Nutrition	Surry County Planning and Development, Disaster Declaration Funding	2025, implement when drought conditions require	The county has implemented a mandatory water conservation ordinance in the past when drought conditions persisted. The county will continue to do this when required.
PEA-2	Listing of local radio and TV stations which will broadcast local weather and emergency information.	Drought	Moderate	Surry County Emergency Management	Surry County Emergency Management	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-3	Monitor and evaluate public response to flood information.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Mt. Airy Planning	Mt. Airy Planning	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-4	Increase awareness through all hazards awareness program at cooperative extension office and distribution of materials at government centers.	All	Moderate	NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension, Surry County Planning and Development	2025	The county has worked to increase awareness through programs at the cooperative extension and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-5	Monitor and evaluate public response to high wind information.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-6	Distribute educational material to the public to simulate wildfire awareness and prevention.	Wildfire	Moderate	Mt. Airy Fire Department	Mt. Airy Fire Department	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-7	Monitor and evaluate public response to wildfire information.	Wildfire	Moderate	Mt. Airy Fire Department	Mt. Airy Fire Department	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-8	Educate on proper winterizing of homes.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-9	Educate on proper emergency heating equipment.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-10	Educate on winter weather disaster supplies.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-11	Educate on several days' supply of non-perishable food.	Severe Winter Weather	Moderate	Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-12	Educate on checking smoke alarms and fire extinguishers.	Severe Winter Weather	Moderate	Mt Airy. Fire Department	Mt Airy. Fire Department	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-13	Inform and educate the citizens by providing hazard and mitigation information in public buildings and websites.	Earthquake	Moderate	City of Mt. Airy	City of Mt. Airy	See schedule for PEA-4	Coordinate with PEA-4 and see Implementation Status above
PEA-14	Educate via classes on proper retrofitting equipment.	Earthquake	Moderate	City of Mt. Airy	City of Mt. Airy	2025	The county has provided some education on earthquake retrofitting, but it would like to encourage more of this and so it will work to hold more classes going forward.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Pilot Mountain Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-2	Develop a comprehensive Capital Improvements Plan.	All	High	Town of Pilot Mountain, Surry County Planning and Development	Surry County Planning and Development	2025	The county has not yet developed a comprehensive CIP, although it has undertaken some capital projects. The county will continue to work to develop a comprehensive CIP going forward.
P-3	Adopt a Storm Water Management Ordinance or Plan	Flooding, Geological Hazards (Landslides)	High	Town of Pilot Mountain, Board of County Commissioners	Surry County Planning and Development	2025	The county has not yet adopted a Stormwater Management Ordinance or Plan. This will continue to be a goal in the future.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-5	Require that structural features are manufactured and installed in such a way that the hazardous effect of wind borne debris is limited.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Building Inspections	Surry County Planning and Development	2025	The county has attempted to identify structures that are constructed in a way that contributes to wind borne debris. Although many cases have been identified and rectified, there is still significant work to be completed on this action.
P-6	Develop a wildfire management plan including clear objectives. The plan should include degree of fire risk and wildfire history of county.	Wildfire	Moderate	Town of Pilot Mountain, NCDFR, USFS, Surry County Fire Marshal's Office	NCDFR, USFS, Surry County Fire Marshal's Office	2025	A wildfire management plan is in progress of being developed but the plan is not complete, so additional work will need to be completed.
P-7	Make available all necessary resources for fire management planning at all levels.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Local, State, Federal	2025	Although many resources are available for fire management planning, additional resources would be useful and an ongoing task will be to pursue more resources.
<b>Property Protection</b>							
PP-1	Encourage low-interest loans to farmers from the State to assist with the effects of a drought.	Drought	Low	Board of County Commissioners	Surry County Government	2025	The county has encouraged low interest loans from the state and will continue to advocate for those to be available during/after a drought event.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PP-3	Review of public and private services for improvements while relocating infrastructure away from flood prone areas.	Flooding, Geological Hazards (Landslides)	High	Town of Pilot Mountain, Surry County Planning and Development	Local	2025	Generally, the county has worked to relocate infrastructure away from flood prone areas. However, there are still areas where infrastructure is located in flood prone areas and the county will work to address those areas.
PP-4	Installation of manufactured homes are properly installed and secured.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Building Inspections	Surry County Planning and Development	2025	The county performs inspections on manufactured homes to ensure they are properly installed. This action will need to be continued going forward.
PP-5	Ensure all residential construction conforms with latest wind-resistance standards.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Building Inspections	Surry County Planning and Development	2025	The county is working to ensure that all residential construction is consistent with the latest wind standards. County officials will continue to identify structures that are in non-conformance and work with citizens to ensure compliance.
PP-6	Retrofit emergency operations centers and critical facilities.	All	High	Town of Pilot Mountain, Surry County	Surry County	2025	Some critical facilities have been retrofitted to protect against hazards, but many critical facilities remain unmitigated and will need to be addressed.
<b>Emergency Services</b>							

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-1	Coordinate efforts in regards to equipment and manpower to unload hay and other agriculture products delivered by aircraft, trucks, and trains.	Drought	Moderate	Town of Pilot Mountain, NC Cooperative Extension, Surry County Emergency Management	NC Cooperative Extension	2025	The county has coordinated efforts on equipment in the past and will continue that effort in the event of a drought.
ES-2	Procure water trailers for communities with dry or contaminated wells.	Drought	Moderate	Town of Pilot Mountain, Surry County Emergency Management, Surry County Health and Nutrition	Surry County Emergency Management, Surry County Health and Nutrition	2025	In the past, water trailers were procured when needed to address dry/contaminate wells. This will continue to be the case going forward.
ES-3	Decrease the time for evacuation.	All	High	Town of Pilot Mountain, Surry County Emergency Management, Law Enforcement	Surry County Emergency Management, Law Enforcement	2025	The county has attempted to decrease evacuation times in the past, but this is an effort that will continue to be pursued to reduce times even further.
ES-4	Improve areas where evacuation may be impeded.	All	High	Town of Pilot Mountain, Surry County Emergency Management, Law Enforcement	Surry County Emergency Management	2025	The county has taken action in some locations where bottlenecks might occur and has worked to develop a plan to keep evacuation moving smoothly. However, as in E-3, the county will continue to try to reduce its evacuation times.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-5	Coordinate early warning flash flood systems with Virginia counties that are upstream of County tributaries.	All	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management, NCDDEM	2025	The county has worked with upstream VA counties to provide advanced flash flood warnings. Continued coordination will be required on this and the county will work to improve warning systems overall.
ES-6	Make sure that all community warning sirens and warning systems are in proper working condition.	All	High	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	2025	The county regularly inspects all warning sirens and systems to ensure they will be ready for a disaster event. The city will continue inspect these systems going forward.
ES-7	Communicate with other cities/counties to facilitate emergency response and recovery.	All	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	2025	The county has taken the lead in the past to coordinate on response and recovery activities with municipalities and it is in constant coordination with other counties. This will continue to be a priority in the future.
ES-8	Train fire fighters with the latest fire fighting techniques and equip them with the most up to date equipment.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Fire Marshal's Office, NCDFR	Local	2025	Although firefighters have been well trained and equipped in the past, there is a constant need for additional training and resources, so this will be pursued going forward.
ES-9	Establish a housing numbering system and ensure that the numbers are visible from the road.	Wildfire	Low	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	2025, Annual review and update	The county completed its re-addressing in 2000 but it will need to be updated on a consistent basis and re-evaluated for an update in the future.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
ES-10	Coordinate responses between each of the county's fire departments.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	2025	The county has coordinated response within each of its fire departments and will continue to ensure coordination is maintained.
ES-11	Post warning signs in communities during times when wildfire danger may be imminent.	Wildfire	Moderate	NCDFR	NCDFR	2025	When wildfire risk has been high in the past, the county has posted warning signs to let residents know their risk level. This action will be continued in the future.
ES-12	Monitor future wildfires so that response times are evaluated and determine the amount of progress made during each fire.	Wildfire	Low	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	2025	The county has monitored past fires which has helped them determine response times. This information will continue to be collected and will be integrated to help make better judgments in the future.
ES-13	Keep primary transportation routes clear for emergency traffic and needs.	Severe Winter Weather	High	NCDOT, Law Enforcement	NCDOT, Law Enforcement	2025	The county has worked to keep primary transportation routes cleared in case they are needed for emergency traffic. This action will continue to be pursued by the county.
ES-14	Equip all essential County emergency or non-emergency vehicles with proper equipment to navigate severe winter weather events.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Each Surry County Department is responsible for its vehicles	Each Surry County Department is responsible for its vehicles	2025	The county has equipped many of its vehicles with the necessary equipment to navigate severe winter weather. However, some vehicles are not fully equipped and the county will work to ensure adequate resources.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Distribute educational material to the public to stimulate drought awareness.	All	Moderate	Town of Pilot Mountain, NC Cooperative Extension, Surry County Planning and Development, Surry County Public Works	NC Cooperative Extension, Surry County Planning and Development	2025	The county has developed a number of educational materials and brochures for the public to utilize, but these may need to be updated and will need to be reviewed so this action will remain in the plan.
PEA-2	Increase awareness through drought awareness program at cooperative extension office and distribution of materials at government centers.	All	Moderate	Town of Pilot Mountain, NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension, Surry County Planning and Development	2025	The county has worked to increase awareness through programs at the cooperative extension and has distributed materials via many government locations. However, these materials and programs will need to be reviewed, so this action will remain in the plan.
PEA-3	Create a mandatory water conservation ordinance to enforce, if necessary.	Drought	Moderate	Town of Pilot Mountain, Surry County Planning and Development, Surry County Health and Nutrition	Surry County Planning and Development, Disaster Declaration Funding	2025, implement when drought conditions require	The county has implemented a mandatory water conservation ordinance in the past when drought conditions persisted. The county will continue to do this when required.
PEA-5	Increase awareness through flood awareness program at local schools and distribution of materials at government centers.	Flooding, Geological Hazards (Landslides)	Moderate	NC Cooperative Extension, Surry County Planning and Development	NC Cooperative Extension	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-6	Increase awareness through high wind awareness program at local schools and distribution of materials at government centers.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above
PEA-7	Monitor and evaluate public response to high wind information.	Tornadoes/ Thunderstorms, Hurricane and Coastal Hazards, Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-8	Distribute educational material to the public to simulate wildfire awareness and prevention.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Fire Marshal's Office, Surry County Emergency Management	Surry County Fire Marshal's Office, Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-9	Increase awareness through wildfire awareness program at local schools and distribution of materials at government centers.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-2	Coordinate with PEA-2 and see Implementation Status above
PEA-10	Monitor and evaluate public response to wildfire information.	Wildfire	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-11	Educate on proper winterizing of homes.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above

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Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
PEA-12	Educate on proper emergency heating equipment.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-13	Educate on winter weather disaster supplies.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-14	Educate on several days' supply of non-perishable food.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-15	Educate on checking smoke alarms and fire extinguishers.	Severe Winter Weather	Moderate	Town of Pilot Mountain, Surry County Fire Marshal's Office	Surry County Fire Marshal's Office	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-16	Inform and educate the citizens by providing hazard and mitigation information in public buildings and websites.	Earthquake	Moderate	Town of Pilot Mountain, Surry County	Surry County	See schedule for PEA-1	Coordinate with PEA-1 and see Implementation Status above
PEA-17	Educate via classes on proper retrofitting equipment.	Earthquake	Moderate	Town of Pilot Mountain, Surry County	Surry County	2025	The county has provided some education on earthquake retrofitting, but it would like to encourage more of this and so it will work to hold more classes going forward.

**SECTION 9: MITIGATION ACTION PLAN**

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**SECTION 9: MITIGATION ACTION PLAN**

**Yadkin County Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Yadkin County Planning and Zoning	Local	2025	Mitigation objectives will be reviewed at all Land Use Plan Meetings
P-3	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Yadkin County Planning and Zoning	Local	2025	Continue work on the Subdivision Ordinance.
P-4	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Yadkin County Planning and Zoning	Local	2025	Although clustering of development is allowed through the group development article of the Planning Ordinance, the county will work to further encourage cluster development in the future.
P-5	Revise and update the regulatory floodplain maps.	Flooding	High	Yadkin County Planning and Zoning	Federal State	2025	Floodplain maps are being reviewed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Yadkin County Building Inspections	Local	2025	The county has implemented inspections of flood damaged structures in the past utilizing the method outlined. This action will continue to be implemented going forward as required when flooding damages structures. When this occurs, the policy will be re-evaluated to determine if changes are necessary.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-7	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Yadkin County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Yadkin County Planning and Zoning	Local	2025	Zoning maps are updated each time areas are re-zoned and kept up to date.
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Yadkin County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Yadkin County Emergency Services	Local	2025, In advance of events	In the 2020 budget a mass notification system has been funded. It will be implemented after 7/1/2019.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Yadkin County Emergency Services	Local	2025	A new sheltering plan is being written along with additional shelters are being added. Old shelters are being removed.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Yadkin County public library system.	All	High	Yadkin County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.
PEA-2	Ensure that the Planning Director is informed of erosion and sedimentation control methods and pushes this information out to the public.	Flooding	High	Yadkin County Planning and Zoning	Local	2025, Annually	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Boonville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Boonville, Yadkin County Planning and Zoning	Local	2025	They will continue to be updated.
P-3	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Boonville, Yadkin County Planning and Zoning	Local	2025	This is being reviewed.
P-4	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Town of Boonville, Yadkin County Planning and Zoning	Local	2025	This will continue.
P-5	Revise and update the regulatory floodplain maps.	Flooding	High	Town of Boonville, Yadkin County Planning and Zoning	Federal State	2025	This is reviewed by the county.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Town of Boonville, Yadkin County Building Inspections	Local	2025, Review and update post-event	This will continue.
P-7	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Town of Boonville, Yadkin County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Town of Boonville, Yadkin County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place.
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Town of Boonville, Yadkin County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Town of Boonville, Yadkin County Emergency Services	Local	2025, In advance of events	An advanced notification system is being implemented in the 2020 budget.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Town of Boonville, Yadkin County Emergency Services	Local	2025	The sheltering annex in the EOP is being updated to reflect improvements.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Yadkin County public library system.	All	High	Town of Boonville, Yadkin County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.
PEA-2	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Town of Boonville, Yadkin County Planning and Zoning	Local	2025, Annually	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of East Bend Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of East Bend, Yadkin County Planning and Zoning	Local	2025	Will review at next update
P-3	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of East Bend, Yadkin County Planning and Zoning	Local	2025	Some mitigation objectives have been integrated into the Subdivision Ordinance, but additional integration would be beneficial.
P-4	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Town of East Bend, Yadkin County Planning and Zoning	Local	2025	Although clustering of development is allowed through the group development article of the Planning Ordinance, the county will work to further encourage cluster development in the future.
P-5	Revise and update the regulatory floodplain maps.	Flooding	High	Town of East Bend, Yadkin County Planning and Zoning	Federal State	2025	Floodplain maps are updated by the state and while they have been updated relatively recently, another update of these maps is likely on the horizon.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Town of East Bend, Yadkin County Building Inspections	Local	2025, Review and update post-event	The County takes care of this
P-7	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Town of East Bend, Yadkin County Building Inspections	Local	2025, Review and update post-event	The county has implemented policies related to utility services in the past through the method outlined. This action will continue to be implemented going forward as required when utilities are damaged. When this occurs, the policy will be re-evaluated to determine if changes are necessary.



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Town of East Bend, Yadkin County Planning and Zoning	Local	2025	The county has created a zoning map, but it will need to be updated periodically in the future so this action will remain in place.
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Town of East Bend, Yadkin County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Town of East Bend, Yadkin County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Town of East Bend, Yadkin County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Yadkin County public library system.	All	High	Town of East Bend, Yadkin County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.
PEA-2	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Town of East Bend, Yadkin County Planning and Zoning	Local	2025, Annually	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Jonesville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025	Currently working on plan and this will be a part.
P-3	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025	Town is looking into this.
P-4	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025	Check with county.
P-5	Revise and update the regulatory floodplain maps.	Flooding	High	Town of Jonesville, Yadkin County Planning and Zoning	Federal State	2025	County has worked with the town to update this information.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Town of Jonesville, Yadkin County Building Inspections	Local	2025, Review and update post-event	Inspections are handled by the county.
P-7	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Town of Jonesville, Yadkin County Building Inspections	Local	2025, Review and update post-event	The county has invested in a mass notification system. This along with radio and TV

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025	The county GIS has this covered.
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025, Annual review and update	This is maintained.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Town of Jonesville, Yadkin County Emergency Services	Local	2025, In advance of events	New County notification system
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Town of Jonesville, Yadkin County Emergency Services	Local	2025	County is improving the sheltering plan

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Yadkin County public library system.	All	High	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025	Still in the works.
PEA-2	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Town of Jonesville, Yadkin County Planning and Zoning	Local	2025, Annually	Working with the county.

**SECTION 9: MITIGATION ACTION PLAN**

**Town of Yadkinville Mitigation Action Plan**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Prevention</b>							
P-1	At next Land Use Plan Update, review and include hazard mitigation objectives.	All	Moderate	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025	No changes.
P-3	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025	This is encouraged.
P-4	Review and revise the Planning Ordinance to allow for clustering of residential lots.	Flooding	Moderate	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025	It was reviewed and it is encouraged.
P-5	Revise and update the regulatory floodplain maps.	Flooding	High	Town of Yadkinville, Yadkin County Planning and Zoning	Federal State	2025	Coordinate with the County

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-6	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flooding	High	Town of Yadkinville, Yadkin County Building Inspections	Local	2025, Review and update post-event	The County has this responsibility
P-7	<p>Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.</p>	All	High	Town of Yadkinville, Yadkin County Building Inspections	Local	2025, Review and update post-event	The town has its own SEO



**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
P-8	Create a zoning map (digital) that can be easily reproduced/updated for staff and public use.	All	High	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025	The County has this responsibility
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flooding	Moderate	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025, Annual review and update	The county currently has a list of all repetitive loss properties, but that list will need to be updated to ensure any repetitive loss properties are on the radar of local officials and that mitigation strategies can be devised.
<b>Emergency Services</b>							
ES-1	Ensure adequate evacuation warning in case of major hazard event.	All	High	Town of Yadkinville, Yadkin County Emergency Services	Local	2025, In advance of events	The county always works to ensure adequate evacuation warning in the case of major hazard events and will continue to do so going forward.
ES-2	Improve shelter capacities with alternate power/heat sources.	Severe Winter Weather	High	Town of Yadkinville, Yadkin County Emergency Services	Local	2025	Although many shelters have improved capacities, improvements in the form of generators or other heat sources are still necessary and will be pursued.

**SECTION 9: MITIGATION ACTION PLAN**

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2020)
<b>Public Education and Awareness</b>							
PEA-1	Place flood protection and other hazard education materials in all branches of the Yadkin County public library system.	All	High	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025	The county has placed education materials concerning hazards in all branches of the county library, but this action will need to be reviewed and revised as additional information is likely available and other outreach strategies will be explored.
PEA-2	The Yadkin County Planning and Zoning Director has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this official or his designee makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Planning and Zoning Department.	Flooding	High	Town of Yadkinville, Yadkin County Planning and Zoning	Local	2025, Annually	The County has this responsibility.



# SECTION 10

## PLAN MAINTENANCE

This section discusses how the Northern Piedmont Region Mitigation Strategy and Mitigation Action Plan will be implemented and how the Regional Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public will continue to be involved in a sustained hazard mitigation planning process. It consists of the following four subsections:

- 10.1 Implementation and Integration
- 10.2 Monitoring, Evaluation, and Enhancement
- 10.3 Continued Public Involvement
- 10.4 Evaluation of Monitoring, Evaluation and Update Process

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### 44 CFR Requirement

#### 44 CFR Part 201.6(c)(4)(i):

The plan shall include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating and updating the mitigation plan within a five-year cycle.

#### 44 CFR Part 201.6(c)(4)(ii):

The plan maintenance process shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

## 10.1 IMPLEMENTATION AND INTEGRATION

Each agency, department or other partner participating under the Northern Piedmont Regional Hazard Mitigation Plan is responsible for implementing specific mitigation actions as prescribed in the Mitigation Action Plan. Every proposed action listed in the Mitigation Action Plan is assigned to a specific “lead” agency or department in order to assign responsibility and accountability and increase the likelihood of subsequent implementation.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date has been assigned in order to assess whether actions are being implemented in a timely fashion. The counties in the Northern Piedmont Region will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the Mitigation Action Plan.

The participating jurisdictions will integrate this Hazard Mitigation Plan into relevant City and County government decision-making processes or mechanisms, where feasible. This includes integrating the requirements of the Hazard Mitigation Plan into other local planning documents, processes or mechanisms, such as comprehensive or capital improvement plans, when appropriate. The members of

the Northern Piedmont Regional Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and mitigation actions of new and updated local planning documents for their agencies or departments are consistent, or do not conflict with, the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the Northern Piedmont Region.

Since the initial plan was adopted in 2015, each County and participating jurisdiction has worked to integrate the hazard mitigation plan into other planning mechanisms where applicable/feasible. Examples of how this integration has occurred have been documented in the Implementation Status discussion provided for each of the mitigation actions found in Section 9. Specific examples of how integration has occurred include:

- Integrating the mitigation plan into reviews and updates of floodplain management ordinances
- Integrating the mitigation plan into reviews and updates of County emergency operations plans
- Integrating the mitigation plan into review and updates of building codes
- Integrating the mitigation plan into the capital improvements plan through identification of mitigation actions that require local funding.

Opportunities to further integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the Regional Hazard Mitigation Planning Committee, individual county meetings, and the annual review process described herein. Although it is recognized that there are many possible benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Regional Hazard Mitigation Plan is deemed by the Northern Piedmont Regional Hazard Mitigation Planning Committee to be the most effective and appropriate method to implement local hazard mitigation actions at this time.

## **10.2 MONITORING, EVALUATION AND ENHANCEMENT**

Periodic revisions and updates of the Hazard Mitigation Plan are required to ensure that the goals of the Plan are kept current, taking into account potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with applicable federal and state regulations. Periodic evaluation of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to the Mitigation Action Plan.

When determined necessary, the Northern Piedmont Regional Hazard Mitigation Planning Committee shall meet in March of every year to evaluate and monitor the progress attained and to revise, where needed, the activities set forth in the Plan. The findings and recommendations of the Regional Hazard Mitigation Planning Committee shall be documented in the form of a report that can be shared with interested City and County Council members. The Regional Hazard Mitigation Planning Committee will also meet following any disaster events warranting a reexamination of the mitigation actions being implemented or proposed for future implementation. This will ensure that the Plan is continuously updated to reflect changing conditions and needs within the Northern Piedmont Region. For future updates of the plan, North Carolina Emergency Management's Hazard Mitigation Planning section will help coordinate the reconvening the Regional Hazard Mitigation Planning Committee for these reviews through coordination with each County's Emergency Management Departments. The Emergency Management Directors from the seven participating counties will maintain ultimate responsibility for their respective County's plan implementation and monitoring, evaluation and update.

### **Five (5) Year Plan Review**

The Plan will be thoroughly reviewed by the Regional Hazard Mitigation Planning Committee every five years to determine whether there have been any significant changes in the Northern Piedmont Region that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, an increase or decrease in capability to address hazards, and changes to federal or state legislation are examples of factors that may affect the necessary content of the Plan.

The plan review provides participating jurisdiction officials with an opportunity to evaluate those actions that have been successful and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. North Carolina Emergency Management's Hazard Mitigation Planning section will help coordinate the reconvening the Regional Hazard Mitigation Planning Committee and conducting the five-year review through coordination with each County's Emergency Management Departments.

During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the Plan?
- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did County departments participate in the plan implementation process as assigned?

Following the five-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined herein. Upon completion of the review and update/amendment process, the Northern Piedmont Regional Hazard Mitigation Plan will be submitted to the State Hazard Mitigation Officer at the North Carolina Division of Emergency Management (NCEM) for final review and approval in coordination with the Federal Emergency Management Agency (FEMA).

### **Disaster Declaration**

Following a disaster declaration, the Northern Piedmont Regional Hazard Mitigation Plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. It will be the responsibility North Carolina Emergency Management's Hazard Mitigation Planning section to coordinate the reconvening of the Regional Hazard Mitigation Planning Committee, through coordination with each County's Emergency Management Department, and ensure the appropriate stakeholders are invited to participate in the plan revision and update process following declared disaster events.

### **Reporting Procedures**

The results of the five-year review will be summarized by the Regional Hazard Mitigation Planning Committee in a report that will include an evaluation of the effectiveness of the Plan and any required or recommended changes or amendments. The report will also include an evaluation of

implementation progress for each of the proposed mitigation actions, identifying reasons for delays or obstacles to their completion along with recommended strategies to overcome them.

**Plan Amendment Process**

Upon the initiation of the amendment process, representatives from Northern Piedmont counties will forward information on the proposed change(s) to all interested parties including, but not limited to, all directly affected County departments, residents, and businesses. Information will also be forwarded to the North Carolina Division of Emergency Management. This information will be disseminated in order to seek input on the proposed amendment(s) for no less than a 45-day review and comment period.

At the end of the 45-day review and comment period, the proposed amendment(s) and all comments will be forwarded to the Regional Hazard Mitigation Planning Committee for final consideration. The Planning Committee will review the proposed amendment along with the comments received from other parties, and if acceptable, the committee will submit a recommendation for the approval and adoption of changes to the Plan.

In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered by the Regional Hazard Mitigation Planning Committee:

- There are errors, inaccuracies or omissions made in the identification of issues or needs in the Plan
- New issues or needs have been identified which are not adequately addressed in the Plan
- There has been a change in information, data, or assumptions from those on which the Plan is based

Upon receiving the recommendation from the Regional Hazard Mitigation Planning Committee and prior to adoption of the Plan, the participating jurisdictions will hold a public hearing, if deemed necessary. The governing bodies of each participating jurisdiction will review the recommendation from the Regional Hazard Mitigation Planning Committee (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, the governing bodies will take one of the following actions:

- Adopt the proposed amendments as presented
- Adopt the proposed amendments with modifications
- Refer the amendments request back to the Regional Hazard Mitigation Planning Committee for further revision, or
- Defer the amendment request back to the Regional Hazard Mitigation Planning Committee for further consideration and/or additional hearings

## 10.3 CONTINUED PUBLIC INVOLVEMENT

### 44 CFR Requirement

#### 44 CFR Part 201.6(c)(4)(iii):

The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process

Public participation is an integral component to the mitigation planning process and will continue to be essential as this Plan evolves over time. As described above, significant changes or amendments to the Plan shall require a public hearing prior to any adoption procedures.

Other efforts to involve the public in the maintenance, evaluation and revision process will be made as necessary. These efforts may include:

- Advertising meetings of the Regional Hazard Mitigation Planning Committee in local newspapers, public bulletin boards and/or County office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the Regional Hazard Mitigation Planning Committee
- Utilizing local media to update the public on any maintenance and/or periodic review activities taking place
- Utilizing the Northern Piedmont county websites to advertise any maintenance and/or periodic review activities taking place, and
- Keeping copies of the Plan in public libraries.

## 10.4 EVALUATION OF MONITORING, EVALUATION AND UPDATE PROCESS

Over the past five years, the participating jurisdictions have been independently implementing, monitoring and evaluating their own mitigation action plans. Progress made in implementing actions has been documented in Section 9: Mitigation Action Plan where each action contains a narrative about the implementation status of the action as of 2015. That said, the jurisdiction did waiver slightly from the monitoring and evaluation process defined in the original version of the plan, but still made significant process in implementing their mitigation action plans. During the 2020 update of this plan, the Regional Hazard Mitigation Planning Committee determined that the procedures for the upcoming five-year monitoring and evaluation process will remain as defined above and will be re-evaluated during the next plan update process.

The five-year comprehensive update process began as early as 2018 when North Carolina Emergency Management made the decision to set aside HMGP funding from Hurricane Matthew to fund the Northern Piedmont Regional Hazard Mitigation Plan. To facilitate this effort, NCEM assigned the plan update to their pre-qualified hazard mitigation planning consultants ESP Associates. Representatives from ESP Associates first reached out to county representatives in October 2018 to initiate the plan update process. More details about the plan update process are provided in Section 2, Planning Process. For the next update of this plan, NCEM's Hazard Mitigation Planning section will continue take the lead on organizing and initiating the 5-year update of the plan.



# Appendix A

## Plan Adoption

This appendix includes the FEMA APP Letter and the local adoption resolutions for each of the participating jurisdictions.



FEMA

October 1, 2020

Mr. Steve McGugan  
State Hazard Mitigation Officer  
Assistant Director / Mitigation Section Chief  
Division of Emergency Management  
NC Department of Public Safety  
200 Park Offices Drive  
Durham, NC 27713

Reference: Multi-Jurisdictional Hazard Mitigation Plan: Northern Piedmont Regional

Dear Mr. McGugan:

We are pleased to inform you that the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan update is in compliance with the Federal hazard mitigation planning requirements resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR 201.6. Effective October 1, 2020, the plan is approved for a period of five (5) years, to September 30, 2025.

This plan approval extends to the following participating jurisdictions that provided copies of their resolutions adopting the plan:

- Town of Bermuda Run
- Town of Bethania
- Town of Boonville
- Village of Clemmons
- Town of Cooleemee
- Town of Danbury
- Davie County, Unincorporated
- Town of East Bend
- Town of Jonesville
- City of King
- Town of Lewisville
- Rockingham County, Unincorporated
- Town of Rural Hall
- Stokes County, Unincorporated
- Surry County, Unincorporated
- Village of Tobaccolville
- Town of Walkertown
- Town of Walnut Cove

The approved participating jurisdictions are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

National Flood Insurance Program (NFIP) participation is required for some programs.

We commend the participants in the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is

submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

We strongly encourage each community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each community to conduct a plan update process within one (1) year of being included in a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development. When you prepare a comprehensive plan update, it must be resubmitted through the State as a “plan update” and is subject to a formal review and approval process by our office. If the plan is not updated prior to the required five (5) year update, please ensure that the draft update is submitted at least six (6) months prior to expiration of this plan.

The State and the participants in the Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or the participants in the Northern Regional Multi-Jurisdictional Hazard Mitigation Plan have any questions or need any additional information, please do not hesitate to contact Catherine Strickland, of the Hazard Mitigation Assistance Branch, at (770) 220-5328 or Edwardine S. Marrone, of my staff, at (404) 433-3968.

Sincerely,

A handwritten signature in blue ink that reads "Kristen M. Martinenza". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Kristen M. Martinenza, P.E., CFM  
Branch Chief  
Risk Analysis  
FEMA Region IV

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Caswell County is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the County of Caswell desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the County of Caswell to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Caswell County Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the County of Caswell; and

WHEREAS, County of Caswell, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;


WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of Caswell County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on October 5th, 2020.

  
Paula Seamster, Clerk to the Board

  
Rick McVey, Chair  
Caswell County Board of Commissioners



RESOLUTION  
ADOPTING NORTHERN PIEDMONT REGIONAL  
HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within Town of Milton are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the county are particularly vulnerable to drought, extreme heat, hailstorm, hurricane and tropical storm, lightning, thunderstorm wind/high wind, tornado, winter storm and freeze, flood, hazardous material incident, and wildfire; and

WHEREAS, the Town desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of Town to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Board of Commissioners of Milton hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan.

2. Vests Caswell County Emergency Management with the responsibility, authority, and the means to:

- (a) Inform all concerned parties of this action.
- (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Caswell County Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Caswell County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 25<sup>th</sup> day of October, 2022.



Name, Chair  
Milton Board of Commissioners

Attest:



Name, Clerk  
Milton Board of Commissioners

Certified by: \_\_\_\_\_ (SEAL)

Date: October 25, 2022





# TOWN OF YANCEYVILLE

INCORPORATED  
1986

*"Tradition with Vision"*

## RESOLUTION ADOPTING NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the Town of Yanceyville are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the town are particularly vulnerable to drought, extreme heat, hailstorm, hurricane and tropical storm, lightning, thunderstorm wind/high wind, tornado, winter storm and freeze, flood, hazardous material incident, and wildfire; and

WHEREAS, the Town desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Yanceyville has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Town Council of the Town of Yanceyville to fulfill this obligation in order that the Town will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the Town;

NOW, THEREFORE, be it resolved that the Town Council of the Town of Yanceyville hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan.
2. Vests Caswell County Emergency Management and the Yanceyville Fire Department with the responsibility, authority, and the means to:
  - (a) Inform all concerned parties of this action.
  - (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.
3. Appoints the Caswell County Emergency Management and the Yanceyville Fire Department to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Town Council of the Town of Yanceyville for consideration.
4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 15<sup>th</sup> day of September, 2022.



Alvin W. Foster, Mayor  
Town of Yanceyville


Attest:



Kamara G. Barnett, Town Clerk  
Town of Yanceyville

(TOWN SEAL)



Certified by:   
R. Lee Farmer, Town Attorney  
Town of Yanceyville

Date: September 15, 2022





**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Davie County is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, Davie County desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of Davie County to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of Davie County to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Davie County; and

WHEREAS, Davie County, in coordination with Caswell, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of Davie County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 3, 2020.

ATTEST:  
Stacy A Moyer, Clerk

Terry N Renegar, Chair  
Davie County Board of Commissioners



**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, THE TOWN OF BERMUDA RUN is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, THE TOWN OF BERMUDA RUN desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Bermuda Run Town Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Bermuda Run Town Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the TOWN OF BERMUDA RUN; and

WHEREAS, THE TOWN OF BERMUDA RUN, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town Council of THE TOWN OF BERMUDA RUN hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 11, 2020.



Rick Cross, Mayor

ATTEST:



Cindy Poe, Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the (Town of Cooleemee) is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the (Town of Cooleemee) desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the (Cooleemee Town Board) to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the (Cooleemee Town Board) to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the (Town of Cooleemee); and

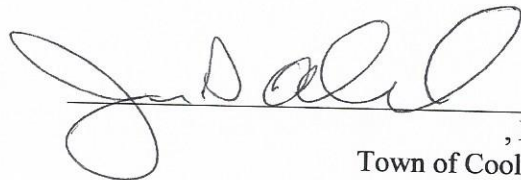
WHEREAS, the (Town of Cooleemee), in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the (Cooleemee Town Board) of the (Town of Cooleemee) hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on 8-17, 2020.

  
\_\_\_\_\_, Mayor

Town of Cooleemee  
Jessica Almond

ATTEST:

  
\_\_\_\_\_, Clerk

Town of Cooleemee  
Steven Corriher



**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Town of Mocksville is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Mocksville desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Mocksville Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Mocksville Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the (Town of Mocksville); and

WHEREAS, Town of Mocksville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town of Mocksville Board of Commissioners of Town of Mocksville hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted this 4<sup>th</sup> day of August 2020.

*William J Marklin III*

---

Will Marklin, Mayor

ATTEST:

*Lynn Trivette*

---

Lynn Trivette, NCCMC

**RESOLUTION ADOPTING THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN  
(EMERGENCY MANAGEMENT DEPARTMENT)**

**WHEREAS** Forsyth County, North Carolina, is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property;

**WHEREAS** Forsyth County desires to seek ways to mitigate situations that may aggravate such circumstances;

**WHEREAS** the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards;

**WHEREAS** it is the intent of the Forsyth County Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan;

**WHEREAS** it is also the intent of the Forsyth County Board of Commissioners to fulfill its obligation under the North Carolina Emergency Management Act, NCGS 166A-19 et seq., and Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 USC 5165, to remain eligible to receive state and federal assistance in the event of a declared disaster affecting Forsyth County;

**WHEREAS** Forsyth County, in coordination with Caswell County, Davie County, Rockingham County, Stokes County, Surry County, Yadkin County and the participating municipalities within those counties, has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and

**WHEREAS** both the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

**NOW, THEREFORE, BE IT RESOLVED**, that the Forsyth County Board of Commissioners hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such official action as may be reasonably necessary to carry out the proposed actions of the said Plan.

Adopted this 27<sup>th</sup> day of August 2020.

ADOPTED

AUG 27, 2020

Forsyth County Board  
of Commissioners

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Bethania is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Bethania desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Bethania Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Bethania Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Bethania; and

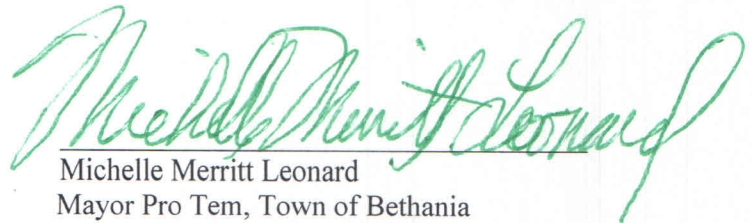
WHEREAS, the Town of Bethania, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Town of Bethania hereby:

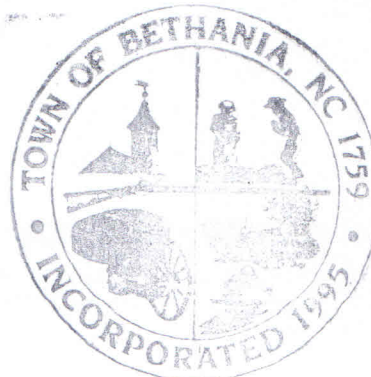
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 13, 2020.

  
Michelle Merritt Leonard  
Mayor Pro Tem, Town of Bethania

ATTEST:

  
Karen Keller, Town Clerk



**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Village of Clemmons is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Village of Clemmons desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Village of Clemmons Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Village of Clemmons Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Village of Clemmons; and

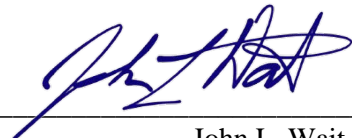
WHEREAS, the Village of Clemmons, in coordination with Forsyth County and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Village of Clemmons Council of the Village of Clemmons hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 10, 2020.



John L. Wait, Mayor  
Village of Clemmons

ATTEST:

  
\_\_\_\_\_  
Lisa Shortt, Village Clerk





**RESOLUTION NO. R-2020-16**

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Kernersville is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Kernersville desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Board of Alderman to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Board of Alderman to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Kernersville; and

WHEREAS, Town of Kernersville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

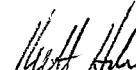
WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Alderman of the Town of Kernersville hereby:

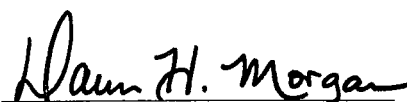
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on September 1, 2020.

ATTEST:

  
\_\_\_\_\_  
Keith Hooker, Town Clerk



  
\_\_\_\_\_  
Dawn H. Morgan, Mayor  
Town of Kernersville

**RESOLUTION 2020052 OF THE LEWISVILLE TOWN COUNCIL  
ADOPTING THE 2020 NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION  
PLAN**

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**WHEREAS**, the citizens and property within the Town of Lewisville are vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

**WHEREAS**, the Town of Lewisville desires to seek ways to mitigate situations that may aggravate such circumstances; and

**WHEREAS**, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

**WHEREAS**, it is the intent of the Lewisville Town Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

**WHEREAS**, it is also the intent of the Lewisville Town Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Lewisville; and

**WHEREAS**, Town of Lewisville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;


**WHEREAS**, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures.

**NOW, THEREFORE, BE IT RESOLVED** that the Town Council of Town of Lewisville hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

**Adopted this the 13<sup>th</sup> Day of August, 2020 by the Lewisville Town Council.**

ATTEST:

  
\_\_\_\_\_  
Joyce C. McWilliams Walker, Town Clerk

  
\_\_\_\_\_  
Mike Horn, Mayor





**RESOLUTION TO ADOPT THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Town of Rural Hall is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Rural Hall desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Rural Hall Town Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Rural Hall Town Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Rural Hall; and

WHEREAS, Town of Rural Hall, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and


WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures.

NOW, THEREFORE, BE IT RESOLVED that the Town of Rural Hall Town Council hereby:


1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan; and
3. Authorizes staff to make modifications based on suggestions from the agencies currently reviewing the Plan.

Adopted on August 10, 2020.



  
\_\_\_\_\_  
Timothy M. Flinchum, Mayor

ATTEST:

  
\_\_\_\_\_  
Dora K. Moore, Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Village of Tobacoville is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Village of Tobacoville desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Village of Tobacoville to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Village of Tobacoville to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Village of Tobacoville; and

WHEREAS, the Village of Tobacoville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

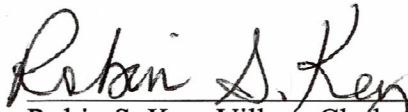
WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

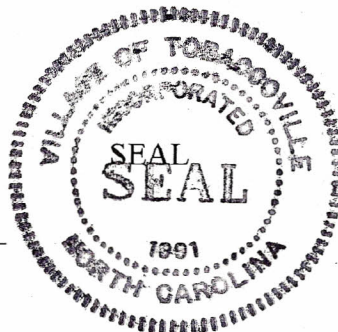
NOW, THEREFORE, BE IT RESOLVED that the Council of the Village of Tobacoville hereby:

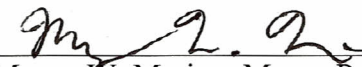
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 6, 2020.

Attest:

  
Robin S. Key, Village Clerk



  
Myron W. Marion, Mayor Pro Tem

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Walkertown is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Walkertown desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Walkertown Town Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Walkertown Town Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Walkertown; and

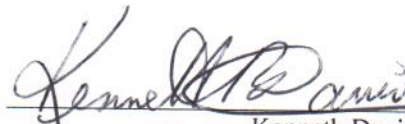
WHEREAS, Town of Walkertown, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town Council of the Town of Walkertown hereby:

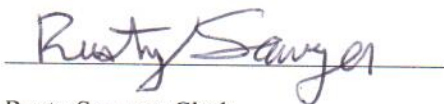
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on September 10th, 2020.



Kenneth Davis, Mayor  
Town of Walkertown

ATTEST:



Rusty Sawyer, Clerk



Resolution #20-0362  
Resolution Book, Volume 2, Page 161

**RESOLUTION TO SUPPORT AND ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

**WHEREAS**, the City of Winston-Salem is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

**WHEREAS**, the City of Winston-Salem desires to seek ways to mitigate situations that may aggravate such circumstances; and

**WHEREAS**, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

**WHEREAS**, it is the intent of the Winston-Salem City Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

**WHEREAS**, it is also the intent of the Winston-Salem City Council to fulfill its obligation under the North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the City of Winston-Salem; and

**WHEREAS**, the City of Winston-Salem in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and


WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures.

NOW, THEREFORE, BE IT RESOLVED that the Mayor, Mayor Pro Tempore, and Members of the City Council hereby:

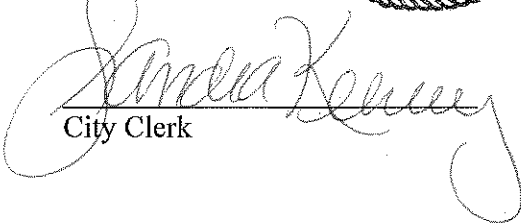
1. Adopt the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agree to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 17, 2020.



  
LOCAL GOVERNING BODY

ATTEST:

  
City Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Rockingham County is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Rockingham County desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Rockingham County, A Body Politic to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Rockingham County, A Body Politic to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Rockingham County; and

WHEREAS, Rockingham County, in coordination with Caswell, Davie, Forsyth, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

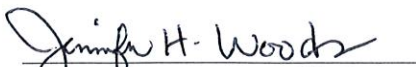
NOW, THEREFORE, BE IT RESOLVED that the Rockingham County, A Body Politic of Rockingham County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on September 21, 2020.

  
Mark F. Richardson, Chair  
LOCAL GOVERNING BODY

ATTEST:

  
Jennifer H. Woods, Clerk







**RESOLUTION: NORTHERN PIEDMONT REGIONAL  
HAZARD MITIGATION PLAN**

WHEREAS, the City of Eden is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the City of Eden desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the City of Eden to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the City of Eden to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the City of Eden; and

WHEREAS, the City of Eden, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

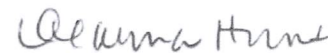
WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the City of Eden of Rockingham County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on June 21, 2022.

ATTEST:

  
Deanna Hunt, City Clerk



  
Neville Hall, Mayor

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Town of Madison is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Madison desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Madison to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Madison to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Madison; and


WHEREAS, Town of Madison, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town of Madison of Rockingham County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on           May 12          , 2022.

  
\_\_\_\_\_  
William Phillips, Chair  
LOCAL GOVERNING BODY

ATTEST:

  
\_\_\_\_\_  
Lannette F. Johnson, Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Town of Mayodan is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Mayodan desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Mayodan to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Mayodan to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Mayodan; and

WHEREAS, Town of Mayodan, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials:

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures:

NOW, THEREFORE, BE IT RESOLVED that the Town of Mayodan of Rockingham County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on May 9, 2022.

*Chel Wee*

\_\_\_\_\_  
Chair  
LOCAL GOVERNING BODY

ATTEST:

*Smith Horn*  
\_\_\_\_\_  
Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

**WHEREAS**, the City of Reidsville is vulnerable to any array of natural hazards that can cause loss of life and damages to public and private property; and,

**WHEREAS**, the City of Reidsville desires to seek ways to mitigate situations that may aggravate such circumstances; and,

**WHEREAS**, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and,

**WHEREAS**, it is the intent of the City of Reidsville to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and,

**WHEREAS**, it is also the intent of the City of Reidsville to fulfill its obligation under North Carolina General Statutes, Chapter 166A; North Carolina Emergency Management Act and Section 322; Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive State and Federal assistance in the event of a declared disaster affecting the City of Reidsville; and,

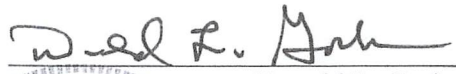
**WHEREAS**, the City of Reidsville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties, has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and,

**WHEREAS**, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

**NOW, THEREFORE, BE IT RESOLVED** that the City of Reidsville of Rockingham County hereby:

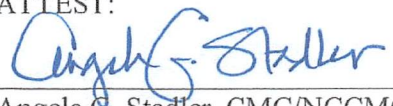
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted this the 10<sup>th</sup> day of May, 2022.



Donald L. Gorham, Mayor

ATTEST:



Angela G. Stadler, CMC/NCCMC, City Clerk





## RESOLUTION TO ADOPT THE

### NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN

WHEREAS, Town of Stoneville is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Stoneville desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Stoneville to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Stoneville to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Stoneville; and

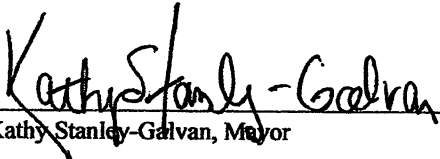
WHEREAS, Town of Stoneville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town of Stoneville of Rockingham County hereby:


1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on May 3, 2022.

  
Kathy Stanley-Galvan, Mayor



ATTEST  
SEAL

  
Sherri Darnell, CMC, NCCMC, Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, Town of Wentworth is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Wentworth desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Wentworth to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Wentworth to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Wentworth; and

WHEREAS, Town of Wentworth, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

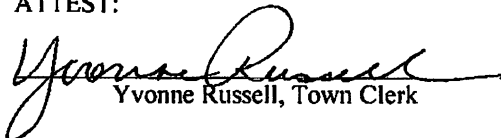
NOW, THEREFORE, BE IT RESOLVED that the Town of Wentworth of Rockingham County hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on May 3<sup>rd</sup>, 2022.

  
Dennis Paschal Jr., Mayor

ATTEST:

  
Yvonne Russell, Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the County of Stokes is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the County of Stokes desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Stokes County Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Stokes County Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the County of Stokes; and


WHEREAS, the County of Stokes, in coordination with Caswell, Davie, Forsyth, Rockingham, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;


NOW, THEREFORE, BE IT RESOLVED that the Stokes County Board of Commissioners of the County of Stokes hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on July 27, 2020.

  
\_\_\_\_\_  
Andy Nickelston, Chairman  
Stokes County Board of Commissioners

ATTEST:

  
Shannon Shaver  
Clerk to the Board

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Danbury is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Danbury desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Danbury Town Council to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Danbury Town Council to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Danbury; and

WHEREAS, the Town of Danbury, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town Council of the Town of Danbury hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on July 22, 2020.

  
Janet S. Whitt  
Mayor

ATTEST: .

  
Dianne B. Starnes  
Town Clerk



**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the City of King is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the City of King desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the City Council of the City of King to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the City Council of the City of King to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the City of King; and

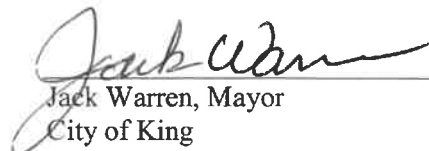
WHEREAS, the City of King, in coordination with Stokes, Caswell, Davie, Forsyth, Rockingham, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;


NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of King hereby:

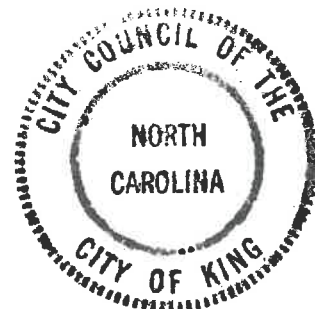
1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 3, 2020.

  
\_\_\_\_\_  
Jack Warren, Mayor  
City of King

ATTEST:

  
\_\_\_\_\_  
Nicole Branshaw  
City Clerk





# Town of Walnut Cove

Office of Board of Town Commissioners

## RESOLUTION TO ADOPT THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the Town of Walnut Cove is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Walnut Cove desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Walnut Cove to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Walnut Cove to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Walnut Cove; and

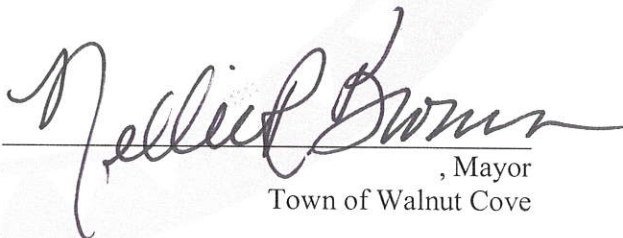
WHEREAS, the Town of Walnut Cove, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Walnut Cove Board of Commissioners of the Town of Walnut Cove hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on July 14, 2020.

  
\_\_\_\_\_, Mayor  
Town of Walnut Cove

ATTEST:

  
\_\_\_\_\_, Clerk

LARRY JOHNSON  
Chairman  
Mount Airy District

MARK MARION  
Vice Chairman  
Central District

BILL GOINS  
Mount Airy District

EDDIE HARRIS  
South District

VAN TUCKER  
East District



CHRIS KNOPF  
County Manager

EDWIN M. WOLTZ  
County Attorney

**BOARD OF COMMISSIONERS**  
Historic Courthouse  
114 W. Atkins Street  
Dobson, NC 27017

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, County of Surry is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the County of Surry desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Surry County Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Surry County Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the County of Surry; and

WHEREAS, County of Surry, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Surry County Board of Commissioners of County of Surry hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

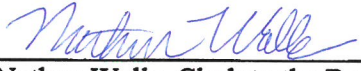
Adopted on July 20, 2020.

  
\_\_\_\_\_

Larry Johnson,  
Chairman

Surry County Board of Commissioners

ATTEST:

  
\_\_\_\_\_

Nathan Walls, Clerk to the Board

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Dobson is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Dobson desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Dobson Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Dobson Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Dobson; and

WHEREAS, the Town of Dobson, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Town of Dobson hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on December 2<sup>nd</sup>, 2020.



Ricky Draughn, Mayor  
Town of Dobson

ATTEST:

  
Misty Marion, Clerk

# Town of Elkin

**Town Manager**  
Brent Cornelison

**Town Attorney**  
Raymond A. Parker



**Mayor**  
Sam Bishop

**Commissioners**  
Robert Ball  
Jeff Eidson  
Will Gwyn  
Cicely McCulloch  
Tommy Wheeler

## RESOLUTION TO ADOPT THE NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN

**WHEREAS**, the Town of Elkin is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

**WHEREAS**, the Town of Elkin desires to seek ways to mitigate situations that may aggravate such circumstances; and

**WHEREAS**, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

**WHEREAS**, it is the intent of the Town of Elkin Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

**WHEREAS**, it is also the intent of the Town of Elkin to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Elkin; and

**WHEREAS**, the Town of Elkin, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those counties, has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials; and

**WHEREAS**, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures.

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Commissioners of the Town of Elkin hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on December 14, 2020.

  
Sam Bishop, Mayor

ATTEST:

  
Catherine C. Tilley, Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the City of Mount Airy is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the City of Mount Airy desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the City of Mount Airy to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the City of Mount Airy to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the City of Mount Airy; and

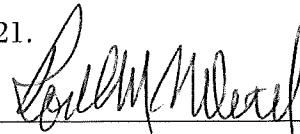
WHEREAS, the City of Mount Airy, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

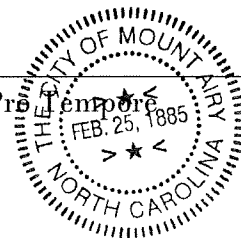
NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF MOUNT AIRY BOARD OF COMMISSIONERS MEETING IN OPEN SESSION THAT:

- Section 1. The Board of Commissioners does hereby approve and adopt the Northern Piedmont Regional Hazard Mitigation Plan.
- Section 2. The Board of Commissioners does hereby agree to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.
- Section 3. This resolution shall become effective upon approval.

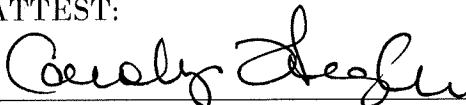
Approved and adopted this the 7<sup>th</sup> day of January, 2021.



Ronald M. Niland, Mayor Pro Tempore



ATTEST:



Carolyn Hegler, Deputy Clerk

STATE OF NORTH CAROLINA  
COUNTY OF SURRY

TOWN OF PILOT MOUNTAIN  
Resolution 2020-16

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Pilot Mountain is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Pilot Mountain desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town of Pilot Mountain Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town of Pilot Mountain Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Pilot Mountain; and

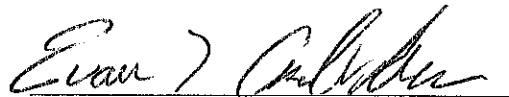
WHEREAS, Town of Pilot Mountain, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

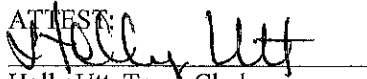
WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Town of Pilot Mountain hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted this the 7<sup>th</sup> day of December, 2020

  
Evan J. Cockerham, Mayor

ATTEST:  
  
Holly Utt, Town Clerk



**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, YADKIN COUNTY is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, YADKIN COUNTY desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the YADKIN COUNTY BOARD OF COUNTY COMMISSIONERS to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the YADKIN COUNTY BOARD OF COUNTY COMMISSIONERS to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the COUNTY OF YADKIN; and

WHEREAS, YADKIN COUNTY, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, and Surry Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

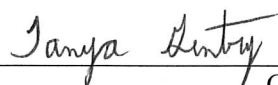
NOW, THEREFORE, BE IT RESOLVED that the BOARD OF COUNTY COMMISSIONERS of YADKIN COUNTY hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on July 20, 2020.

  
\_\_\_\_\_, Chair  
YADKIN COUNTY BOARD OF COUNTY  
COMMISSIONERS

ATTEST:

  
\_\_\_\_\_, Clerk

WHEREAS, TOWN OF BOONVILLE is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the TOWN OF BOONVILLE desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the TOWN OF BOONVILLE to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the TOWN OF BOONVILLE to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the TOWN OF BOONVILLE; and

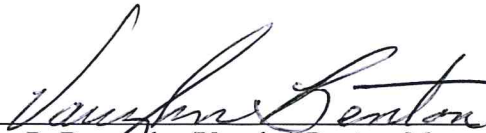
WHEREAS, TOWN OF BOONVILLE, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

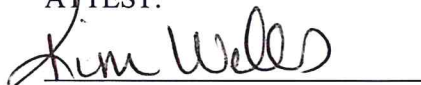
NOW, THEREFORE, BE IT RESOLVED that the GOVERNING BODY of TOWN OF BOONVILLE hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 4, 2020.

  
R. Devaughn (Vaughn) Benton, Mayor  
TOWN OF BOONVILLE

ATTEST:

  
Kim Wells, Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of East Bend is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of East Bend desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town; and


WHEREAS, the Town, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town of East Bend hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 10, 2020 by a vote of 4 in favor and 0 opposed.

  
\_\_\_\_\_  
Archie B. Hicks, Jr. Mayor  
Town of East Bend

ATTEST:

  
\_\_\_\_\_  
Vickie J. Matthews, Town Clerk/Administrator

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the TOWN OF JONESVILLE is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the TOWN OF JONESVILLE desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the JONESVILLE TOWN COUNCIL to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the JONESVILLE TOWN COUNCIL to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the TOWN OF JONESVILLE; and

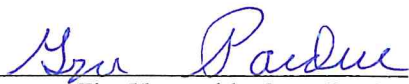
WHEREAS, The TOWN OF JONESVILLE, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;

WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the TOWN COUNCIL of ~~The~~ TOWN OF JONESVILLE hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 17, 2020.

  
\_\_\_\_\_  
The Honorable Gene Pardue  
Mayor Town of Jonesville

ATTEST:  
  
\_\_\_\_\_  
Wenona C. Thompson, Town Clerk

**RESOLUTION TO ADOPT THE  
NORTHERN PIEDMONT REGIONAL HAZARD MITIGATION PLAN**

WHEREAS, the Town of Yadkinville is vulnerable to an array of natural hazards that can cause loss of life and damages to public and private property; and

WHEREAS, the Town of Yadkinville desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the development and implementation of a hazard mitigation plan can result in actions that reduce the long-term risk to life and property from natural hazards; and

WHEREAS, it is the intent of the Town Board of Commissioners to protect its citizens and property from the effects of natural hazards by preparing and maintaining a local hazard mitigation plan; and

WHEREAS, it is also the intent of the Town Board of Commissioners to fulfill its obligation under North Carolina General Statutes, Chapter 166A: North Carolina Emergency Management Act and Section 322: Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to remain eligible to receive state and federal assistance in the event of a declared disaster affecting the Town of Yadkinville; and


WHEREAS, the Town of Yadkinville, in coordination with Caswell, Davie, Forsyth, Rockingham, Stokes, Surry and Yadkin Counties and the participating municipalities within those Counties has prepared a multi-jurisdictional hazard mitigation plan with input from the appropriate local and state officials;


WHEREAS, the North Carolina Division of Emergency Management and the Federal Emergency Management Agency are reviewing the Northern Piedmont Regional Hazard Mitigation Plan for legislative compliance and will approve the plan pending the completion of local adoption procedures;

NOW, THEREFORE, BE IT RESOLVED that the Town Board of Commissioners of the Town of Yadkinville hereby:

1. Adopts the Northern Piedmont Regional Hazard Mitigation Plan; and
2. Agrees to take such other official action as may be reasonably necessary to carry out the proposed actions of the Plan.

Adopted on August 3, 2020.

  
\_\_\_\_\_  
Eddie Norman, Mayor

ATTEST:  
  
\_\_\_\_\_  
Crystal Sprague, Clerk



# Appendix B

## Planning Tools

This appendix includes the following:

1. Blank Public Survey
2. Blank Capability Assessment Survey
3. Scoring Criteria for Capability Assessment
4. Blank Mitigation Action Worksheet

## PUBLIC SURVEY FOR HAZARD MITIGATION PLANNING

### We need your help!

Caswell, Davie, Forsyth, Rockingham, Surry, Stokes and Yadkin Counties, along with participating local jurisdictions and other participating partners, are now working to update the region's multi-jurisdictional *Hazard Mitigation Plan*. The purpose of this Plan is to identify and assess our community's natural hazard risks and determine how to best minimize or manage those risks. Upon completion, the Plan will represent a comprehensive multi-jurisdictional *Hazard Mitigation Plan* for the seven-county region.

This survey questionnaire provides an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that should help lessen the impact of future hazard events.

### Please help us by completing this survey and returning it to:

Nathan Slaughter, ESP Associates  
2200 Gateway Centre Blvd., Suite 216  
Morrisville, NC 27560

Surveys can also be emailed to [nsllaughter@espassociates.com](mailto:nsllaughter@espassociates.com)

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the *Northern Piedmont Regional Multi-Jurisdictional Hazard Mitigation Plan*, please contact Nathan Slaughter at 919-415-2726 or at the email address above.

This survey is also available online at:  
[https://s.surveyplanet.com/62w0P\\_cDw](https://s.surveyplanet.com/62w0P_cDw)

### 1. Where do you live?

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Unincorporated Caswell County    | <input type="checkbox"/> Jonesville     | <input type="checkbox"/> Winston-Salem |
| <input type="checkbox"/> Unincorporated Davie County      | <input type="checkbox"/> Kernersville   | <input type="checkbox"/> Yadkinville   |
| <input type="checkbox"/> Unincorporated Forsyth County    | <input type="checkbox"/> King           | <input type="checkbox"/> Yanceyville   |
| <input type="checkbox"/> Unincorporated Rockingham County | <input type="checkbox"/> Lewisville     | <input type="checkbox"/> Other: _____  |
| <input type="checkbox"/> Unincorporated Stokes County     | <input type="checkbox"/> Madison        |  |
| <input type="checkbox"/> Unincorporated Surry County      | <input type="checkbox"/> Mayodan        |  |
| <input type="checkbox"/> Unincorporated Yadkin County     | <input type="checkbox"/> Milton         |  |
| <input type="checkbox"/> Bermuda Run                      | <input type="checkbox"/> Mocksville     |  |
| <input type="checkbox"/> Bethania                         | <input type="checkbox"/> Mount Airy     |  |
| <input type="checkbox"/> Boonville                        | <input type="checkbox"/> Pilot Mountain |  |
| <input type="checkbox"/> Clemmons                         | <input type="checkbox"/> Reidsville     |  |
| <input type="checkbox"/> Cooleemee                        | <input type="checkbox"/> Rural Hall     |  |
| <input type="checkbox"/> Danbury                          | <input type="checkbox"/> Stoneville     |  |
| <input type="checkbox"/> Dobson                           | <input type="checkbox"/> Tobaccoville   |  |
| <input type="checkbox"/> East Bend                        | <input type="checkbox"/> Walkertown     |  |
| <input type="checkbox"/> Eden                             | <input type="checkbox"/> Walnut Cove    |  |
| <input type="checkbox"/> Elkin                            | <input type="checkbox"/> Wentworth      |  |

**2. Have you ever experienced or been impacted by a disaster?**

- Yes
- No

**a. If "Yes," please explain:**

**3. How concerned are you about the possibility of our community being impacted by a disaster?**

- Extremely concerned
- Somewhat concerned
- Not concerned

**4. Please select the one hazard you think is the *highest threat* to your neighborhood:**

- |  |  |
|--|--|
| <input type="checkbox"/> Acts of Terror      | <input type="checkbox"/> Hurricane Remnants              |
| <input type="checkbox"/> Dam / Levee Failure | <input type="checkbox"/> Land Subsidence                 |
| <input type="checkbox"/> Drought             | <input type="checkbox"/> Landslide                       |
| <input type="checkbox"/> Earthquake          | <input type="checkbox"/> Lightning                       |
| <input type="checkbox"/> Expansive Soils     | <input type="checkbox"/> Severe Winter/Ice Storm         |
| <input type="checkbox"/> Extreme Heat        | <input type="checkbox"/> Severe Thunderstorm / High Wind |
| <input type="checkbox"/> Flood               | <input type="checkbox"/> Tornado                         |
| <input type="checkbox"/> Hailstorm           | <input type="checkbox"/> Wildland Fire                   |

**5. Please select the one hazard you think is the *second highest threat* to your neighborhood:**

- |  |  |
|--|--|
| <input type="checkbox"/> Acts of Terror      | <input type="checkbox"/> Hurricane Remnants              |
| <input type="checkbox"/> Dam / Levee Failure | <input type="checkbox"/> Land Subsidence                 |
| <input type="checkbox"/> Drought             | <input type="checkbox"/> Landslide                       |
| <input type="checkbox"/> Earthquake          | <input type="checkbox"/> Lightning                       |
| <input type="checkbox"/> Expansive Soils     | <input type="checkbox"/> Severe Winter/Ice Storm         |
| <input type="checkbox"/> Extreme Heat        | <input type="checkbox"/> Severe Thunderstorm / High Wind |
| <input type="checkbox"/> Flood               | <input type="checkbox"/> Tornado                         |
| <input type="checkbox"/> Hailstorm           | <input type="checkbox"/> Wildland Fire                   |

**6. Is there another hazard not listed above that you think is a wide-scale threat to your neighborhood?**

- Yes (please explain): \_\_\_\_\_
- No



**7. Is your home located in a floodplain?**

- Yes
- No
- I don't know

**8. Do you have flood insurance?**

- Yes
- No
- I don't know

**a. If "No," why not?**

- Not located in floodplain
- Too expensive
- Not necessary because it never floods
- Not necessary because I'm elevated or otherwise protected
- Never really considered it
- Other (please explain): \_\_\_\_\_

**9. Have you taken any actions to make your home or neighborhood more resistant to hazards?**

- Yes
- No

**b. If "Yes," please explain:**

**10. Are you interested in making your home or neighborhood more resistant to hazards?**

- Yes
- No

**11. Do you know what office to contact regarding reducing your risks to hazards in your area?**

- Yes
- No

**12. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?**

- Newspaper
- Television
- Radio
- Internet
- Mail
- Public workshops/meetings
- School meetings
- Other (please explain): \_\_\_\_\_

**13. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?**

**14. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?**

**15. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.**

Category	Very Important	Somewhat Important	Not Important
<p><b><u>1. Prevention</u></b>            Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b><u>2. Property Protection</u></b>            Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b><u>3. Natural Resource Protection</u></b>            Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b><u>4. Structural Projects</u></b>            Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, detention/retention basins, channel modification, retaining walls and storm sewers.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b><u>5. Emergency Services</u></b>            Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b><u>6. Public Education and Awareness</u></b>            Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**THANK YOU FOR YOUR PARTICIPATION!**

*This survey may be submitted anonymously; however, if you provide us with your name and contact information below we will have the ability to follow up with you to learn more about your ideas or concerns (optional):*

**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
 \_\_\_\_\_  
**Phone:** \_\_\_\_\_ **E-Mail:** \_\_\_\_\_

## Local Capability Assessment Survey

Jurisdiction/Agency: \_\_\_\_\_

Phone: \_\_\_\_\_

Point of Contact: \_\_\_\_\_

E-mail: \_\_\_\_\_

**1. PLANNING AND REGULATORY CAPABILITY** - Please indicate whether the following planning or regulatory tools (plans, ordinances, codes or programs) are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate its estimated or anticipated effect on hazard loss reduction (Strongly Supports, Helps Facilitate or Hinders) with another "X". Finally, please provide additional comments or explanations in the space provided or with attachments.

Planning / Regulatory Tool	In Place	Under Development	Department / Agency Responsible	Effect on Loss Reduction			Comments
				Strongly Supports	Helps Facilitate	Hinders	
Hazard Mitigation Plan							
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)							
Floodplain Management Plan							
Open Space Management Plan (or Parks & Rec./ Greenways Plan)							
Stormwater Management Plan / Ordinance							
Natural Resource Protection Plan							
Flood Response Plan							
Emergency Operations Plan							
Continuity of Operations Plan							
Evacuation Plan							
Other Plans (please explain under Comments)							

### Local Capability Assessment Survey

Planning / Regulatory Tool	In Place	Under Development	Department / Agency Responsible	Effect on Loss Reduction			Comments
				Strongly Supports	Facilitates	Hinders	
Disaster Recovery Plan							
Capital Improvements Plan							
Economic Development Plan							
Historic Preservation Plan							
Floodplain Ordinance (or Flood Damage Prevention Ordinance)							
Zoning Ordinance							
Subdivision Ordinance							
Unified Development Ordinance							
Post-disaster Redevelopment / Reconstruction Ordinance							
Building Code							
Fire Code							
National Flood Insurance Program (NFIP)							
NFIP Community Rating System (CRS Program)							

## Local Capability Assessment Survey

**2. ADMINISTRATIVE AND TECHNICAL CAPABILITY** - Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box . Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff / Personnel Resources	Yes	No	Department / Agency	Comments
Planners with knowledge of land development and land management practices				
Engineers or professionals trained in construction practices related to buildings and/or infrastructure				
Planners or engineers with an understanding of natural and/or human-caused hazards				
Emergency manager				
Floodplain manager				
Land surveyors				
Scientist familiar with the hazards of the community				
Staff with education or expertise to assess the community's vulnerability to hazards				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program				
Resource development staff or grant writers				

### Local Capability Assessment Survey

**3. FISCAL CAPABILITY** - Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department / Agency	Comments
Capital Improvement Programming				
Community Development Block Grants (CDBG)				
Special Purpose Taxes (or taxing districts)				
Gas / Electric Utility Fees				
Water / Sewer Fees				
Stormwater Utility Fees				
Development Impact Fees				
General Obligation, Revenue and/or Special Tax Bonds				
Partnering arrangements or intergovernmental agreements				
Other: _____				

## Local Capability Assessment Survey

**4. POLITICAL CAPABILITY** - Political capability can be generally measured by the degree to which local political leadership is willing to enact policies and programs that reduce hazard vulnerabilities in your community, even if met with some opposition. Examples may include guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum State or Federal requirements (e.g., building codes, floodplain management, etc.). Please identify some general examples of these efforts if available and/or reference where more documentation can be found.



## Local Capability Assessment Survey

**5. SELF-ASSESSMENT OF CAPABILITY** - Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-4 of this survey.

	DEGREE OF CAPABILITY		
	LIMITED	MODERATE	HIGH
Planning and Regulatory Capability			
Administrative and Technical Capability			
Fiscal Capability			
Political Capability			
<b>OVERALL CAPABILITY</b>			

## Points System for Capability Ranking

<p><b>0-19 points = Limited overall capability</b> <b>20-39 points = Moderate overall capability</b> <b>40-68 points = High overall capability</b></p>
--

### I. Planning and Regulatory Capability (Up to 43 points)

*Yes = 3 points*

*Under Development = 1 point*

*Included under County plan/code/ordinance/program = 1 point*

*No = 0 points*

- Hazard Mitigation Plan
- Comprehensive Land Use Plan
- Floodplain Management Plan
- National Flood Insurance Program
- NFIP Community Rating System

*Yes = 2 points*

*Under Development = 1 point*

*Included under County plan/code/ordinance/program = 1 point*

*No = 0 points*

- Open Space Management Plan / Parks & Recreation Plan
- Stormwater Management Plan
- Natural Resource Protection Plan
- Flood Response Plan
- Emergency Operations Plan
- Continuity of Operations Plan
- Evacuation Plan
- Disaster Recovery Plan
- Flood Damage Prevention Ordinance
- Post-disaster Redevelopment / Reconstruction Ordinance

*Yes = 1 point*

*No = 0 points*

- Capital Improvements Plan
- Economic Development Plan
- Historic Preservation Plan
- Zoning Ordinance
- Subdivision Ordinance
- Unified Development Ordinance
- Building Code
- Fire Code

**II. Administrative and Technical Capability  
(Up to 15 points)**

*Yes = 2 points*

*Service provided by County = 1 point*

*No = 0 points*

- Planners with knowledge of land development and land management practices
- Engineers or professionals trained in construction practices related to buildings and/or infrastructure
- Planners or engineers with an understanding of natural and/or human-caused hazards
- Emergency manager
- Floodplain manager

*Yes = 1 point*

*No = 0 points*

- Land surveyors
- Scientist familiar with the hazards of the community
- Staff with education or expertise to assess the community's vulnerability to hazards
- Personnel skilled in Geographical Information Systems (GIS) and/or Hazus
- Resource development staff or grant writers

**III. Fiscal Capability  
(Up to 10 points)**

*Yes = 1 point*

*No = 0 points*

- Capital Improvement Programming
- Community Development Block Grants (CDBG)
- Special Purpose Taxes (or tax districts)
- Gas / Electric Utility Fees
- Water / Sewer Fees
- Stormwater Utility Fees
- Development Impact Fees
- General Obligation / Revenue / Special Tax Bonds
- Partnering arrangements or intergovernmental agreements
- Other

## MITIGATION ACTION WORKSHEETS

Mitigation Action Worksheets are used to identify potential hazard mitigation actions that participating jurisdictions in the Northern Piedmont Region will consider to reduce the negative effects of identified hazards. The worksheets provide a simple yet effective method of organizing potential actions in a user-friendly manner that can easily be incorporated into the Region's Hazard Mitigation Plan.

The worksheets are to be used as part of a strategic planning process and are designed to be:

- a.) completed electronically (worksheets and instructions will be e-mailed to members of the Hazard Mitigation Planning Team following the Mitigation Strategy Workshop);
- b.) reviewed with your department/organization for further consideration; and
- c.) returned according to the contact information provided below.

Electronic copies may be e-mailed to: [nslaughter@espassociates.com](mailto:nslaughter@espassociates.com)

Hard copies can be mailed to:

Nathan Slaughter  
2200 Gateway Centre Blvd  
Morrisville, NC 27560

## INSTRUCTIONS

Each mitigation action should be considered to be a separate local project, policy or program and each individual action should be entered into a separate worksheet. By identifying the implementation requirements for each action, the worksheets will help lay the framework for engaging in distinct actions that will help reduce the community's overall vulnerability and risk. Detailed explanations on how to complete the worksheet are provided below.

**Proposed Action:** Identify a specific action that, if accomplished, will reduce vulnerability and risk in the impact area. Actions may be in the form of local policies (i.e., regulatory or incentive-based measures), programs or structural mitigation projects and should be consistent with any pre-identified mitigation goals and objectives.

**Site and Location:** Provide details with regard to the physical location or geographic extent of the proposed action, such as the location of a specific structure to be mitigated, whether a program will be citywide, countywide or regional, etc.

**History of Damages:** Provide a brief history of any known damages as it relates to the proposed action and the hazard(s) being addressed. For example, the proposed elevation of a repetitive loss property should include an overview of the number of times the structure has flooded, total dollar amount of damages if available, etc.

**Hazard(s) Addressed:** List the hazard(s) the proposed action is designed to mitigate against.

**Category:** Indicate the most appropriate category for the proposed action as discussed during the Mitigation Strategy Workshop (Prevention; Property Protection; Natural Resource Protection; Structural Projects; Emergency Services; Public Education and Awareness).

**Priority:** Indicate whether the action is a "high" priority, "moderate" priority or "low" priority based generally on the following criteria:

1. Effect on overall risk to life and property
2. Ease of implementation / technical feasibility
3. Project costs versus benefits
4. Political and community support
5. Funding availability

**Estimated Cost:** If applicable, indicate what the total cost will be to accomplish this action. This amount will be an estimate until actual final dollar amounts can be determined. Some actions (such as ordinance revisions) may only cost “local staff time” and should be noted so.

**Potential Funding Sources:** If applicable, indicate how the cost to complete the action will be funded. For example, funds may be provided from existing operating budgets or general funds, a previously established contingency fund, a cost-sharing federal or state grant program, etc.

**Lead Agency/Department Responsible:** Identify the local agency, department or organization that is best suited to implement the proposed action.

**Implementation Schedule:** Indicate when the action will begin and when the action is expected to be completed. Remember that some actions will require only a minimal amount of time, while others may require a long-term or continuous effort.

**Comments:** This space is provided for any additional information or details that may not be captured under the previous headings.

MITIGATION ACTION	
<b>Proposed Action:</b>	
<b>BACKGROUND INFORMATION</b>	
<b>Site and Location:</b>	
<b>History of Damages:</b>	

MITIGATION ACTION DETAILS	
<b>Hazard(s) Addressed:</b>	
<b>Category:</b>	
<b>Priority (High, Moderate, Low):</b>	
<b>Estimated Cost:</b>	
<b>Potential Funding Sources:</b>	
<b>Lead Agency/Department Responsible:</b>	
<b>Implementation Schedule:</b>	

COMMENTS

# **Appendix C**

## **Local Mitigation Plan Review Tool**

## APPENDIX A:

# LOCAL MITIGATION PLAN REVIEW TOOL

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The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

<b>Jurisdiction:</b> Northern Piedmont Region (Caswell County, Milton, Yanceyville, Davie County, Bermuda Run, Cooleemee, Mocksville, Forsyth County, Bethania, Clemmons, Kernersville, Lewisville, Rural Hall, Tobaccoville, Walkertown, Winston-Salem, Rockingham County, Eden, Mayodan, Reidsville, Stoneville, Wentworth, Stokes County, Danbury, King, Walnut Cove, Surry County, Dobson, Elkin, Mount Airy, Pilot Mountain, Yadkin County, Boonville, East Bend, Jonesville, Yadkinville)	<b>Title of Plan:</b> Northern Piedmont Regional Hazard Mitigation Plan – 2020 Update	<b>Date of Plan:</b> Second Draft – June 2020
<b>Local Point of Contact:</b> Nathan Slaughter	<b>Address:</b> 2200 Gateway Centre Blvd., Suite 216 Morrisville, NC 27560	
<b>Title:</b> Hazard Mitigation Department Manager		
<b>Agency:</b> ESP Associates, Inc.		
<b>Phone Number:</b> 919-678-1070	<b>E-Mail:</b> nslaughter@essassociates.com	

<b>State Reviewer:</b> Carl Baker Carl Baker	<b>Title:</b> Hazard Mitigation Planner Hazard Mitigation Planner	<b>Date:</b> March 19, 2020 June 19, 2020
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<b>FEMA Reviewer:</b> Martin Erbele Edwardine S. Marrone Martin Erbele (Adoption Resolution)	<b>Title:</b> FEMA RIV Program Analyst NC-FIT-Mitigation Planner FEMA RIV Program Analyst	<b>Date:</b> 8-25-2020 09-28-2020 10-2-2020
<b>Date Received in FEMA Region IV</b>	June 22, 2020	
<b>Plan Not Approved</b>		
<b>Plan Approvable Pending Adoption</b>		
<b>Plan Approved</b>	10-1-2020	

**SECTION 1:  
REGULATION CHECKLIST**

**INSTRUCTIONS:** The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b>		<b>Not</b>	
<b>Regulation (44 CFR 201.6 Local Mitigation Plan)</b>		<b>(section and/or page number)</b>		<b>Met</b>	<b>Met</b>
<b>ELEMENT A. PLANNING PROCESS</b>					
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Section 2, pages 2:3 – 2:18, Appendix D  A1a: Section 2, p.3-19 A1b: Section 2, p.2-3 A1c: Section 2, p.6-8 A1d: Section 2, p.8-14 A1e: Section 2, p.3-19			X	



<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation</b> (44 CFR 201.6 Local Mitigation Plan)				
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Section 2, p. 2.17 and Appendix D  A2a: Section 2, p.3-19 (2-17 specifically) A2b: Appendix D PDF page 478-479 A2c: Appendix D PDF page 478-479		X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section 2, pages 2:15 and 2:16 And Appendix D  A3a: Section 2, p.15-16; Appendix D A3b: Section 2, p.15-16; Appendix D		X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Section 7, entire Section And Appendix E  A4a and A4b: Section 7 (all) and Appendix E		X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section 10, page 10:5  A5: Section 10, page 10:5		X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section 10, pages 10:2-10:4  A6a: Section 10, p. 2-4 A6b: Section 10, p. 2-4 A6c: Section 10, p. 2-3 A6d: Section 10, p.2-3; Section 2 p. 6-8		X	

1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
<b>ELEMENT A: REQUIRED REVISIONS</b>			
<p><b>A.1:</b> (Section 2.4) Table 2.1 does not identify agency or position for RHMP team members from Tobaccoville, Lewisville, or Walkertown. Member from “City of Winston Salem” does not list agency. Members listed in Table 2.2 are not documented in Appendix D. Per the Local Mitigation Plan Review Guide, page 15, “The plan must identify who represented each jurisdiction. The Plan must provide, at a minimum, the jurisdiction represented and the person’s position or title and agency within the jurisdiction.”</p> <p><b>A.2: - A.6:</b> No revisions noted.</p> <p>ESP Response: Corrected Table 2.1 to add agency/position info. Table 2.2 provides the minimum information required.</p> <p>NCEM 2<sup>nd</sup> review, no revisions required.</p>			
NA			
<b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>			

<p>B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))</p>	<p>Section 4: Entire Section; Section 5: Entire Section Extent Section 5.19.1</p> <p><b>B1a:</b> Section 4 and 5 (all), descriptions:</p> <table border="1"> <tr><td>Drought</td><td>5.6</td></tr> <tr><td>Excessive Heat</td><td>5.10</td></tr> <tr><td>Hurricane and Coastal Hazards</td><td>5.13</td></tr> <tr><td>Tornadoes/Thunderstorms</td><td>5.19</td></tr> <tr><td>Severe Winter Weather</td><td>5.32</td></tr> <tr><td>Earthquakes</td><td>5.35</td></tr> <tr><td>Geological Hazards</td><td>5.42</td></tr> <tr><td>Dam Failure</td><td>5.49</td></tr> <tr><td>Flooding</td><td>5.52</td></tr> <tr><td>Wildfires</td><td>5.59</td></tr> </table> <p><b>B1b:</b> 4:4 through 4:16 <b>B1c:</b> Location</p> <table border="1"> <tr><td>Drought</td><td>5.8</td></tr> <tr><td>Excessive Heat</td><td>5.11</td></tr> <tr><td>Hurricane and Coastal Hazards</td><td>5.14</td></tr> <tr><td>Tornadoes/Thunderstorms</td><td>5.24</td></tr> <tr><td>Severe Winter Weather</td><td>5.32</td></tr> <tr><td>Earthquakes</td><td>5.38</td></tr> <tr><td>Geological Hazards</td><td>5.45-47</td></tr> <tr><td>Dam Failure</td><td>5.49-50</td></tr> <tr><td>Flooding</td><td>5.52-54, Appendix F Flood Maps</td></tr> <tr><td>Wildfires</td><td>5.60-64, Appendix G Wildfire Hazard Maps</td></tr> </table> <p><b>B1c:</b> Extent, Table 5.34 and:</p> <table border="1"> <tr><td>Drought</td><td>5.8-9</td></tr> <tr><td>Excessive Heat</td><td>5.11-12</td></tr> <tr><td>Hurricane and Coastal Hazards</td><td>5.14-15</td></tr> <tr><td>Tornadoes/Thunderstorms</td><td>5.24; 5.27</td></tr> </table>	Drought	5.6	Excessive Heat	5.10	Hurricane and Coastal Hazards	5.13	Tornadoes/Thunderstorms	5.19	Severe Winter Weather	5.32	Earthquakes	5.35	Geological Hazards	5.42	Dam Failure	5.49	Flooding	5.52	Wildfires	5.59	Drought	5.8	Excessive Heat	5.11	Hurricane and Coastal Hazards	5.14	Tornadoes/Thunderstorms	5.24	Severe Winter Weather	5.32	Earthquakes	5.38	Geological Hazards	5.45-47	Dam Failure	5.49-50	Flooding	5.52-54, Appendix F Flood Maps	Wildfires	5.60-64, Appendix G Wildfire Hazard Maps	Drought	5.8-9	Excessive Heat	5.11-12	Hurricane and Coastal Hazards	5.14-15	Tornadoes/Thunderstorms	5.24; 5.27	<p>X</p>	
Drought	5.6																																																		
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1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plan)	Severe Winter Weather	5.32		
	Earthquakes	5.38-40		
	Geological Hazards	5.45		
	Dam Failure	5.49		
	Flooding	5.52/Appen dix H:10- 14		
	Wildfires	5.60/App. G		
	<b>B1d:</b> Section 4 and Section 5:1-5.5			

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
<b>B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))</b>	Section 5: Entire Section And Appendix G		<b>X</b>	
	<b>B2a:History of Previous Events</b>			
	Drought	5.8-9, Appx. H		
	Excessive Heat	5.11-12, Appx. H		
	Hurricane and Coastal Hazards	5.14-15, Appx. H		
	Tornadoes/Thunderstorms	5.24; 5.27-30, Appx. H		
	Severe Winter Weather	5.32-34, Appx. H		
	Earthquakes	5.39-41, Appx. H		
	Geological Hazards	5.47-48, Appx. H		
	Dam Failure	5.51, Appx. H		
	Flooding	5.54-58, Appx. H		
	Wildfires	5.60-61 , Appx. H		
	<b>B2b:Probability:</b>			
	Drought	5.9		
	Excessive Heat	5.12		
Hurricane and Coastal Hazards	5.17			
Tornadoes/Thunderstorms	5.30-31			
Severe Winter Weather	5.34			
Earthquakes	5.41			
Geological Hazards	5.48			
Dam Failure	5.51,			
	5.52-53; and 5-			
Flooding	58,			
Wildfires	5.64			
<b>B2c. Section 5, all; Appendix H, all</b>				

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation</b> (44 CFR 201.6 Local Mitigation Plan)				
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section 5: Entire Section and Section 6: Entire Section <a href="#">Impact: Table 5.35 pg. 5:90</a>  <b>B3a:</b> Section 5, all; Appendix H, all <b>B3b:</b> (All 5.83 – 5.92); Drought: 6.2-6.15; Table 6.26; p. 6.52 - 6.79 Heat: 6.2-6.15; Table 6.26; p. 6.52 - 6.79 Hurricane/TS: 6.13 - 6.17 Tornado/ThundStorm: 6.17-6.20, 6.20-6.23 Winter Weather: 6.2-6.15; Table 6.26; p. 6.52 - 6.7 Earthquake: 6.2-6.15; Table 6.26; p. 6.52 - 6.79 Geological: 6.26 -6.28 Dam Failure 5.50, 6.2-6.15, Table 6.26 Flooding: 6.28 - 6.37 Wildfire: 6.40 - 6.43		X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Section 5, pages 5:60 through 5:62 <a href="#">5:57-5:58</a>  <b>B4a:</b> 5:57-5.58		X	
<b>ELEMENT B: REQUIRED REVISIONS</b>				
<p><b>B.1:</b> Participating RHMP jurisdictions identified in table 5.1 are duplicated for Forsyth and Rockingham Counties.</p> <p><b>B.2:</b> no revisions identified</p> <p><b>B.3:</b> no revisions identified</p> <p><b>B.4:</b> no revisions identified</p> <p>See Element F for noted corrections</p> <p>ESP Response: <a href="#">Corrected Table 5.1</a></p> <p>NCEM 2<sup>nd</sup> review, no revisions required.</p> <p>NA</p>				
<b>ELEMENT C. MITIGATION STRATEGY</b>				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section 7: Entire Section  <b>C1:</b> 7.1 through 7.18		X	

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation</b> (44 CFR 201.6 Local Mitigation Plan)				
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Section 7.3.4, pages 7:8 through 7:11 and Section 5.11.4, pages 5:59 through 5:60  <b>C2:</b> Section 7.3.4, pages 7:8 through 7:11 and Pages 5:56 through 5:58		X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section 8.2, page 8:3 and 8:4  <b>C3a and C3b:</b> Section 8.2, page 8:3 and 8:4		X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Section 9  <b>C4a, C4b, C4c:</b> Section 9 (all)		X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section 9: Entire Section  <b>C5a, C5b, C5c:</b> Section 9 (all)		X	

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation</b> (44 CFR 201.6 Local Mitigation Plan)				
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Section 10.1, pages 10:1 and 10:2  C6a: p.10.1 -10.2 C6b: p.7.1 through 7.18; p.10.1 -10.2 C6c: p.10.1 -10.2 C6d: p.10.1 -10.2 C6e: p.10.1 -10.2		X	
<b>ELEMENT C: REQUIRED REVISIONS</b>				
C.1: No revisions noted.				
C.2: Page 7.10: "The Towns of Milton and Elkin also do not participate in the NFIP due to lack of available funding and political support." Does not match participating jurisdictions in Table 7.2 ESP Response: Corrected narrative and table to provide accurate information.				
C.3: From page 8.3: "As part of the development of the 2020 update of this plan, the goals found in Table 8.1 were reviewed and discussed at the 5/30/19 meeting of the Regional Hazard Mitigation Planning Committee. It was determined that the goals are still applicable for the region." The table on page 8.4 is misnumbered. ESP Response: Corrected table numbering.				
C.4: No revisions noted.				
C.5: No revisions noted.				
C.6: No revisions noted.				
NCEM 2 <sup>nd</sup> review, no revisions required.				
NA				
<b>ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION</b> (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Section 2: 2.8 Section 6.4.3  D1: Section 6.4.3 (p. 6.11-6.13) ; Section 2:6; Section 6.6 Conclusions on Hazard Vulnerability		X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Section 9: Entire Section And Appendix E.  D2: Section 9 (all) and Appendix E, Completed Mitigation Actions		X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Section 8: 8.5  D3: p.8.2 and 8.3		X	



<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>ELEMENT D: REQUIRED REVISIONS</b>				
<p><b>D.1:</b> Section 6.4.3 mentions increases in development, but does not discuss hazard prone areas or the increase or decrease in vulnerability for EACH jurisdiction per the Local Mitigation Plan Review Guide (page 26).</p> <p>ESP Response: Added a sentence to discuss how population loss impacts development and vulnerability. We respectfully request that the language be submitted as-is to FEMA for their comments since they have found similar language to be sufficient in other plans that they have approved.</p> <p><b>D.2:</b> Status of actions are listed in the tables in Section 9. Completed mitigation actions are listed in Appendix E for each jurisdiction.</p> <p><b>D.3:</b> Statement addresses D-2 and D-3.</p> <p><b>NCEM 2<sup>nd</sup> review, no revisions required.</b></p>				
<b>ELEMENT E. PLAN ADOPTION</b>				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Pending NCEM and FEMA review and APA status.		X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Pending NCEM and FEMA review and APA status.			X

## **ELEMENT E: REQUIRED REVISIONS**

Pending review status.

***E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))***

Not all of the participating jurisdictions have provided documentation of adoption of the updated plan. This requirement will be marked as met following the submittal of documentation.

### Required Revisions:

- The plan must include documentation of plan adoption, usually a resolution by the governing body or other authority.
- If adopted after FEMA review, adoption must take place within one calendar year of receipt of FEMA's "Approvable Pending Adoption".
- Each jurisdiction that is included in the plan must have its governing body adopt the plan, even when a regional agency has the authority to prepare such plans.

*Additional information can be found in the "Local Mitigation Plan Review Guide", Element E: Plan Adoption, dated October 1, 2011, Pages 28-29. Also see the Local Mitigation Plan Handbook dated March 2013, Task 8. Links to these documents can be found in Section 3 of this Plan Review Tool.*

As of 10/1/20, the following communities have submitted resolutions:

- Town of Bermuda Run
- Town of Bethania
- Town of Boonville
- Village of Clemmons
- Town of Cooleemee
- Town of Danbury
- Davie County, Unincorporated
- Town of East Bend
- Town of Jonesville
- City of King
- Town of Lewisville
- Rockingham County, Unincorporated
- Town of Rural Hall
- Stokes County, Unincorporated
- Surry County, Unincorporated
- Village of Tobaccoville
- Town of Walkertown
- Town of Walnut Cove

10/2/20 adoption: Forsyth County, Unincorporated

### **October 22, 2020 Adoption Resolutions:**

- Yadkin County, Unincorporated
- Town of Yadkinville
- Town of Mocksville

November 18, 2020 Adoption Resolutions:

- City of Winston-Salem
- Town of Kernersville

January 4, 2021

- Town of Dobson

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation</b> (44 CFR 201.6 Local Mitigation Plan)	<ul style="list-style-type: none"> <li>Town of Elkin</li> <li>Town of Pilot Mountain</li> </ul> <p>04/15/22 Adoption documentation was provided by Caswell County</p> <p>8/29/22 Adoption documentation was processed for Reidsville, Madison, Mayodan, and Eden, Stoneville and Wentworth</p> <p>9/20/22 Adoption documentation was processed for Yanceyville &amp; Mount Airy.</p> <p>10/26/22 – Adoption documentation was processed for Town of Milton</p>			
<b>ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)</b>				

## 1. REGULATION CHECKLIST

Regulation (44 CFR 201.6 Local Mitigation Plans)

Location in Plan  
(section and/or  
page number)

Met Not  
Met Met

### ELEMENT F: REQUIRED REVISIONS

- Designated Plan Members on Table (2.4) 2.2 highlighted for Davie, Forsyth and Rockingham Counties. Table description states members would be listed alphabetically by first name.  
ESP Response: Removed highlighting, removed sentence from table description.
- Table numbers are repeated throughout subsections, which may lead to confusion when referencing data.  
ESP Response: Corrected
- Replace “flood gage” with **flood gauge**. Multiple occurrences throughout the plan.  
ESP Response: Corrected
- Update Mitigation Action Plan table action numbers in Section 9.  
ESP Response: The mitigation action numbers are correct. As actions are completed or deleted, they get moved to Appendix E but the numbering stays the same as it did when the actions were first identified and included in the plan.
- Mitigation actions throughout tables in Section 9 do not match with the nomenclature in 2020 Northern Piedmont Hazards Update table. Table 4.1 (page 4:2)  
ESP Response: Corrected
- Action numbers in Appendix E are not numerically sequential.  
ESP Response: Mitigation Action numbers may not be sequential. The numbering reflects which action number it received when it was first included in the plan.
- Page 4.4-4.5 - Avalanche hazards; should read did NOT have enough snow...  
ESP Response: Corrected.
- Table 4.5 Hazard Identification Results - Remove Infectious Disease from Natural Hazards column  
ESP Response: Fixed
- Page 5:60 - Bottom of page should reference Table 5.27  
ESP Response: Corrected all tables, figures, and references throughout the document.
- Page 9:9 - Town of Milton P-2; is this a flooding or all hazards action?  
ESP Response: Corrected to be a mitigation action for flooding.
- Page 9:126 - PEA-8; change to stimulate wildfire awareness...  
ESP Response: Corrected
- Page 5:80 – Change Section 5.71.3 to 5.17.3 and page 5:81 change Section 5.15.4 to 5.17.4  
ESP Response: Corrected
- Page 5:11 – Recorded high temps are in Table 5.6 versus annotated Table 5.7. Table 5.7 is skipped in the sequence of tables in the section. This will skew the remainder of the table numbers in the hazard profile section.  
ESP Response: Corrected all tables, figures, and references throughout the document.

NCEM 2<sup>nd</sup> review, no revisions required.

## SECTION 2: PLAN ASSESSMENT

**INSTRUCTIONS:** The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

***Plan Strengths and Opportunities for Improvement*** is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

***Resources for Implementing Your Approved Plan*** provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

## A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

### Element A: Planning Process

#### Plan Strengths:

- The planning committee included a diverse group of stakeholders from various local positions and across all communities. The wide assortment of local departments surely contributed to a thorough discussion and healthy exchange of ideas.
- The description of the planning process in Section 2 is clear and concise. A reader would be able to quickly understand how this plan was put together, including the history of the regional approach, who was involved, and what was considered. The use of well formatted tables further improve readability.
- Several smaller communities utilized County-level Planning Committee Members to represent them during planning meetings, and this is explained and understandable. The plan states “Although these members designated county officials to represent them at in-person meetings, each was still contacted throughout the planning process and participated by providing suggestions and comments on the Plan via email and phone conversations.”
- A public survey was promoted online and at government offices to capture additional public input on hazard mitigation and recent experiences with hazard events. 116 responses were received. Appendix D includes a detailed summary of the results.
- The consultant who helped the planning committee utilized a game to help committee members ‘spend’ on mitigation options and led several discussions during the planning process to ensure everyone was engaged and informed.
- Neighboring counties and communities were invited to attend planning meeting and provide feedback on the draft plan via emails, phone calls, and in-person discussions.
- The plan outlines a variety of local plans, studies, and reports, and Section 7, Capability, summarizes which communities have those in place. The layout for this information, especially considering the number of jurisdictions, is easy to read and understand. Communities are also able to utilize this section of the plan to quickly see which of their neighbors have certain plans and capabilities. Perhaps most importantly, there is an explanation of most of these plans and communities can look to the list for new ideas.

#### Opportunities for Improvement:

- Only one of the plan update meetings appears to have been advertised to the public, while the remaining events were closed meetings. While the public participation requirement will be met with a second meeting to adopt the plan (and the planning committee utilized a public survey), the committee is encouraged to further expand opportunities for the public to participate in the plan update process. Consider opening all meetings to the public or utilizing an existing community event to discuss the plan under development and solicit input, such as a disaster awareness event or a community meeting.

### Element B: Hazard Identification and Risk Assessment

#### Plan Strengths:

- The plan primarily uses quantitative data to discuss vulnerability across the region including property damage estimates based on the hazard and community, vulnerable populations, and includes pre/post FIRM construction details to help communicate older homes vs. newer homes (assumed to be built to more strict building codes).
- The plan does a good job of localizing hazard events, impacts, risks, etc. to each jurisdiction, even with hazards that are expected to be consistent across the region (drought for instance is profiled regionally, but also includes simple tables that help convey slight differences in previous events at a county level). The additional information is welcome because it provides additional clarity at a community level and is communicated clearly to the

reader. Similarly, for flooding, there are narratives for each event which is great for general readability, but also uses data tables and the annexes to include jurisdiction specific information.

- Data visualization and GIS mapping is exceptionally clear, readable, and consistently formatted. Throughout the plan, data is summarized in tables and with regional maps, and in the appendices each community is given a dedicated GIS map of their locations of floodplains and several wildfire risk factors. These additional graphics perfectly support the written text and provide the reader a lot of useful information.
- Heavy use of tables and consistent formatting, especially considering the size and extent of the planning area, is very helpful and makes the plan easy to read and follow.
- Following the hazard specific discussions in Section 5, a summary 'Conclusions on Hazard Risk' table beginning on 5.93 is very easy to read and provides the reader a lot of important information.
- Including the NCDC database reports of hazard events in the Region in Appendix H is a great practice. Data is summarized and significant events are the focus in the main sections of the plan, but if a reader is interested in seeing all data, as well as the helpful narratives from each event, that is available in the appendices.

#### **Opportunities for Improvement:**

- Discussions of community specific vulnerability to each hazard is largely based on the populations exposed, the anticipated damages to buildings, and the exposure of the hazard to critical facilities. In the flooding hazard for instance, particular hot spot are summarized in each county, Figure 6.4-6.10, as well as an interesting mapping summary of population density compared to the locations of floodplains. These types of analysis are immensely helpful to the larger plan but could greatly benefit each jurisdiction if they were included in the appendices, zoomed in on each jurisdiction with narratives vs. encompassing the entire region.
- Vulnerability discussions could also be improved with more qualitative discussions/perspectives from community staff and leaders. For instance, when discussing hazards like wildfire or flooding, are there any areas of a community where significant older populations reside that might make rescues more difficult? Or when discussing tornado risk, are there concentrated areas of mobile homes in a community? Or even generally, the plan could highlight areas throughout the Region where poverty is higher or where English isn't widely spoken to try and specifically target these groups with key information.

## **Element C: Mitigation Strategy**

### **Plan Strengths:**

- The plan outlines the applicable plans, existing authorities, policies, programs, and resources that the various communities have in place to help support and advance hazard mitigation efforts. Plans and programs include definitions and descriptions of how the various plans/programs can support resiliency. Additionally, by summarizing which communities participate in each program and which ones do not, a community official looking to improve and expand their jurisdictions capability could see which community they could contact for more information.
- The summary of community capability in Section 7, helping identify communities which may require additional technical assistance or other support to advance mitigation actions is a helpful table considering the diversity of communities within the Region.
- In addition to outlining available plans and programs to advance mitigation, the plan also includes a table that outlines relevant staff and personnel, such as planners, emergency managers, and GIS knowledgeable staff. This is a great resource for other communities to understand what resources are available in the area should one community not have all the needed resources for a particular effort.
- The variety of actions across all jurisdictions is impressive and it is clear there is a lot of partnership between the cities and counties within this region. Responsible parties, sources of funding, etc. are for the most part well defined.
- The goals and further detailed objectives of the plan are consistent with the risks outlined in the hazard assessment and the actions proposed to reduce that risk. The overall goals of the plan seem to come through in the majority of the proposed actions.

### Opportunities for Improvement:

- The prioritization of the mitigation actions is unclear. While the list of prioritization factors on pages 8:2 and 8:3 seem comprehensive and imply that each prioritization list is most appropriate to the individual jurisdiction, it would be very difficult for a new local official/planning team member to understand why the rankings are what they are in this plan. It is encouraged that each jurisdiction includes a rationale for why the actions received the priority they did or to include a scoring sheet that shows how the priority determination was made, like how hazards were profiled.
- Jurisdiction specific flood extent (the strength or magnitude of the hazard, commonly met with previous flood depths or expected flood depths) is largely missing. Technical flood gauge data is included as available, but without narrative context or subtracting the ground elevation from the figure, it would be very difficult for the average reader to understand the worst-case flooding in their community. The planning committee is strongly encouraged to profile the depths of flooding possible/observed in each community in future plan updates.

## **Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)**

### Plan Strengths:

- The plan includes community specific tables showing changes in population, homes built in the last ten years, and other trends that help a reader understand how their community has grown since the last plan was approved.
- Numerous mitigation actions have been completed since the previous plan. Providing mitigation action successes in a dedicated section is a wonderful practice, as shown in Appendix E. Suggest incorporating these successes in the HIRA to demonstrate the improvements made towards decreasing the risk and becoming a more resilient region.

### Opportunities for Improvement:

- The plan includes such a strong capability assessment earlier in the plan (p.7.1 through 7.18), the planning committee is encouraged to provide additional examples and details for integrating and implementing this hazard mitigation plan updated in conjunction with the other identified community documents.
- As noted in the initial state review for Element D1 seeking additional context, the intent of this element is to ensure that recent development is considered for each jurisdiction and whether those changes affect hazard vulnerability for the citizens of each community. It is determined that this element is minimally met due to the jurisdiction-specific population changes, previous discussions on vulnerability elsewhere in the plan, and the plan stating on 6:13 that additional population increases/decreases vulnerability by changing the number of people potentially exposed to a hazard. The inference is that no development has occurred that significantly changes vulnerability in any community, apart from more or less people affected should a hazard event occur. However, the planning committee and contractor is strongly encouraged to expand this section for future updates. Changes in population alone doesn't provide a lot of information about vulnerability. Consider including **where** those population changes have occurred: Are there particularly hazard prone areas seeing growth such as a WUI areas (wildfire) or problematic low-lying areas (flooding) seeing those increases? Or expanding **who** the population change is referring to (primarily older residents, non-english speakers, etc.) whose unique needs would definitely impact vulnerability.

And for the majority of communities where little development or population changes have occurred, consider including additional detail about any new community groups, changes in local capability, new staff, new priorities from elected officials, and additional details about how mitigation actions (and the handful of completions) have impacted community resilience and vulnerability, even if they are small steps or efforts.



## B. Resources for Implementing Your Approved Plan

**Region IV Planning Toolkit:** This toolkit was produced by Region IV and Resilience Action Partners, the Community Engagement and Risk Communications Contractor. The document was developed for communities writing/implementing their hazard mitigation plan 'In-house' without the use of a contractor. It offers credible data sources, summarized content, and helpful suggestions related to hazard mitigation plans. It is not available online, but can be requested through the State Planning Coordinator as well as the FEMA Planning Team.

**Local Mitigation Planning Handbook:** This Handbook provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements under the Code of Federal Regulations (CFR) Title 44 – Emergency Management and Assistance §201.6. Use the Local Plan Guide and Handbook in tandem to understand technical requirements  
<http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=7209>

**Integrating Mitigation Strategies with Local Planning:** This resource provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns.  
<http://www.fema.gov/library/viewRecord.do?id=7130>

**Mitigation Ideas:** Communities can use this resource to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters.  
<http://www.fema.gov/media-library/assets/documents/30627?id=6938>

**Mitigation Assistance Programs:** Currently, FEMA administers three programs that provide funding for eligible mitigation projects that reduces disaster losses and protect life and property from future disaster damages. The three programs are the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program.  
<http://www.fema.gov/hazard-mitigation-assistance>

**Integrating Mitigation Strategies with Local Planning:** Provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns.  
<http://www.fema.gov/library/viewRecord.do?id=7130>

### State NFIP Coordinators:

<http://www.floods.org/index.asp?menuID=274&firstlevelmenuID=185&siteID=1>

### Mitigation Funding Sources:

#### Federal Emergency Management Agency

Program	Details	Notes
Hazard Mitigation Grant Program (HMGP)	Provides grants to implement long-term hazard mitigation measures after a major disaster declaration <a href="https://www.fema.gov/hazard-mitigation-grant-program">https://www.fema.gov/hazard-mitigation-grant-program</a>	See website
Pre-Disaster Mitigation Program (PDM)	Provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event <a href="https://www.fema.gov/pre-disaster-mitigation-grant-program">https://www.fema.gov/pre-disaster-mitigation-grant-program</a>	See website

Flood Mitigation Assistance (FMA)	Provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis <a href="https://www.fema.gov/flood-mitigation-assistance-program">https://www.fema.gov/flood-mitigation-assistance-program</a>	See website
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**Environmental Protection Agency**

The EPA makes available funds for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. <a href="http://water.epa.gov/grants_funding/">http://water.epa.gov/grants_funding/</a>	See website

**National Oceanic and Atmosphere Administration (NOAA)**

NOAA is the major source for mitigation funding related to coastal zone management and other coastal protection projects.

Mitigation Funding Sources Program	Details	Notes
Coastal Services Center Grant Opportunities	Formula and program enhancement grants for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce.  <a href="http://coast.noaa.gov/funding/?redirect=301ocm">http://coast.noaa.gov/funding/?redirect=301ocm</a>	See website.

**National Fire Protection Association - Firewise**

Mitigation Funding Sources Program	Details	Notes
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts.  <a href="http://www.firewise.org">http://www.firewise.org</a>	See website

**U.S. Department of Agriculture**

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. <a href="http://www.forestsandrangelands.gov/">http://www.forestsandrangelands.gov/</a>	See website
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USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Information and funds for landscape planning, soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. <a href="http://www.nrcs.usda.gov/programs/watershed/index.html">http://www.nrcs.usda.gov/programs/watershed/index.html</a>	See website

**SECTION 3:**  
**MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

**INSTRUCTIONS:** For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/township/village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1	<i>Caswell</i>	<i>County</i>					Y	Y	Y	Y	Y	
2	Milton	Town					Y	Y	Y	Y	Y	
3	Yanceyville	Town					Y	Y	Y	Y	Y	
4	<i>Davie</i>	<i>County</i>					Y	Y	Y	Y	Y	
5	Bermuda Run	Town					Y	Y	Y	Y	Y	
6	Cooleemee	Town					Y	Y	Y	Y	Y	
7	Mocksville	Town					Y	Y	Y	Y	Y	
8	<i>Forsyth</i>	<i>County</i>					Y	Y	Y	Y	Y	

**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/borough/township/village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
9	Bethania	Town					Y	Y	Y	Y	Y	
10	Clemmons	Village					Y	Y	Y	Y	Y	
11	Kernersville	Town					Y	Y	Y	Y	Y	
12	Lewisville	Town					Y	Y	Y	Y	Y	
13	Rural Hall	Village					Y	Y	Y	Y	Y	
14	Tobaccoville	Town					Y	Y	Y	Y	Y	
15	Walkertown	Town					Y	Y	Y	Y	Y	
16	Winston-Salem	City					Y	Y	Y	Y	Y	
17	<b>Rockingham</b>	<b>County</b>					Y	Y	Y	Y	Y	
18	Eden	City					Y	Y	Y	Y	Y	
19	Madison	Town					Y	Y	Y	Y	Y	
20	Mayodan	Town					Y	Y	Y	Y	Y	
21	Reidsville	City					Y	Y	Y	Y	Y	

**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
22	Stoneville	Town					Y	Y	Y	Y	Y	
23	Wentworth	Town					Y	Y	Y	Y	Y	
24	<b>Stokes</b>	<b>County</b>					Y	Y	Y	Y	Y	
25	Danbury	Town					Y	Y	Y	Y	Y	
26	King	City					Y	Y	Y	Y	Y	
27	Walnut Cove	Town					Y	Y	Y	Y	Y	
28	<b>Surry</b>	<b>County</b>					Y	Y	Y	Y	Y	
29	Dobson	Town					Y	Y	Y	Y	Y	
30	Elkin	Town					Y	Y	Y	Y	Y	
31	Mount Airy	City					Y	Y	Y	Y	Y	
32	Pilot Mountain	Town					Y	Y	Y	Y	Y	
33	<b>Yadkin</b>	<b>County</b>					Y	Y	Y	Y	Y	
34	Booneville	Town					Y	Y	Y	Y	Y	

**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
35	East Bend	Town					Y	Y	Y	Y	Y	
36	Jonesville	Town					Y	Y	Y	Y	Y	
37	Yadkinville	Town					Y	Y	Y	Y	Y	





# Appendix D

## Planning Process Documentation

This appendix includes:

1. Meeting Agendas
2. Meeting Sign-In Sheets
3. Neighboring Jurisdiction Outreach Documentation
4. Public Survey Summary Results

# **AGENDA**

## Northern Piedmont Regional Hazard Mitigation Plan Hazard Mitigation Plan Update Kickoff Meeting

January 9, 2019  
10:00AM - Noon

### **1) Introductions**

### **2) Overview of Mitigation/Icebreaker Exercise**

### **3) Project Overview**

- a) Key Objectives
- b) Project Tasks
- c) Project Schedule
- d) Project Staffing

### **4) Roles & Responsibilities**

- a) ESP
- b) County Leads
- c) Participating Jurisdictions

### **5) Next Steps**

- a) Data collection efforts
- b) Begin public outreach
- c) Discuss next Hazard Mitigation Planning Team meeting

### **6) Questions, Issues or Concerns**

## **AGENDA**

Northern Piedmont Regional Hazard Mitigation Plan  
Mitigation Strategy Workshop

May 30, 2019  
10:00AM - Noon

- 1) Introductions**
- 2) Mitigation Recap**
- 3) Project Schedule**
- 4) Risk Assessment Findings**
  - a) Hazard Identification**
  - b) Hazard Profiles**
  - c) Hazard Vulnerability Assessment**
- 5) Capability Assessment Findings**
- 6) Mitigation Strategy**
- 7) Summary of Public Involvement**
- 8) Plan Maintenance**
- 9) Next Steps**

Northern Piedmont Regional Hazard Mitigation Plan  
Stakeholder Kickoff Meeting

January 9, 2019  
10:00AM

Name	Agency	City	Phone Number	E-mail Address
Michelle Brock	Winston-Salem/Forsyth County EM	Winston-Salem	336 917 7074	michelleb@cityofws.org
Leigha Cordell	Winston-Salem/Forsyth Co EM	Winston-Salem	336 917-7073	LeighaC@cityofws.org
Joel Wood	NCEM		336-894-7692	joel.wood@nceps.gov
Myron Waddell	Stokes Co. EM	Mt. Airy	336-783-9012	waddellm@co.stokes.nc.us
Robert Wade	Winston-Salem Fire Department	Winston-Salem	336-399-8240	Robert.Wade@CityofWinston-Salem.nc.us
Brandon Bentley	Stokes Co. EM	Danbury	336-403-2913	bgentbr@co.stokes.nc.us
Barry Lynch	Caswell Co EM		336 694 5777	blynch@caswellcounty.nc.us
Drake DeBiss	City of WS	WS	336 739 1757	brackeb@cityofws.org

Name	Agency	City	Phone Number	E-mail Address
Scott Aaron	STOKES COUNTY Fire Marshal / EM	Danbury	536-593-2484 336-403-4479	Saaron@co.stokes.nc.us
Shirase Moose	WSFD / FC	Winston Salem	336-682-3242	mshirase@yahoo.com
Joshua Swift	Forsyth Dept of Public Health	WS	336-703-3099	Swiftjr@ forsyth.cc
Dan Dockery	WSFC PLANNING DEPT	WS/FC	336-727-2084	dand@ cityofws.org
John Mello	NCEM HAZARD Mitigation	RALEIGH	919-825-2334	john.mello@ncdps.gov
Chris Belden	Yadkin County EM	Yadkinville	336 406 1021	cbelden@ yadkincountync.gov
KEITH VESTAL	YADKIN COUNTY EM	YADKINVILLE	336-849-7622	KVESTAL@ YADKINCOUNTYNC.GOV
Drew Hinkle	Yadkin County	Yadkinville	336 488 8688	shinkle@yadkincountync.gov
Dan Corder		Village of Tobaccoville	336-983-0029	administrator@ tobaccovillenc.org

Name	Agency	City	Phone Number	E-mail Address
Tyres Tatum	NCEM	Mayodan	919-368-7235	tyres.tatum@ncdps.gov
Robert Reece	WS/CEM	Winston-Salem	336-917-1015	rreece@cityofws.org
Jason Brooks	Rockingham Co. EM	Reidsville	336-634-3004	jbrooks@co.rockingham.nc.us
Dawn Purdue	Yadkinville Police	Yadkinville	336-679-2863	dpurdue@yadkinvillepd.com
Amy Crum	Winston-Salem Forsyth County Planning	Winston-Salem	336-747-7051	amy@cityofws.org
Stacy Tolbert	Town of Lewisville	Lewisville	336-945-1023	planner@lewisville.net
Scott Snow	Town of Walkertown	Walkertown	336-595-4212	scottsnow@thi.tn.com
Gayle Swain	Dept. of Social Svcs	Forsyth	336-703-3033	swain@forsyth.nc
AUGUST VERNON	W-5/FC OEM	Forsyth	336-917-7171	AUGUST@CITYOFWS.ORG
Gary Styers	Forsyth County Emergency Services	Forsyth	336-703-2552	styers@forsyth.nc



**Northern Piedmont Regional Hazard Mitigation Plan Update  
Mitigation Strategy Workshop**

**May 30, 2019**

**10AM - Noon**

Name	Agency	City	Phone Number	E-mail Address
James Collins	NCEM		336 592 3015	James.collins@ncdps.gov
Chris Bolden	Yadkin Co. ES		336-406-1021	cbolden@yadkincountync.gov
Leigha Cordell	Forsyth EM	WS	336-917-7073	Leigha@cityofws.org
Scott Aaron	STOKES County	Danbury	336-407-4449	saaron@co.stokes.nc.us
Shirise Moore	Forsyth count	WS	336-682-3242	shirise@cityofws.org
Amy Cunn	WS/FC Planning	WS	336 747 7051	amyc@cityofws.org



**Northern Piedmont Regional Hazard Mitigation Plan Update  
Mitigation Strategy Workshop**

**May 30, 2019**

**10AM - Noon**

Name	Agency	City	Phone Number	E-mail Address
Michelle Brock	Forsyth EM	Winston-Salem	336 917 7074	michelleb@cityofws.org
KEITH VESTAL	YADKIN EM	YADKINVILLE	336-849-7622	<del>KIVESTAL</del> KVESTAL@YADKINCOUNTYNC.GOV
Robert Reece	Forsyth EM	Winston-Salem	336-911-9015	rreece@cityofws.org
Sarah Isom	Forsyth Public Health	Winston-Salem	336-703-3122	isomssf@forsyth.cc
JAY BROOKS	Rockingham County	Wentworth	336-634-3003	jbrooks@co.rockingham.nc.us
Matthew Osborne	City of Winston-Salem	Winston-Salem	336-747-7453	matthewo@cityofws.org
Bruce Beilke	City of WS	Winston Salem	336 734 1257	bruceb@cityofws.org
BRIAN BYRD	DAVIE CTY E.M.	MOCKSVILLE	336-528-3068	bbyrd@daviecountync.gov

**Northern Piedmont Regional Hazard Mitigation Plan Update  
Mitigation Strategy Workshop**

**May 30, 2019**

**10AM - Noon**

Name	Agency	City	Phone Number	E-mail Address
Drew Hinkle	Yadkin County	Yadkinville	336 849 7515	shinkle@yadkincountync.gov
JAMES GRIFFIN	FORSYTH CO'S FIRE	Winston-Salem	336-705-0247	griffin@ FORSYTH.CC
Barry Lynch	Caswell EMA	Caswell Co	336 694 5177	blynch@ caswellcountync.gov
Dan Corpen	Tobaccoville	Tobaccoville	336-983-0029	administrator@ tobaccoville.nc.org
Jimmy Flythe	Duke Energy			
BRIAN TUTTLE	MAP FORSYTH	FORSYTH COUNTY	336-703-2364	tuttleb@ forsyth.cc

**Northern Piedmont Regional Hazard Mitigation Plan Update  
Mitigation Strategy Workshop**

**May 30, 2019**

**10AM - Noon**

Name	Agency	City	Phone Number	E-mail Address
Joel Wood	NCEM	Butner, NC	336-894-7692	joel.wood@ncdps.gov
Stacy Tolbert	Town of Lewisville	Lewisville, NC	336-945-1023	planner@lewisville-nc.net
Gayle Swain	FC DSS	Winston-Salem	336-703-3433	Swaing1@forsyth-nc.gov

Northern Piedmont Regional Hazard Mitigation Plan  
Public Meeting

January 9, 2019

6:00PM

Name	Agency	City	Phone Number	E-mail Address
Jo Fulton	Belews Creek Fire/Rescue	Belews Creek	(336) 595-1100 (fire dept)	bcvfd 3135 @ yahoo.com
Michelle Brock	Forsyth EM	Winston-Salem	336 917 7074	michelleb@ cityofws.org

## Nathan Slaughter

---

**From:** Nathan Slaughter  
**Sent:** Wednesday, October 2, 2019 2:11 PM  
**To:** alleghanyem@skybest.com; patty.gambill@ashecountygov.com; jsmyre@co.iredell.nc.us; Chris.Soliz@rowancountync.gov; alton.hanes@davidsoncountync.gov; emergencymanagement@guilford-es.com; ksaunders@orangecountync.gov; debbie.hatfield@alamance-nc.com; dyoung@personcounty.net; information@graysoncountyva.gov; elineberry@carrollcountyva.org; sallen@co.patrick.va.us; chris.slemp@pittgov.org; duffetj@danvilleva.gov; planning@co.halifax.va.us; mtatum@henrycountyva.gov  
**Subject:** NOTIFICATION: Northern Piedmont Regional Hazard Mitigation Plan

Good afternoon

You are receiving this email because a neighboring County (Caswell County, Davie County, Forsyth County, Rockingham County, Stokes County, Surry County and/or Yadkin County NC), along with the municipalities within those counties and other participating partners, are now working to update the region's multi-jurisdictional *Northern Piedmont Regional Hazard Mitigation Plan* as required by the Federal Emergency Management Agency (FEMA). The purpose of this plan is to identify and assess the region's natural hazard risks and determine strategies for how to best minimize or manage vulnerability to those risks. Upon completion, the plan will represent a comprehensive multi-jurisdictional *Hazard Mitigation Plan* for the seven-county region.

You are being notified of this planning process for two purposes:

1. FEMA requires that neighboring jurisdictions be provided an opportunity to be involved in the planning process.
2. You may want to contribute information to these jurisdictions to consider as they update their hazard mitigation plan.

I serve as the Project Manager for the update of the plan. Please let me know if you would like to contribute information, be invited to any upcoming meetings in the development of the plan or if you would like to receive a copy of the draft plan.

Should you have any questions about the Northern Piedmont Regional Hazard Mitigation Plan, please do not hesitate to contact me. Thank you for your time!

**Nathan Slaughter, AICP, CFM**

Department Manager – Hazard Mitigation

**ESP Associates, Inc.**

2200 Gateway Centre Boulevard – Suite 216

Morrisville, NC 27560

[www.espassociates.com](http://www.espassociates.com)

[nslaughter@espassociates.com](mailto:nslaughter@espassociates.com)

919.415.2726 | Direct

919.678.1070 | Office

919.244.9536 | Cell

Neighboring Jurisdictions for the Northern Piedmont Region

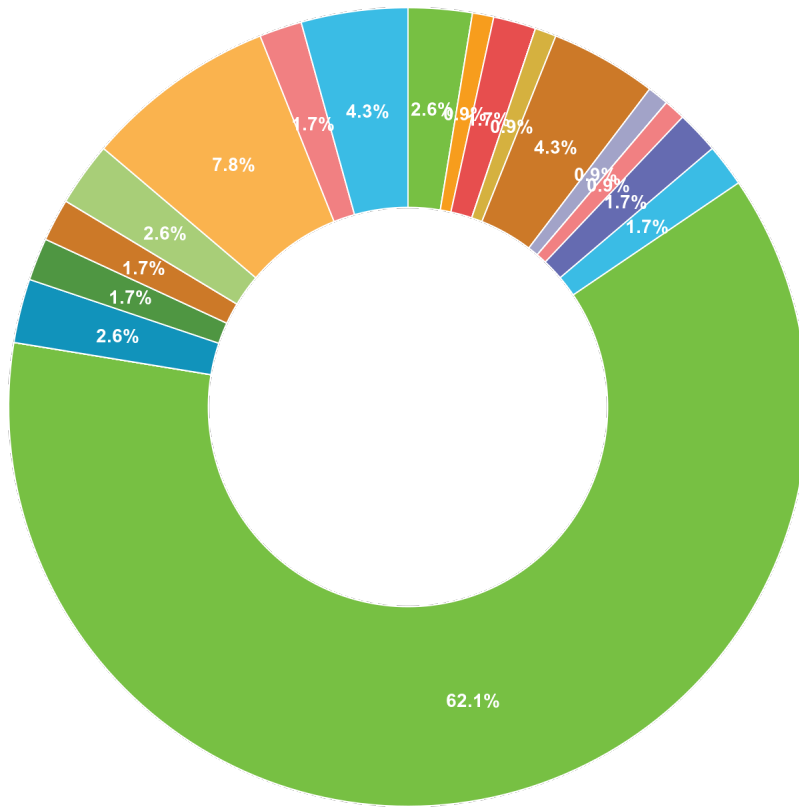
Jurisdiction	Name	Title	Email
Alleghany County NC	Daniel Roten	Emergency Management Director	<a href="mailto:alleghanyem@skybest.com">alleghanyem@skybest.com</a>
Ashe County NC	Patty Gambill	Emergency Management Director	<a href="mailto:patty.gambill@ashecountygov.com">patty.gambill@ashecountygov.com</a>
Iredell County NC	Jody Smyre	Emergency Management Director	<a href="mailto:jsmyre@co.iredell.nc.us">jsmyre@co.iredell.nc.us</a>
Rowan County NC	Chris Soliz	Emergency Services Director	<a href="mailto:Chris.Soliz@rowancountync.gov">Chris.Soliz@rowancountync.gov</a>
Davidson County NC	Alton Hanes	Emergency Management Director	<a href="mailto:alton.hanes@davidsoncountync.gov">alton.hanes@davidsoncountync.gov</a>
Guilford County NC	Donald L Campbell	Emergency Management Director	<a href="mailto:emergencymanagement@guilford-es.com">emergencymanagement@guilford-es.com</a>
Orange County NC	Kirby Saunders	Emergency Services Director	<a href="mailto:ksaunders@orangecountync.gov">ksaunders@orangecountync.gov</a>
Alamance County NC	Debbie Hatfield	Emergency Management Director	<a href="mailto:debbie.hatfield@alamance-nc.com">debbie.hatfield@alamance-nc.com</a>
Person County NC	Doug Young	Emergency Services Director	<a href="mailto:dyoung@personcounty.net">dyoung@personcounty.net</a>
Grayson County VA			<a href="mailto:information@graysoncountyva.gov">information@graysoncountyva.gov</a>
Carroll County VA	Everett Lineberry	Emergency Management Director	<a href="mailto:elineberry@carrollcountyva.org">elineberry@carrollcountyva.org</a>
Patrick County VA	Steve Allen	Emergency Management Director	<a href="mailto:sallen@co.patrick.va.us">sallen@co.patrick.va.us</a>
Pittsylvania County VA	Chris Slep	Public Safety Director	<a href="mailto:chris.slep@pittgov.org">chris.slep@pittgov.org</a>
Danville VA	Timothy Duffer	Deputy Emergency Coordinator	<a href="mailto:duffetj@danvilleva.gov">duffetj@danvilleva.gov</a>
Halifax County VA			<a href="mailto:planning@co.halifax.va.us">planning@co.halifax.va.us</a>
Henry County, VA	Matt Tatum	Public Safety Director	<a href="mailto:mtatum@henrycountyva.gov">mtatum@henrycountyva.gov</a>



# Northern Piedmont Regional Hazard Mitigation Plan - Public Survey

We need your help!





























**Q1** 1\.. Where do you live?\*



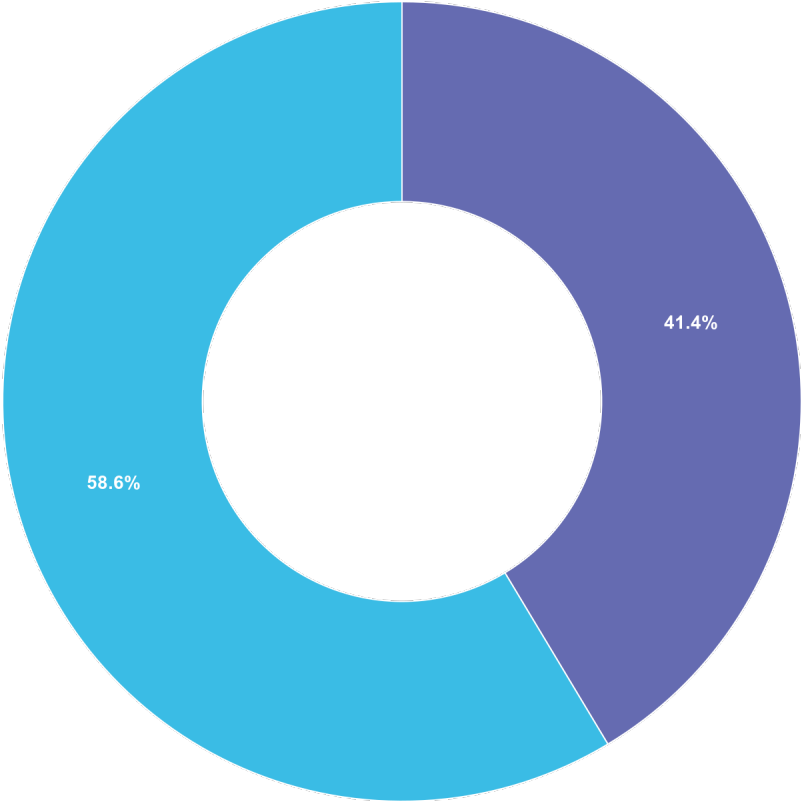
Answered: 116 Unanswered: 0

Choice	Total
Unincorporated Caswell County	0
Unincorporated Davie County	0
Unincorporated Forsyth County	3
Unincorporated Rockingham County	0
Unincorporated Stokes County	1
Unincorporated Surry County	2
Unincorporated Yadkin County	0
Bermuda Run	0
Bethania	0
Boonville	1



<b>Choice</b>	<b>Total</b>
 Clemmons	5
 Cooleemee	0
 Danbury	1
 Dobson	0
 East Bend	0
 Eden	0
 Elkin	0
 Jonesville	1
 Kernersville	2
 King	2
 Lewisville	72
 Madison	0
 Mayodan	0
 Milton	0
 Mocksville	0
 Mount Airy	3
 Pilot Mountain	2
 Reidsville	0
 Rural Hall	2
 Stoneville	0
 Tobaccoville	0
 Walkerton	0
 Walnut Cove	3
 Wentworth	0
 Winston-Salem	9
 Yadkinville	2
 Yanceyville	0
 Other	5

Q2 2\ Have you ever experienced or been impacted by a disaster?\*



Answered: 116 Unanswered: 0

---

Choice	Total
Yes	48
No	68

Q3 3\ If "Yes," please explain.

Wednesday, July 17, 2019, 2:32 PM UTC

Tornadoes hit my neighborhood in 1989.

---

Thursday, May 30, 2019, 8:07 PM UTC

Flooding

---

Thursday, May 30, 2019, 5:55 PM UTC

Hurricane Charley's eye crossed directly over my house in Port Charlotte, Florida. Lived in California working for San Jose PD dispatch when the Loma Prieta quake hit.

---

Thursday, May 30, 2019, 3:31 PM UTC

A tree through my deck during hurricane Michael.

---

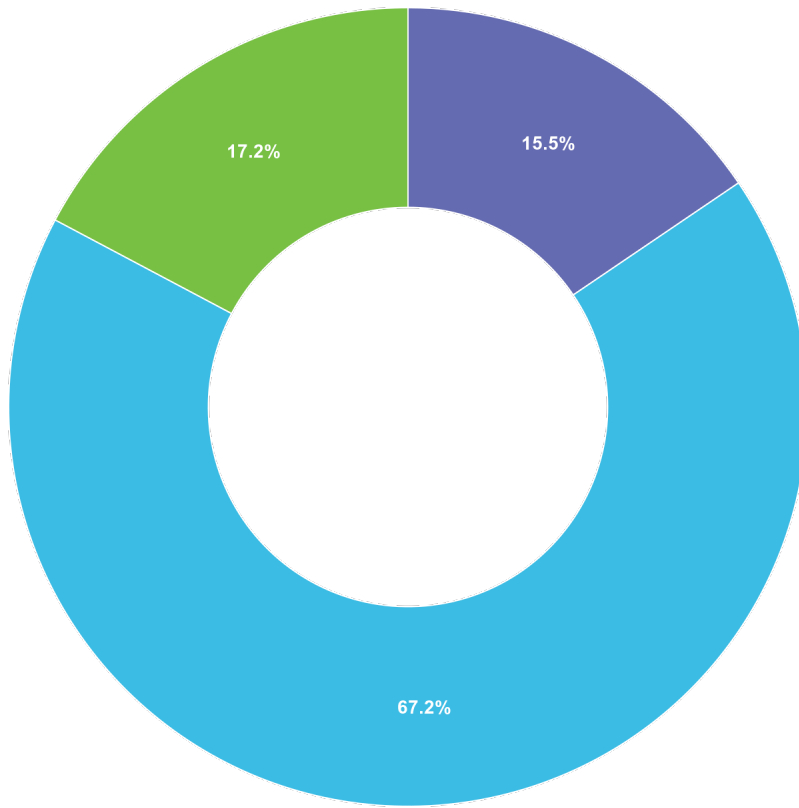
Tuesday, April 9, 2019, 8:50 PM UTC

During heavy rain storms our basement has flooded four times. The stream (trickle usually) had risen above our driveway which is above the stream around 5-6 feet.

---

**Answered:** 42 **Unanswered:** 74

**Q4** 4\.. How concerned are you about the possibility of our community being impacted by a disaster?\*

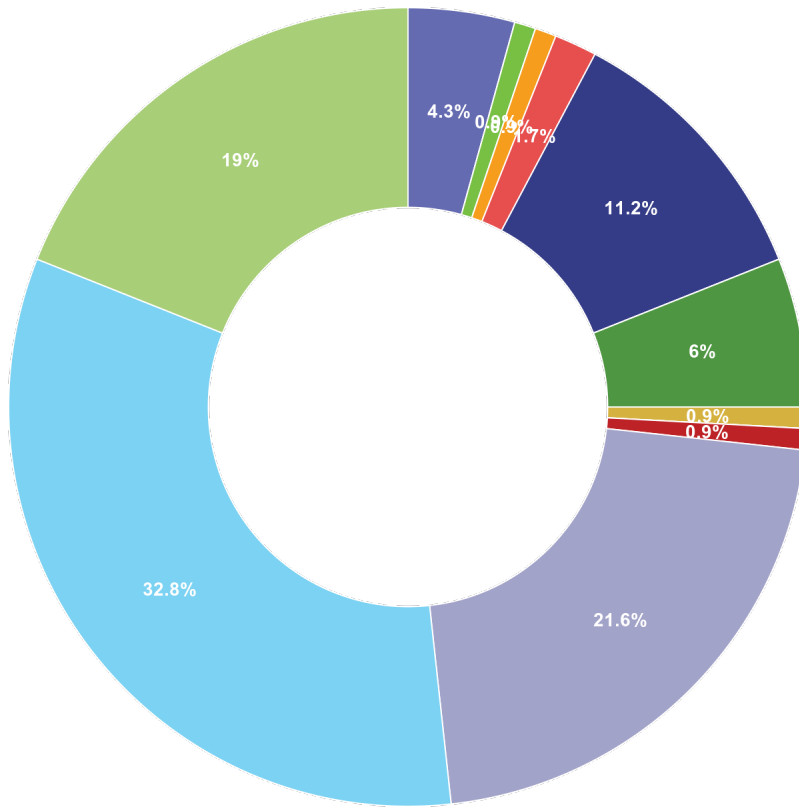


Answered: 116 Unanswered: 0

---

Choice	Total
 Extremely concerned	18
 Somewhat concerned	78
 Not concerned	20

**Q5** 5\ Please select the **one** hazard you think is the highest threat to your neighborhood:\*

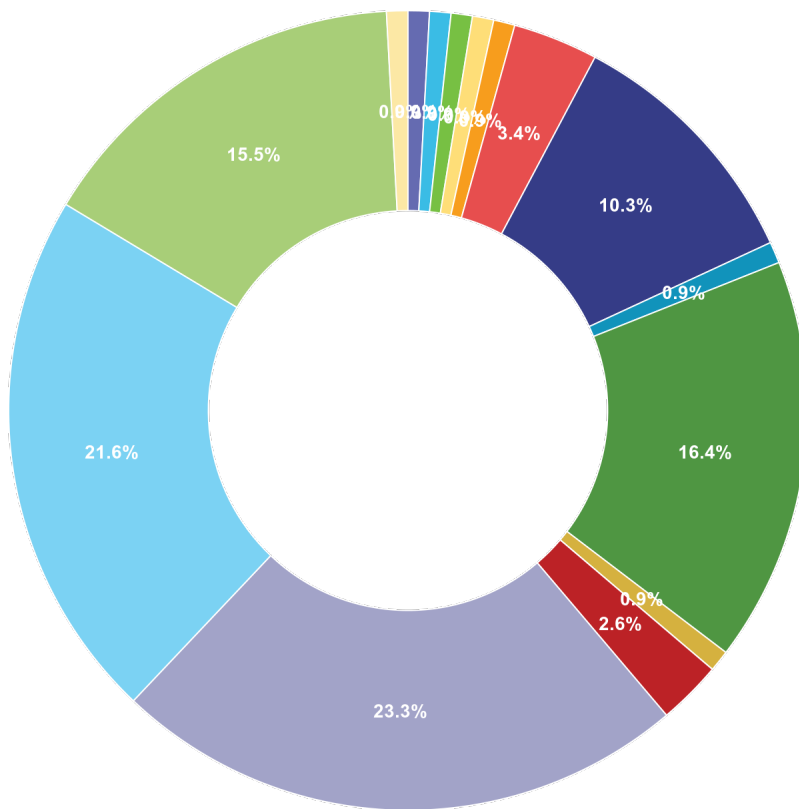


Answered: 116 Unanswered: 0

Choice	Total
Acts of Terror	5
Dam/Levee Failure	0
Drought	1
Earthquake	0
Expansive Soils	1
Extreme Heat	2
Flood	13
Hailstorm	0
Hurricane Remnants	7
Land Subsidence	1

















Choice	Total
Landslide	0
Lightning	1
Severe Winter/Ice Storms	25
Severe Thunderstorms/High Winds	38
Tornado	22
Wildfire	0

**Q6 6\.** Please select the **one** hazard you think is the second highest threat to your neighborhood:\*



Answered: 116 Unanswered: 0

---

Choice	Total
 Acts of Terror	1
 Dam/Levee Failure	1
 Drought	1
 Earthquake	1
 Expansive Soils	1
 Extreme Heat	4
 Flood	12
 Hailstorm	1
 Hurricane Remnants	19
 Land Subsidence	1
 Landslide	0
 Lightning	3
 Severe Winter/Ice Storms	27
 Severe Thunderstorms/High Winds	25
 Tornado	18
 Wildfire	1

**Q7** 7\ Are there any other hazards that you feel pose a wide-scale threat to your community?

Wednesday, July 17, 2019, 2:32 PM UTC

No.

---

Thursday, May 30, 2019, 5:55 PM UTC

Dealing with residual ice after snows, flooding in more prone areas.

---

Thursday, April 18, 2019, 3:33 PM UTC

Tornado

---

Thursday, April 4, 2019, 5:44 PM UTC

no

---

Monday, April 1, 2019, 7:28 AM UTC

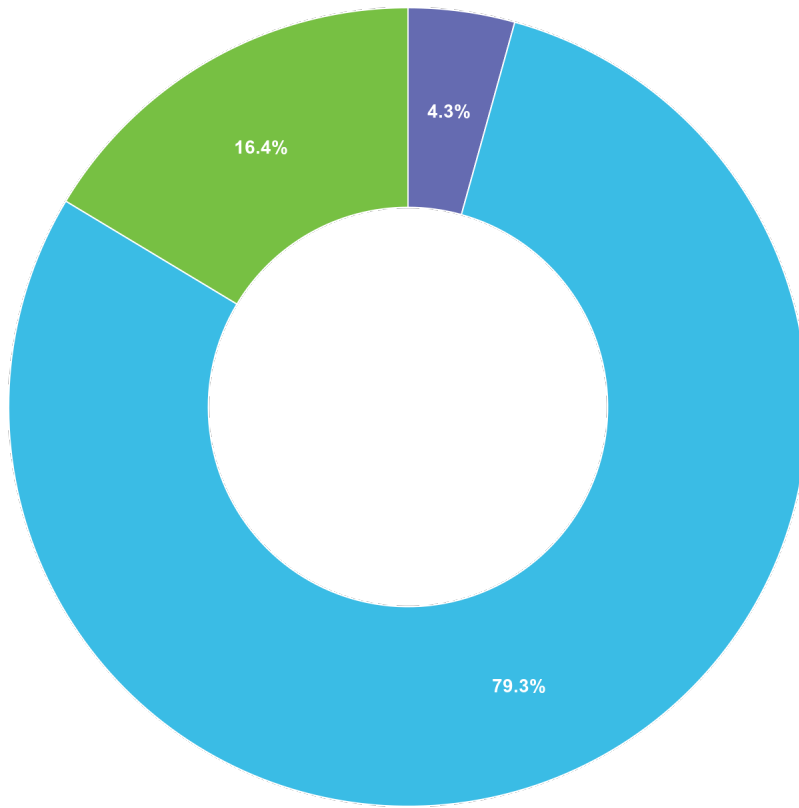
I know of no threats to Lewisville. Its been a rainy season, so it was to be expected. The drain system could be better on Lewisville Clemmons Road.

---

**Answered:** 49 **Unanswered:** 67

**Q8** 8\ . Is your home located in a floodplain?\*



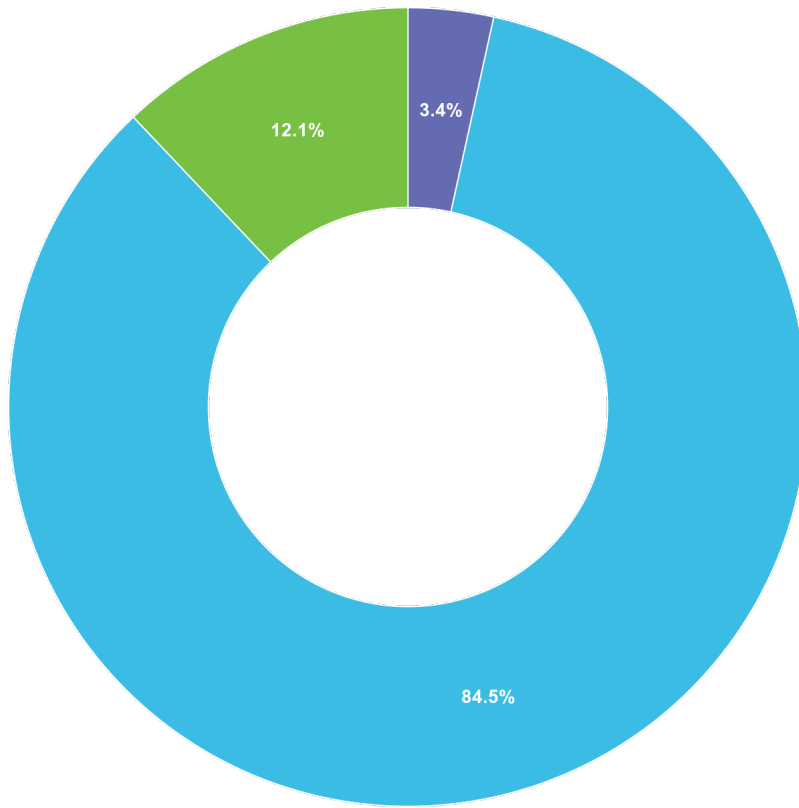


Answered: 116 Unanswered: 0

---

Choice	Total
 Yes	5
 No	92
 I don't know	19

Q9 9\.. Do you have flood insurance?\*

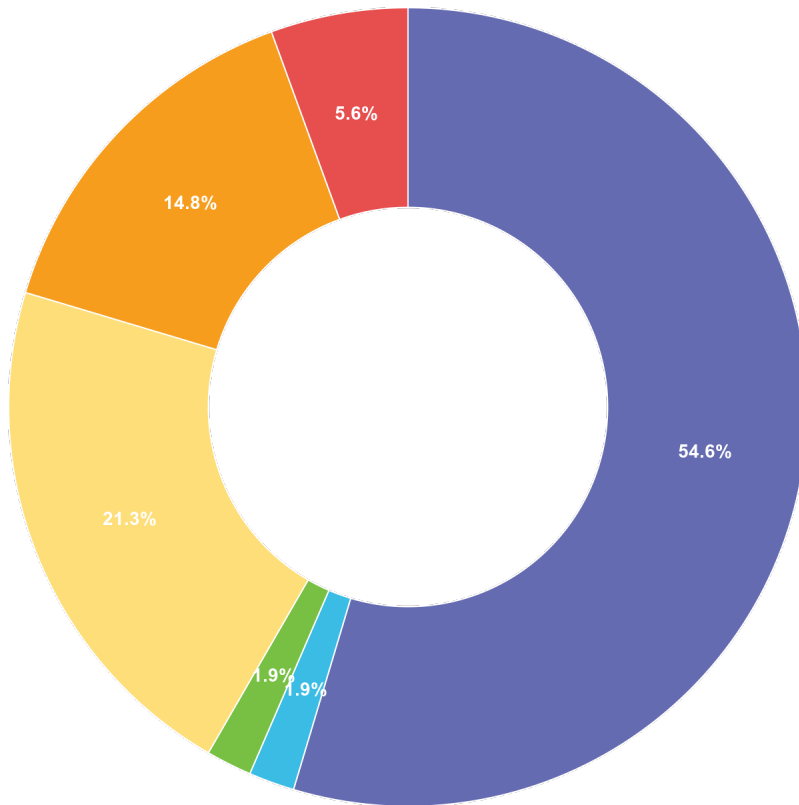


Answered: 116 Unanswered: 0

---

Choice	Total
Yes	4
No	98
I don't know	14

**Q10** 10\.. If you do not have flood insurance, why not?



Answered: 108 Unanswered: 8

Choice	Total
Not located in a floodplain	59
Too expensive	2
Not necessary because it never floods	2
Not necessary because I'm elevated or otherwise protected	23
Never really considered it	16
Other	6

**Q11** 11\. If "Other," please explain.

Monday, February 18, 2019, 8:11 PM UTC

n/a

---

Thursday, February 7, 2019, 10:13 PM UTC

I am only considering moving to mt airy nc. I wont be owning property.

---

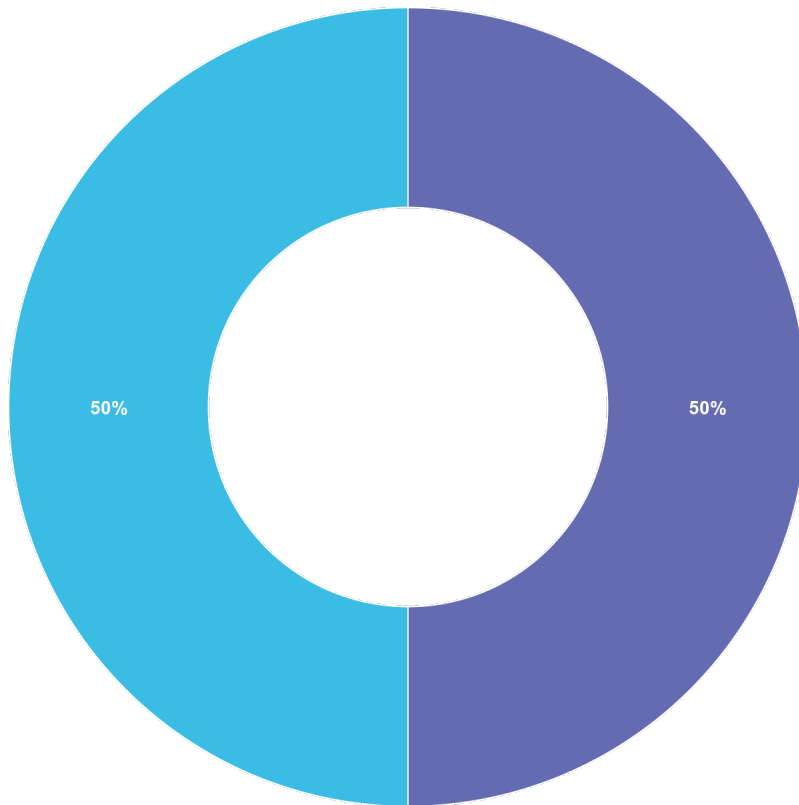
Thursday, January 17, 2019, 8:46 PM UTC

Unsure if we have flood coverage.

---

**Answered:** 3 **Unanswered:** 113

**Q12** 12\. Have you taken any steps to make your home or neighborhood more resistant to hazards?\*



Answered: 116 Unanswered: 0

---

Choice	Total
Yes	58
No	58

**Q13** 13\. If "Yes," please explain.

Thursday, May 30, 2019, 8:07 PM UTC

Keeping road clear and trees trimmed

---

Thursday, May 30, 2019, 5:55 PM UTC

Trimmed trees of branches near the house, secured outdoor items. Have safety items in basement.

---

Thursday, April 4, 2019, 5:44 PM UTC

cut down trees that are likely to fall

---

Monday, April 1, 2019, 7:28 AM UTC

I cleared all water ways where possible.

---

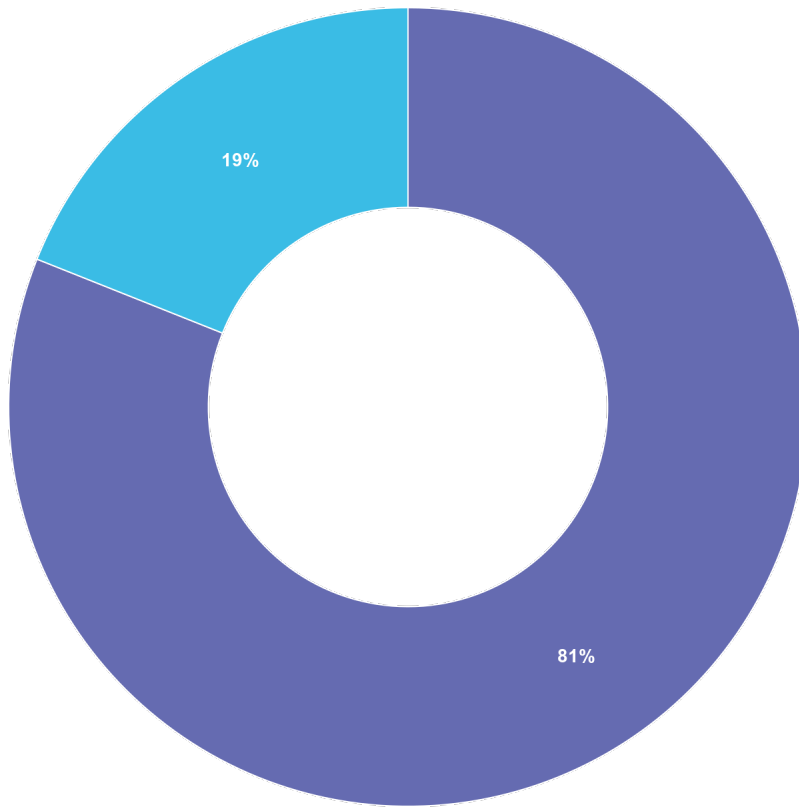
Wednesday, March 27, 2019, 8:56 PM UTC

Fire Safety Plan, Generator for power outages, Small amount of wind blowable objects in and around yard

---

**Answered:** 48 **Unanswered:** 68

**Q14** 14\|. Are you interested in making your home or neighborhood more resistant to hazards?\*

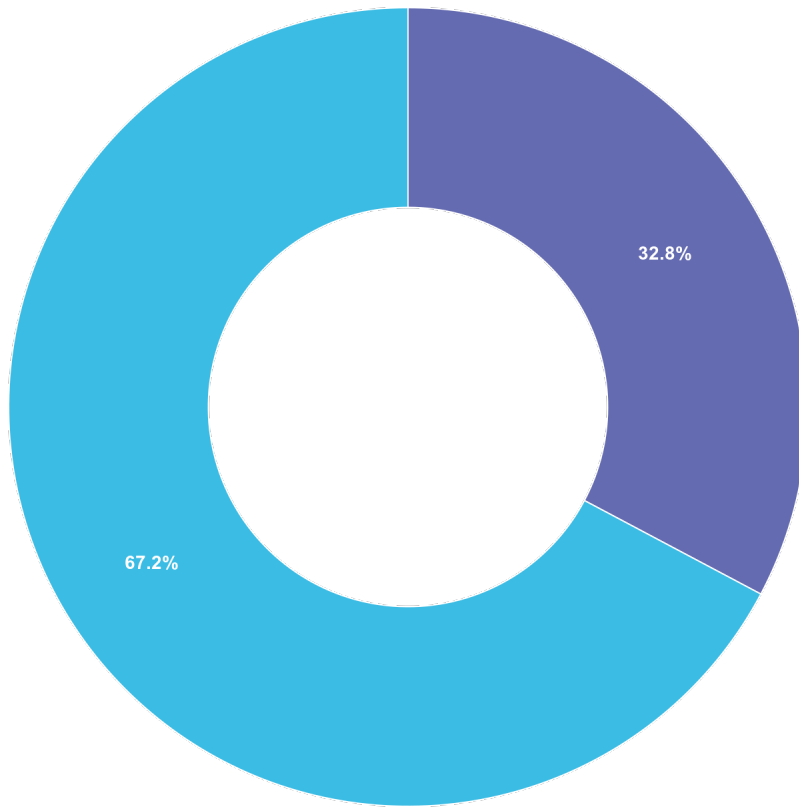


Answered: 116 Unanswered: 0

---

Choice	Total
<span style="color: #4a55a8;">●</span> Yes	94
<span style="color: #00a0c9;">●</span> No	22

**Q15** 15\. Do you know what office to contact to find out more information about how to reduce your risks to hazards in your area?\*



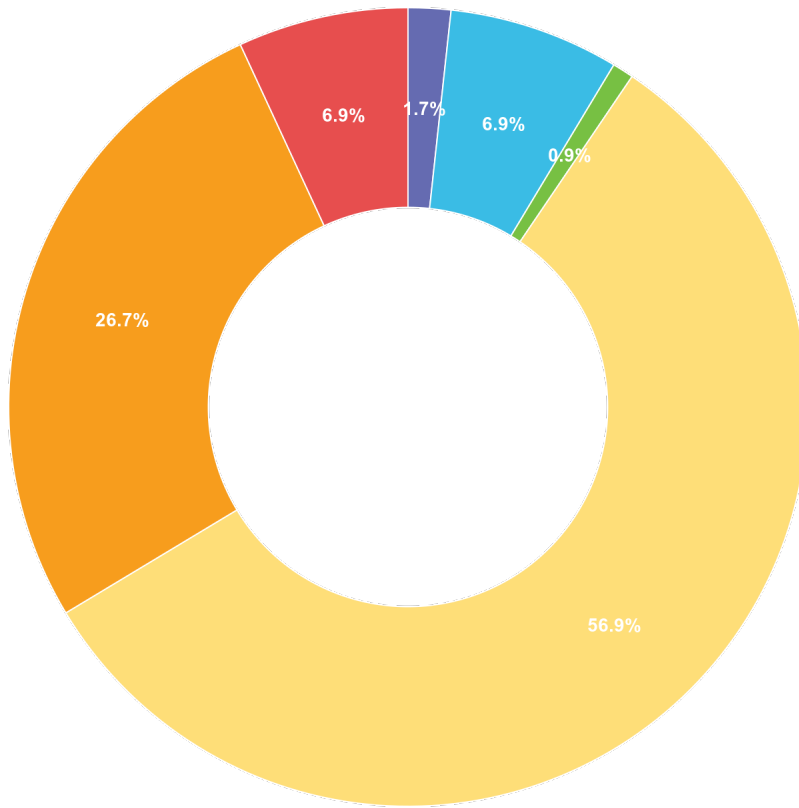
Answered: 116 Unanswered: 0

---

Choice	Total
Yes	38
No	78

**Q16** 16\.. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?\*





Answered: 116 Unanswered: 0

Choice	Total
Newspaper	2
Television	8
Radio	1
Internet (Including Social Media)	66
Mail	31
Public Workshops/Meetings	8
School Meetings	0

**Q17** 17\.. Are there any other ways you prefer to receive information? If so, please explain.

Tuesday, April 9, 2019, 8:50 PM UTC

Email

---

Monday, April 1, 2019, 7:28 AM UTC

No thanks.

---

Wednesday, March 27, 2019, 8:56 PM UTC

social media or phone

---

Sunday, March 3, 2019, 7:47 PM UTC

email

---

Saturday, March 2, 2019, 11:17 PM UTC

Email or Text

---

**Answered:** 38 **Unanswered:** 78

**Q18** 18\.. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?

Thursday, May 30, 2019, 5:55 PM UTC

Enforce trimming of trees around power lines, there's a tree broken in half and fallen over a powerline roughly in ~5000 blk Baux Mountain, that's even pulling the line down, and it's been that way since last year's hurricanes.

---

Thursday, May 30, 2019, 3:31 PM UTC

Public awareness

---

Tuesday, April 9, 2019, 8:50 PM UTC

Water management of ponds, streams, etc. I am not sure but, my understanding is that this waterway leads to the Yakin River.

---

Thursday, April 4, 2019, 5:44 PM UTC

education

---

Monday, April 1, 2019, 7:28 AM UTC

Sanitation. Flood preparedness.

---

**Answered:** 56 **Unanswered:** 60

**Q19** 19\.. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

Tuesday, April 9, 2019, 8:50 PM UTC

An emergency plan.

---

Thursday, April 4, 2019, 5:44 PM UTC

no

---

Wednesday, March 27, 2019, 8:56 PM UTC

Fire awareness both at home and Wildland urban interface

---

Friday, March 1, 2019, 1:23 PM UTC

With the flooding the has been occurring, the roads are being affected. There are pot hole, albeit, not huge; however, if not taken care of they will get bigger.

---

Thursday, February 28, 2019, 6:54 PM UTC

I think it would be beneficial that, following any disaster or loss that affects greater than 5 households or businesses should should be investigated to determine what could have been done to prevent the extent of the loss or mitigate the severity. Ask those affected what could have helped them.

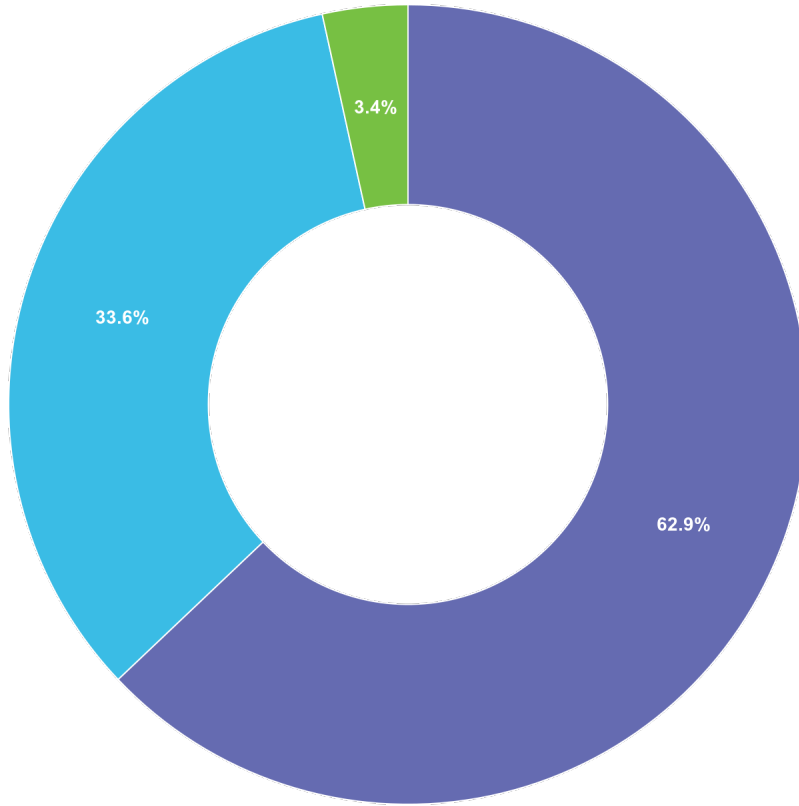
---

**Answered:** 22 **Unanswered:** 94

**Q20** A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. In the next six questions, please tell us how important you think each one is for your community to consider pursuing.

20\ **Prevention** -Administrative or regulatory actions that influence the way land is

developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.\*

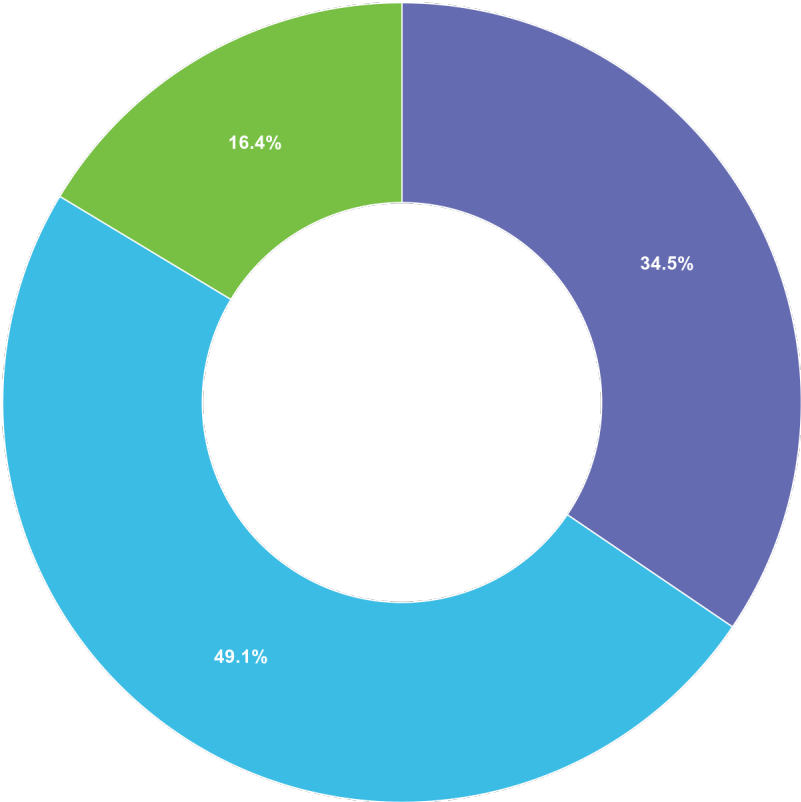


Answered: 116 Unanswered: 0

---

Choice	Total
 Very important	73
 Somewhat important	39
 Not important	4

**Q21 21\.** **Property Protection** - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.\*

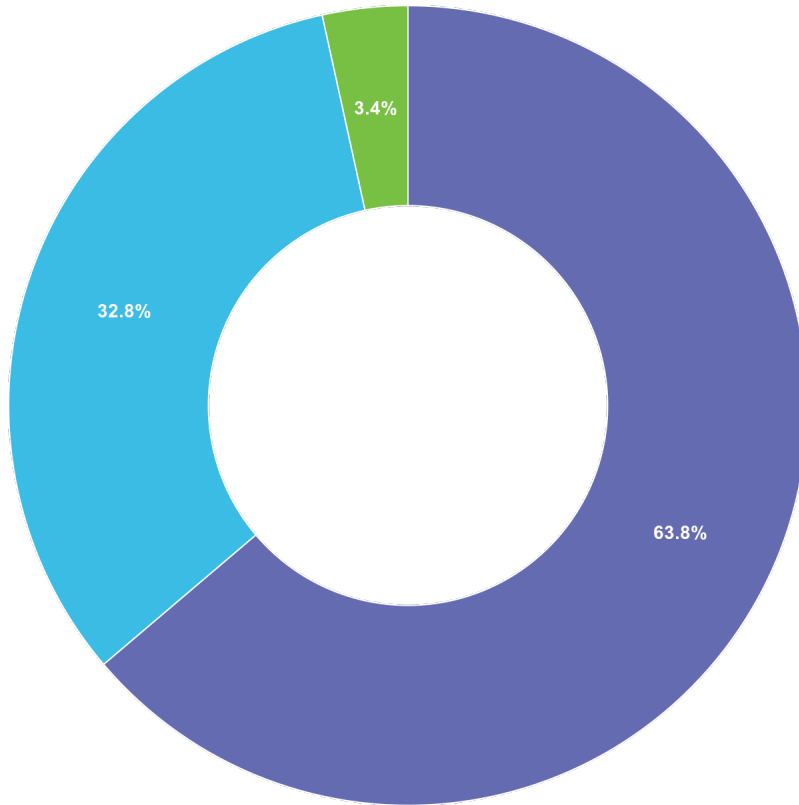


Answered: 116 Unanswered: 0

---

Choice	Total
 Very important	40
 Somewhat important	57
 Not important	19

**Q22 22\.** **Natural Resource Protection** - Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.\*

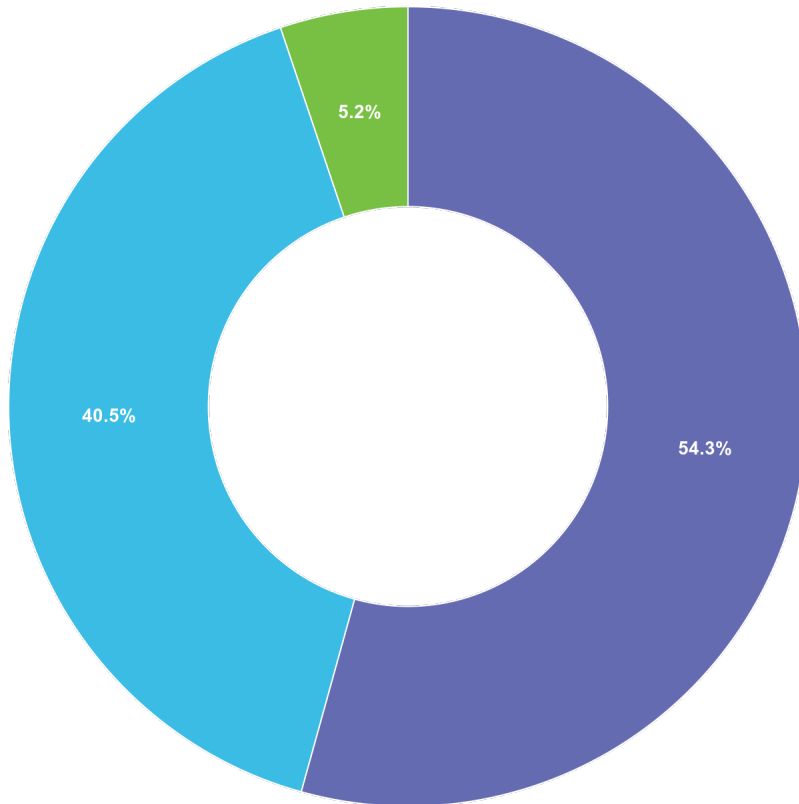


Answered: 116 Unanswered: 0

---

Choice	Total
 Very important	74
 Somewhat important	38
 Not important	4

**Q23** 23\. **\*\*Structural Projects - \*\*Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, detention/retention basins, channel modification, retaining walls and storm sewers.\***



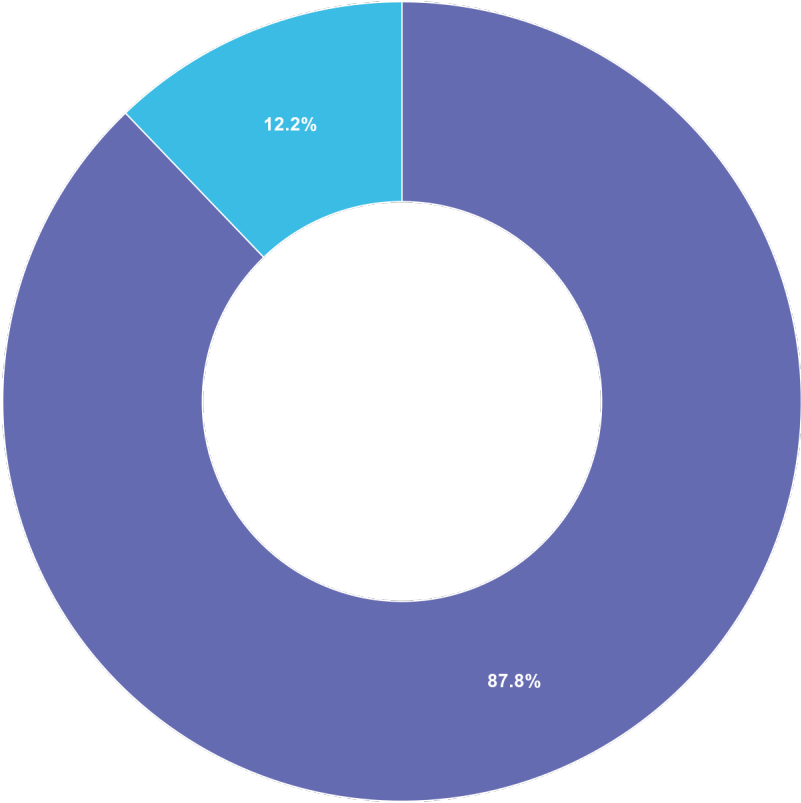
Answered: 116 Unanswered: 0

---

Choice	Total
 Very important	63
 Somewhat important	47
 Not important	6



**Q24 24\.** **Emergency Services** - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.

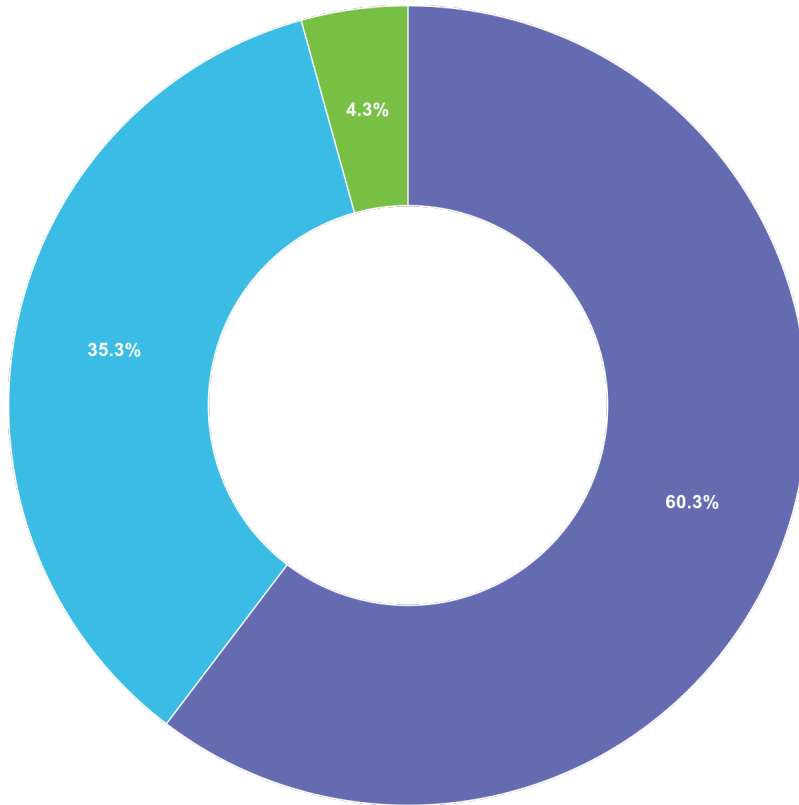


Answered: 115 Unanswered: 1

---


Choice	Total
 Very important	101
 Somewhat important	14
 Not important	0

**Q25** 25\ **\*\*Public Education and Awareness - \*\*Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events.\***



**Answered:** 116 **Unanswered:** 0

---

Choice	Total
 Very important	70
 Somewhat important	41
 Not important	5

**Q26** This survey may be submitted anonymously; however, if you provide us with your name and contact information below, we will have the ability to follow up with you to learn more about your ideas or concerns. (Optional)

Thursday, May 30, 2019, 5:55 PM UTC

Ann Voss annie.voss@gmail.com

---

Tuesday, April 9, 2019, 8:50 PM UTC

Mary Potter/Richard Clayton

7825 Beech Forest Rd

Lewisville, NC 27023

336.945.4894 (Home)

---

Wednesday, March 27, 2019, 8:56 PM UTC

timlasley@gmail.com

---

Thursday, February 28, 2019, 6:54 PM UTC

Larry Roscana

lroscana62749@gmail.com

---

Friday, February 22, 2019, 5:50 PM UTC

Mark James

4439380479

---

**Answered:** 20   **Unanswered:** 96



# Belews Creek Fire Department

@belewscreekfire

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## Belews Creek Fire Department

December 23, 2018 at 10:37 AM · 🌐

Help out by providing your input and support

### Northern Piedmont Regional Hazard Mitigation Plan Update -- Public Meeting

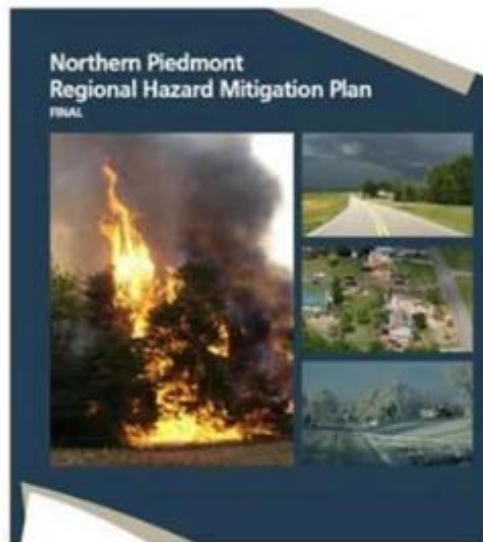
Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties are working together to update the regional Hazard Mitigation Plan. Natural disasters in our area are inevitably going to occur; however, the purpose of this plan is to assess our community's natural hazard risks and determine how to lessen our vulnerability when disaster strikes.

Public input and support are essential parts of this plan. In order to develop the most effective and beneficial plan possible, your input is needed! A public meeting will be held on January 9, 2019 from 6pm-7pm at the Belews Creek Fire/Rescue Department.

All interested residents from these counties and participating jurisdictions are invited to attend the meeting. By applying a collective approach to hazard mitigation plan development, we will contribute to a more resilient community! We look forward to seeing you on January 9<sup>th</sup>!

January 9<sup>th</sup>, 2019  
6PM-7PM

Belews Creek Fire/Rescue Department  
7675 Belews Creek Road  
Belews Creek, NC 27009



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2 hrs · 🌐

Join us at Belews Creek Fire & Rescue Department for a Public Meeting to kickoff the update of the regional hazard mitigation plan. Your input is needed! #ReadyFORSYTH



WED, JAN 9 AT 6 PM

**Hazard Mitigation Plan Update Public Meeting**

✓ Going ▾

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👍 1

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ReadyFORSYTH added an event.

2 hrs · 🌐

Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties are working together to update the Northern Piedmont Regional Hazard Mitigation Plan. Natural disasters in our area are inevitably going to occur; however, the purpose of this plan is to assess our community's natural hazard risks and determine how to lessen our vulnerability when disaster strikes.

Public input and support are essential parts of this plan. In order to develop the most effective and beneficial plan possible, your input is needed!

All interested residents from these counties and participating

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Join us at Belevs Creek Fire & Rescue Department for a Public Meeting to kickoff the update of the regional hazard mitigation plan. Your input is needed! #ReadyFORSYTH [facebook.com/ReadyFORSYTH/p...](https://facebook.com/ReadyFORSYTH/p...)

1:55 PM · 3 Jan 2019

Tweet your reply

**ReadyForsyth** @ReadyForsyth

Forsyth County, NC, citizens now have access to a new website filled with emergency preparedness information.

Forsyth, NC  
[readyforsyth.org](#)  
Joined May 2010

Tweet to ReadyForsyth

7 Followers

18 Photos and videos

**ReadyForsyth** @ReadyForsyth · Jan 2  
Winston-Salem/Forsyth County Emergency Management will have booth space here to promote and recruit for the Forsyth County Incident Management Team. Take advantage of the learning opportunities and come mingle with the expositors. #ReadyFORSYTH [facebook.com/ReadyFORSYTH/p...](https://facebook.com/ReadyFORSYTH/p...)

**ReadyForsyth** @ReadyForsyth · 31 Dec 2018  
Have a safe and happy New Year! [facebook.com/ReadyFORSYTH/p...](https://facebook.com/ReadyFORSYTH/p...)

**ReadyForsyth** @ReadyForsyth · 20 Dec 2018  
Can help find you when you need it? Be #ReadyFORSYTH! [facebook.com/ReadyFORSYTH/p...](https://facebook.com/ReadyFORSYTH/p...)

**ReadyForsyth** @ReadyForsyth · 27 Dec 2018  
More rain ahead...and plenty of it. It's been a really wet year! Note that Western NC will be getting more rain than our area with this front...and water tends to make its way downhill. #ReadyFORSYTH [facebook.com/ReadyFORSYTH/p...](https://facebook.com/ReadyFORSYTH/p...)

Who to follow

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- City of Winston-Salem Follow
- cityofwspolice @cityofw... Follow

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- Nancy Pelosi Nancy Pelosi elected speaker of the House
- #SpeakerPelosi 42.1K Tweets
- #MCLIV 91.2K Tweets
- #DemsTakeTheHouse 48.2K Tweets
- Paul Ryan



### Stokes County EMS

Posted by Brandon Gentry  
December 27 at 11:15 PM

## Public meeting for Stokes County and surrounding county's Hazard Mitigation Plan update.

#### Northern Piedmont Regional Hazard Mitigation Plan Update – Public Meeting

Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties are working together to update the regional Hazard Mitigation Plan. Natural disasters in our area are inevitably going to occur; however, the purpose of this plan is to assess our community's natural hazard risks and determine how to lessen our vulnerability when disaster strikes.

Public input and support are essential parts of this plan. In order to develop the most effective and beneficial plan possible, your input is needed! A public meeting will be held on January 9, 2019 from 6pm-7pm at the Belews Creek Fire/Rescue Department.

All interested residents from these counties and participating jurisdictions are invited to attend the meeting. By applying a collective approach to hazard mitigation plan development, we will contribute to a more resilient community! We look forward to seeing you on January 9<sup>th</sup>!

January 9<sup>th</sup>, 2019  
6PM-7PM

Belews Creek Fire/Rescue Department  
7675 Belews Creek Road  
Belews Creek, NC 27009



**Stokes News, The**

Jan. 3, 2019

Miscellaneous Notices

Northern Piedmont Regional Hazard Mitigation Plan Update Public Meeting Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin counties are working together to update the regional Hazard Mitigation Plan. Natural disasters in our area are inevitably going to occur; however, the purpose of this plan is to assess our community's natural hazard risks and determine how to lessen our vulnerability when disaster strikes. Public input and support are essential parts of this plan. In order to develop the most effective and beneficial plan possible, your input is needed! A public meeting will be held on January 9, 2019 from 6pm-7pm at the Belews Creek Fire/Rescue Department. All interested residents from these counties and participating jurisdictions are invited to attend the meeting. By applying a collective approach to hazard mitigation plan development, we will contribute to a more resilient community! We look forward to seeing you on January 9th! January 9th, 2019 6PM-7PM Belews Creek Fire/RescueDepartment7675 Belews Creek RoadBelews Creek, NC 27009 Publish: 01/03/2019

**Stokes News, The**

Dec. 27, 2018

Miscellaneous Notices

NOTICE TO CREDITORS Having qualified as Administrator of the Estate of Rose Nell Wall Armstrong Ivester, late of 6968 NC Hwy 66 S, King, Stokes County, North Carolina, the undersigned does hereby notify all persons, firms and corporations having claims against the estate of said decedent to exhibit them to the undersigned at P.O. Box 775, King, North Carolina 27021, on or before the 3rd day of April, 2019, or this notice will be pled in bar of their recovery. All persons, firms and corporations indebted to the said estate will please make immediate





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Posted by Brandon Gentry

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Northern Piedmont Regional Hazard Mitigation Plan - Public Survey



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Take the survey! We are asking that our community stakeholders share their wisdom and wishes for hazard mitigation. Survey is located in this post.  
[#ReadyFORSYTH](#)



READYFORSYTH.ORG  
**It's Time to Update the Northern Piedmont Regional Hazard Mitigation Plan: Take the Survey**  
Help us write a comprehensive plan...TAKE THE SURVEY!

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 Write a comment... 😊 📷 GIF 🗨️

 **ReadyFORSYTH** shared a post.  
January 15 at 9:31 AM · 🌐

Thanks to those in the community supporting the utility effort to get power back up for businesses and residents of Forsyth County.  
[#ReadyFORSYTH](#)



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## It's Time to Update the Northern Piedmont Regional Hazard Mitigation Plan: Take the Survey

Posted by: Michelle Brock on 01/16/19 10:00 AM.



We encourage all of our community stakeholders to provide feedback for hazard mitigation. Your voice is important to producing an effective mitigation plan for our county and region. Please take the survey: [Hazard Mitigation Planning Public Survey](#)

Our hazard mitigation planning process reduces risks and helps prepare our communities for all types of hazards. This detailed planning makes the counties more sustainable and more resilient to various emergencies and disasters, such as winter storms, severe thunderstorms, tornadoes, flooding, droughts, wildfires, tropical storms, etc. Seven counties, including 37 jurisdictions, have been working together to produce a regional Hazard Mitigation Plan.

The Forsyth County portion of the plan must be regularly updated, reviewed and adopted by all the jurisdictions in Forsyth County; the jurisdictions include: Bethania, Clemmons, Kernersville, Lewisville, Rural Hall, Tobaccoville, Walkertown, Winston-Salem and the Unincorporated areas of Forsyth County. The Forsyth County portion of this plan is maintained by the Winston-Salem/Forsyth County Office of Emergency Management.

Because of the large file size of the complete plan document, it has been divided into 3 parts: The General Plan, Forsyth's Annex (C), and the Appendices. *Note: Other county annexes are not included.*

[Northern Piedmont Hazard Mitigation Plan\\_General Plan](#)

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# Residents asked to Participate in Regional Hazard Mitigation Plan Survey

Lewisville participates in a regional Hazard Mitigation Plan and it is time for that plan to be updated. The Plan identifies and assesses natural hazard risks and recognizes strategies to best minimize those risks. Please take a moment to fill out this survey as an opportunity to share your opinions as well as an opportunity to participate in the mitigation planning process.

[https://s.surveypplanet.com/62w0P\\_cDw](https://s.surveypplanet.com/62w0P_cDw)

## More By This Author

- Town hosts Winter Break - Art Classes - Introduction to Drawing
- Town Announces Committee & Board Meeting Cancellations for December
- LBC Plans Holiday Drive-Through
- Town hires Stacy Tolbert as new Town Planner
- Williams Road Gateway Project Public Meeting Set for Dec. 4
- Tree Lighting Ceremony set for Friday, November 30
- Special Recycling Event Set for November 3
- PART Schedules have been finalized for enhanced service to begin October 29

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### Northern Piedmont Regional Hazard Mitigation Plan - Public Survey

Caswell, Davie, Forsyth, Rockingham, Stokes, Surry, and Yadkin Counties and the municipalities within the counties are working together to become less vulnerable to natural disasters, and your participation in the process is important to us!

Click [here](#) for more information.

# Appendix E

## COMPLETED MITIGATION ACTIONS

This section of the Plan includes the mitigation actions that have been identified as having been completed or deleted by the participating jurisdictions in previous version of the plan.

### Caswell County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-6	Review and revise the Sub-Division Ordinance to allow for clustering of residential lots.	Flood	Moderate	Caswell County Planning and Zoning	Local	Completed	The Subdivision Ordinance now allows clustering of residential lots. This action is complete
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Caswell County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations	All	High	Caswell County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete

## Town of Milton Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-6	Review and revise the Sub-Division Ordinance to allow for clustering of residential lots.	Flood	Moderate	Caswell County Planning and Zoning	Local	Completed	The Subdivision Ordinance now allows clustering of residential lots. This action is complete
<b>Emergency Services</b>							
Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-3	Establish program to maintain continuity of government operations.	All	High	Caswell County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations	All	High	Caswell County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete

## Town of Yanceyville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	The Towns of Milton and Yanceyville will adopt Resolutions to participate in the NFIP and request that an Inter-Local Agreement be reached with the County to provide Administrative Services over this program	All	High	Town Manager Milton, Town Manager of Yanceyville	Local	Completed	The Town of Yanceyville is now a participant in the NFIP.
P-6	Review and revise the Sub-Division Ordinance to allow for clustering of residential lots.	Flood	Moderate	Caswell County Planning and Zoning	Local	Completed	The Subdivision Ordinance now allows clustering of residential lots. This action is complete
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Caswell County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations	All	High	Caswell County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete



## Davie County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Davie County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Davie County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Davie County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Davie County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete

## Town of Bermuda Run Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Bermuda Run, Davie County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-3	Establish program to maintain continuity of government operations.	All	High	Bermuda Run, Davie County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate detour routes from major arteries in the county.	All	High	Bermuda Run, Davie County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete

## Town of Coolemee Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Coolemee, Davie County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Coolemee, Davie County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate detour routes from major arteries in the county.	All	High	Coolemee, Davie County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete.

## Town of Mocksville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Mocksville, Davie County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Mocksville, Davie County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate detour routes from major arteries in the county.	All	High	Mocksville, Davie County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete.

## Forsyth County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-13	Participate in the National Flood Insurance Program's Community Rating System.	Flood	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Public Education and Awareness</b>							
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Town of Bethania Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Bethania, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Town of Bethania, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Public Education and Awareness</b>							
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Town of Bethania, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Village of Clemmons Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	<p>Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.</p> <p>Clemmons is updating their UDO to incorporate a site plan review item which references Hazard Mitigation Objectives 1.1, 2.1., and 3.2. Site plan petitions will consider and ensure compliance with those objectives and plan reports will indicate this.</p>	All	Moderate	Village of Clemmons, Winston-Salem/Forsyth County Planning	Local	Completed	Clemmons updated their UDO to incorporate a site plan review item which references Hazard Mitigation Objectives 1.1, 2.1, and 3.2. Site plan petitions consider and ensure compliance with those objectives and plan reports indicate this. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flood	High	Village of Clemmons, Winston-Salem Stormwater Division	Federal, State	Completed	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Village of Clemmons, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Village of Clemmons, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-9	Identify an Emergency Operations center and an Alternate Emergency Operations Center.	All	High	Village of Clemmons	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-10	Develop a Continuity of Government Operations Plan.	All	High	Village of Clemmons	Local	Completed	Clemmons continuously updates their Emergency Management Plan. Clemmons added Appendix H to the Plan, which includes the "Line of Succession" for the governing body. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Public Education and Awareness</b>							
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Village of Clemmons, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-4	Participate in outreach activities to inform and educate the public of emergency preparedness and mitigation strategies/techniques. Example activities: newsletters, websites, hotlines, mailings, television broadcasts & postings, public events, etc.	All	Moderate	Village of Clemmons	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Town of Kernersville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Kernersville, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Town of Kernersville, Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Town of Kernersville, Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Town of Kernersville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Town of Kernersville, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Town of Kernersville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Town of Lewisville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Lewisville, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Town of Lewisville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Town of Lewisville, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Town of Lewisville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Town of Rural Hall Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Rural Hall, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-6	Revise, update, and locally adopt floodplain maps (FIRMs – Flood Insurance Rate Maps).	Flood	High	Town of Rural Hall, Winston-Salem Stormwater Division	Federal, State	Completed	NCEM and Forsyth County multi-jurisdictional floodplain management officials work together to identify flood prone areas throughout the county in which to conduct detailed flood studies during FIRM revisions. NCEM has not set a date for the completion of updated FIRMs.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Town of Rural Hall, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Town of Rural Hall, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Town of Rural Hall, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

## Village of Tobacoville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Village of Tobacoville, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Village of Tobaccoville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Village of Tobaccoville, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							



Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Village of Tobaccoville, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-4	Participate in outreach activities to inform and educate the public of emergency preparedness and mitigation strategies/techniques. Example activities: newsletters, websites, hotlines, mailings, television broadcasts & postings, public events, etc.	All	Moderate	Village of Tobaccoville	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	Town of Walkertown, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	Town of Walkertown, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	Town of Walkertown, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.
<b>Emergency Services</b>							
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-11	Public Works/Road Maintenance Plan in place to mitigate traffic problems caused by winter storms.	Winter Storm	High	Town of Walkertown	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	Town of Walkertown, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



## City of Winston-Salem Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Update the Subdivision Ordinance by reviewing and incorporating hazard mitigation objectives.	All	Moderate	City of Winston-Salem, Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-7	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-8	Policy and procedures related to storm damage and disconnected utility services: 1) inform public via television, radio and newspaper of the necessary steps to have utilities restored; 2) restrict travel as necessary while collecting damage assessment data; 3) conduct inspections on first come, first serve basis; 4) work overtime to expedite utility reconnections.	All	High	Winston-Salem/Forsyth County Inspections	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-9	Create a digital zoning map (Geo-Data) that can be easily reproduced for staff and public use and update on an annual basis.	All	High	Winston-Salem/Forsyth County Planning	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-10	Digitize all floodplain related development documents and link them to a GIS platform.	Flood	Moderate	Winston-Salem/Forsyth County Inspections, Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-11	Create a position for a full time Certified Floodplain Manager for the entire county that coordinates Community Rating System activities and certification maintenance for all Forsyth County communities that participate in the National Flood Insurance Program.	Flood	High	Winston-Salem/Forsyth County Emergency Management, Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Completed	There is a CFM on staff with the City of Winston-Salem Stormwater Division that handles Stormwater activities. Another staff member is expected to obtain their CFM. These staff positions handle floodplain management activities throughout the county. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-12	Participate in FEMA's National Flood Insurance Program.	Flood	High	City of Winston-Salem, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-13	Participate in the National Flood Insurance Program's Community Rating System.	Flood	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-14	Develop and implement the Firewise Program.	Wildfire	Moderate	Forsyth County Forester, Local Fire Department	State, Local	Deleted	This action has been deleted. The suburban nature of Forsyth County and effective local codes offset the benefits of implementing the Firewise Program in Forsyth County.
P-15	Enforce burning bans during droughts.	Wildfire	High	Forsyth County Forester, Local Fire Department	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
P-16	Participate in the Piedmont Triad Water Quality Partnership to maintain an environmentally friendly storm water system and implement best storm water management practices.	Flood	High	City of Winston-Salem, Winston-Salem Stormwater	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Property Protection</b>							
PP-1	Create and maintain a list of repetitive flood loss properties.	Flood	Moderate	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PP-3	Limit new development and encroachment (building or fill) to 15% of the Floodway Fringe.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning	Local	Deleted	This action has been deleted. Current ordinance standards restrict encroachment to no more than 50% of the flood fringe. A proposal was made to the Public Works Committee of the Winston-Salem City Council to adopt regulations that would limit flood fringe encroachment to no more than 15%. On September 23, 2010, the City of Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Planning Department and Winston-Salem/Forsyth County Inspections Division conducted a tour of the various flood fringe areas for the Council's Public Works Committee to show how the more restrictive regulations would impact a sampling of flood fringe areas. No change has been made to fill limits in the floodway fringe due to lack of political will.
PP-4	Provide cost-share information in conjunction with FEMA flood mitigation grant assistance program information to property owners within the City of Winston-Salem.	Flood	Moderate	Winston-Salem Stormwater Division, Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Emergency Services</b>							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-1	Ensure adequate hazard warning in case of major hazard event.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-3	Establish program to maintain continuity of government operations.	All	High	Winston-Salem/Forsyth County Emergency Management	State	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-5	Train Community Emergency Response Teams and maintain notification rosters.	All	Moderate	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	A "Forsyth County CERT Standard Operating Guide" was developed by Winston-Salem/Forsyth County Emergency Management in 2011. Two CERT courses and a day-long CERT Refresher Workshop were held in 2011 as well. One CERT course was held in the Spring of 2012. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
ES-7b	Acquire and utilize Hazus (GIS-based mapping software developed by FEMA that models community impacts for flooding, hurricanes, and earthquakes) for mitigation planning.	Flood, Hurricane, Earthquake	High	Winston-Salem/Forsyth County Emergency Management	Federal, State, Local	Completed	EM acquired Hazus and attended several Hazus training courses at the Emergency Management Institute (EMI). Emergency Operations Center GIS support staff is working with EM to develop Hazus models and other mapping technologies. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
ES-7c	Utilize subject matter expert (SME) support groups to develop emerging technologies in disaster preparedness, mitigation, response, and recovery.	All	High	Winston-Salem/Forsyth County Emergency Management	Local	Completed	EM established an Emergency Preparedness Technology Support Group in order to share knowledge and ideas of SMEs in the fields of technology and disaster management. This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
<b>Public Education and Awareness</b>							

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PEA-2	The Forsyth County/Winston-Salem Flood Plain Administrator/Engineer has received training on erosion and sedimentation control methods and on floodplain surveying certification. On an annual basis, this person makes numerous site visits to assist property owners and developers with problems and potential problems associated with drainage, erosion, and flooding. Site visits are made at the request of the property owner or developer and are usually handled through the Stormwater Division.	Flood	High	Winston-Salem Stormwater Division	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)
PEA-3	Develop and conduct county-wide educational programs for the general public, organizations and businesses that emphasize emergency preparedness for all types of local hazards and help them identify how mitigation and preparedness can become incorporated into their own routine functions.	All	High	City of Winston-Salem, Winston-Salem/Forsyth County Emergency Management	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
PEA-4	Participate in outreach activities to inform and educate the public of emergency preparedness and mitigation strategies/techniques. Example activities: newsletters, websites, hotlines, mailings, television broadcasts & postings, public events, etc.	All	Moderate	City of Winston-Salem	Local	Completed	This action has been completed and, since it is an ongoing action, it will be incorporated into the capability assessment narrative in future plan updates. (See Table C.56.)



## Stokes County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Stokes County Planning and Community Development	Local	Completed	The Building Inspections plan for flood damaged structures has been put into place and is carried out after flooding events. Therefore, this action will be removed from the next update of the plan as a capability.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-4	<p>Policy and procedures related to storm damage and disconnected utility services:</p> <ol style="list-style-type: none"> <li>1. Inform public via television, radio and newspaper of the necessary steps to have utilities restored;</li> <li>2. Restrict travel as necessary while collecting damage assessment data;</li> <li>3. Conduct inspections on first come, first serve basis;</li> <li>4. Work overtime to expedite utility reconnections.</li> </ol>	All	High	Stokes County Planning and Community Development	Local	Completed	Procedures for storm damage and disconnected utility services have been put into place and are carried out after events. Therefore, this action will be removed from the next update of the plan as a capability.

## Town of Danbury Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Stokes County Planning and Community Development	Local	Completed	The Building Inspections plan for flood damaged structures has been put into place and is carried out after flooding events. Therefore, this action will be removed from the next update of the plan as a capability.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-4	<p>Policy and procedures related to storm damage and disconnected utility services:</p> <ol style="list-style-type: none"> <li>1. Inform public via television, radio and newspaper of the necessary steps to have utilities restored;</li> <li>2. Restrict travel as necessary while collecting damage assessment data;</li> <li>3. Conduct inspections on first come, first serve basis;</li> <li>4. Work overtime to expedite utility reconnections.</li> </ol>	All	High	Stokes County Planning and Community Development	Local	Completed	Procedures for storm damage and disconnected utility services have been put into place and are carried out after events. Therefore, this action will be removed from the next update of the plan as a capability.

## City of King Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	City of King Planning Department	Local	Completed	The Building Inspections plan for flood damaged structures has been put into place and is carried out after flooding events. Therefore, this action will be removed from the next update of the plan as a capability.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-4	<p>Policy and procedures related to storm damage and disconnected utility services:</p> <ol style="list-style-type: none"> <li>1. Inform public via television, radio and newspaper of the necessary steps to have utilities restored;</li> <li>2. Restrict travel as necessary while collecting damage assessment data;</li> <li>3. Conduct inspections on first come, first serve basis;</li> <li>4. Work overtime to expedite utility reconnections.</li> </ol>	All	High	City of King Planning Department	Local	Completed	Procedures for storm damage and disconnected utility services have been put into place and are carried out after events. Therefore, this action will be removed from the next update of the plan as a capability.

## Town of Walnut Cove Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-3	<p>Building Inspections – Flood Damaged Structures. Any and all portions of buildings that have been submerged for any length of time will be inspected for flood related damage as well as other conditions that may be dangerous to life, health or other property. Plan for Damaged Structures:</p> <ol style="list-style-type: none"> <li>1. Overall damage assessment/data collection (visual inspection from roadways).</li> <li>2. Data compiled and geographical areas assigned to teams.</li> <li>3. Second detailed assessment by area teams.</li> <li>4. Portions of walls, floors, ceilings, etc. that have been exposed to water will be opened for evaluation.</li> <li>5. All construction that is repaired, replaced, dried or sealed will be inspected before covered.</li> <li>6. Structure inspected for certificate of compliance.</li> </ol>	Flood	High	Town of Walnut Cove Town Manager	Local	Completed	The Building Inspections plan for flood damaged structures has been put into place and is carried out after flooding events. Therefore, this action will be removed from the next update of the plan as a capability.

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
P-4	<p>Policy and procedures related to storm damage and disconnected utility services:</p> <ol style="list-style-type: none"> <li>1. Inform public via television, radio and newspaper of the necessary steps to have utilities restored;</li> <li>2. Restrict travel as necessary while collecting damage assessment data;</li> <li>3. Conduct inspections on first come, first serve basis;</li> <li>4. Work overtime to expedite utility reconnections.</li> </ol>	All	High	Town of Walnut Cove Town Manager	Local	Completed	Procedures for storm damage and disconnected utility services have been put into place and are carried out after events. Therefore, this action will be removed from the next update of the plan as a capability.



## Surry County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Annually report on progression of the Hazard Mitigation Plan.	All	Moderate	Surry County Planning and Development, Surry County Emergency Management	Surry County Planning and Development, Surry County Emergency Management	Completed	The county will continue to produce an annual report on the progress of the mitigation plan. This action will be removed from the next update as a capability.
<b>Public Education and Awareness</b>							
PEA-4	Create listing of local radio and TV stations which will broadcast local weather and emergency information.	Drought	Moderate	Surry County Emergency Management	Surry County Emergency Management	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

## Town of Dobson Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-1	Consider a community ratings system evaluation to continue compliance with NFIP.	Flood, Landslide	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	Deleted	The town does not currently participate in the CRS or NFIP
P-4	Annually report on progression of the Hazard Mitigation Plan.	All	Moderate	Town of Dobson, Surry County Planning and Development, Surry County Emergency Management	Surry County Planning and Development, Surry County Emergency Management	Completed	The county will continue to produce an annual report on the progress of the mitigation plan. This action will be removed from the next update as a capability.
<b>Property Protection</b>							
PP-2	Address properties that are vulnerable to flood damage, especially those that are repetitive loss properties to continue compliance with NFIP.	Flood, Landslide	High	Town of Dobson, Surry County Planning and Development, Surry County Parks and Recreation	Local, State, Federal	Deleted	The town does not currently participate in the CRS or NFIP
<b>Public Education and Awareness</b>							
PEA-4	Create listing of local radio and TV stations which will broadcast local weather and emergency information.	Drought	Moderate	Town of Dobson, Surry County Emergency Management	Surry County Emergency Management	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

## Town of Elkin Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Public Education and Awareness</b>							
PEA-14	Create listing of local radio and TV stations which will broadcast local weather and emergency information	Winter Storm	Moderate	Elkin Fire Department	Elkin Fire Department	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

## City of Mount Airy Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-4	Annually report on progression of the Hazard Mitigation Plan.	All	Moderate	Surry County Planning and Development	Surry County Planning and Development	Completed	The city will continue to produce an annual report on the progress of the mitigation plan. This action will be removed from the next update as a capability.
<b>Public Education and Awareness</b>							
PEA-2	Listing of local radio and TV stations which will broadcast local weather and emergency information.	Drought	Moderate	Surry County Emergency Management	Surry County Emergency Management	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

## Town of Pilot Mountain Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-1	Consider a community ratings system evaluation to continue compliance with NFIP.	Flood, Landslide	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	Deleted	The town does not currently participate in the CRS or NFIP
P-4	Annually report on progression of the Hazard Mitigation Plan.	All	Moderate	Town of Pilot Mountain, Surry County Planning and Development, Surry County Emergency Management	Surry County Planning and Development, Surry County Emergency Management	Completed	The county will continue to produce an annual report on the progress of the mitigation plan. This action will be removed from the next update as a capability.
<b>Property Protection</b>							
PP-2	Address properties that are vulnerable to flood damage, especially those that are repetitive loss properties to continue compliance with NFIP.	Flood, Landslide	High	Town of Pilot Mountain, Surry County Planning and Development, Surry County Parks and Recreation	Local, State, Federal	Deleted	The town does not currently participate in the CRS or NFIP
<b>Public Education and Awareness</b>							
PEA-4	Listing of local radio and TV stations which will broadcast local weather and emergency information.	Drought	Moderate	Town of Pilot Mountain, Surry County Emergency Management	Surry County Emergency Management	Completed	This list has been created and so the action is complete. This will be removed from the next update as a capability.

## Yadkin County Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Yadkin County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Yadkin County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Yadkin County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Yadkin County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete

## Town of Boonville Completed Mitigation Actions

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Town of Boonville, Yadkin County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Town of Boonville, Yadkin County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Town of Boonville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Town of Boonville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete

## Town of East Bend Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Town of East Bend, Yadkin County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Town of East Bend, Yadkin County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Town of East Bend, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Town of East Bend, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete

## Town of Jonesville Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Town of Jonesville, Yadkin County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Town of Jonesville, Yadkin County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Town of Jonesville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Town of Jonesville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete



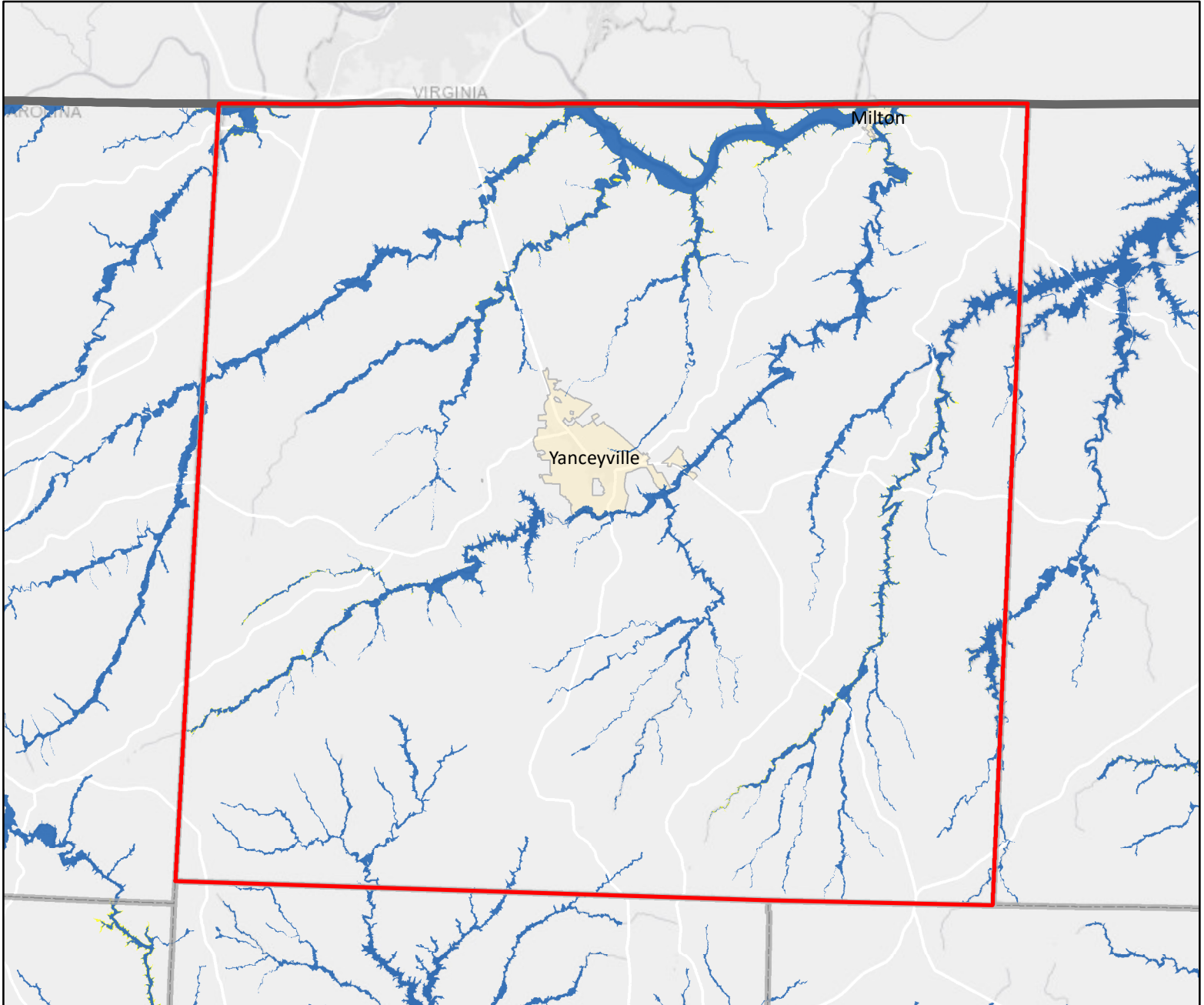
## Town of Yadkinville Mitigation Action Plan

Action #	Description	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2014)
<b>Prevention</b>							
P-2	Update the Floodplain Ordinance to raise the minimum flood protection level.	Flood	Moderate	Town of Yadkinville, Yadkin County Planning and Zoning	Local	Completed	The minimum flood protection level was raised. This action is complete.
<b>Emergency Services</b>							
ES-3	Establish program to maintain continuity of government operations.	All	High	Town of Yadkinville, Yadkin County Emergency Services	Local	Completed	A program has been developed to maintain continuity of operations in the event of a disaster. This action is complete.
ES-4	Identify alternate Emergency Operations Center locations.	All	High	Town of Yadkinville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate location for the EOC. This action is complete
ES-5	Identify alternate detour routes from major arteries in the county.	All	High	Town of Yadkinville, Yadkin County Emergency Services	Local	Completed	The county has identified an alternate detour routes from major arteries in the county. This action is complete




# **Appendix F**

## **Flood Hazard Maps**



# Caswell County - Flood Hazard Areas



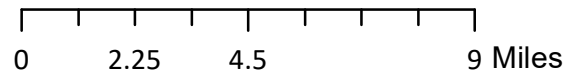
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

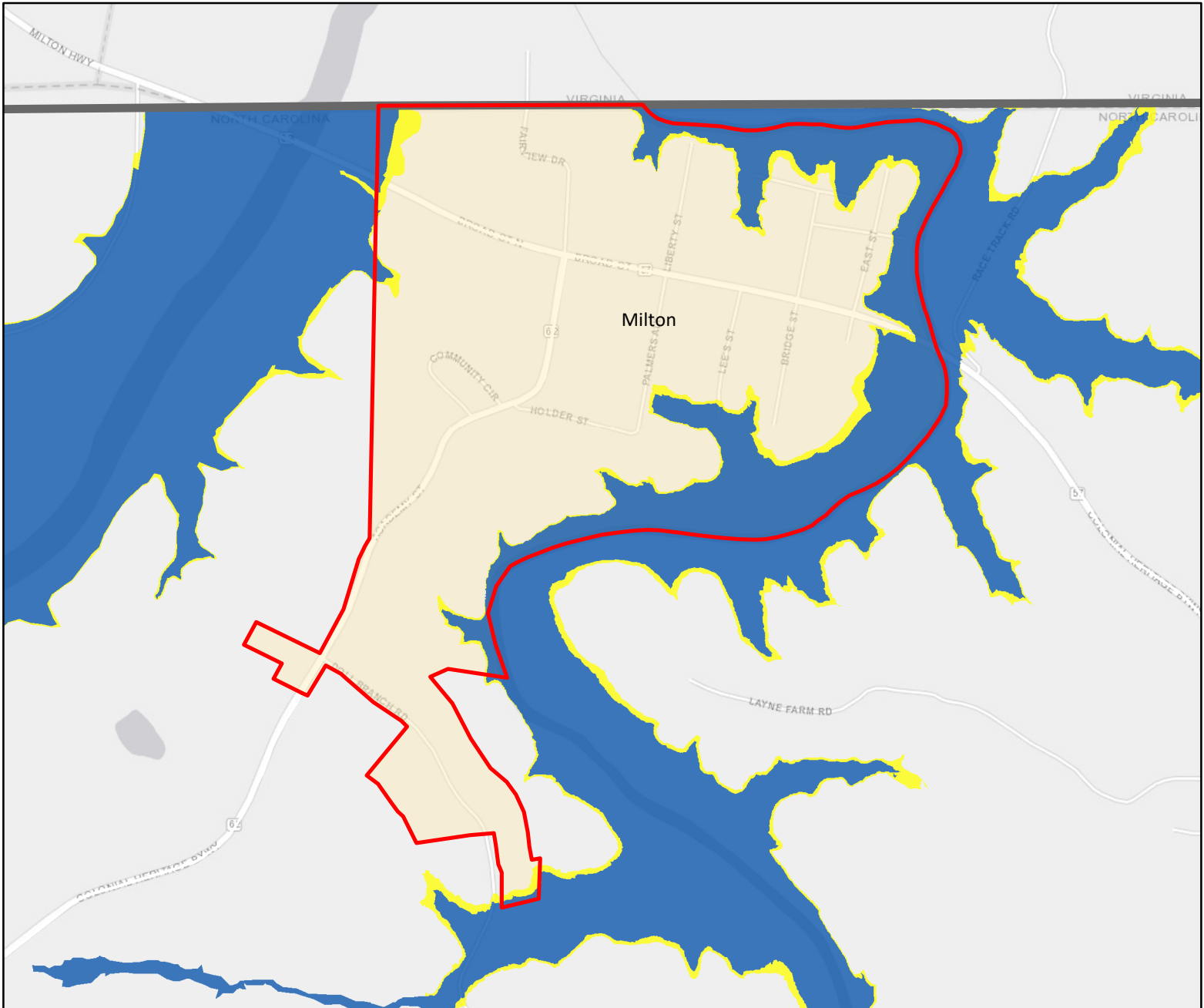
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Milton - Flood Hazard Areas



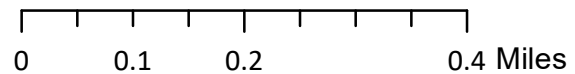
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

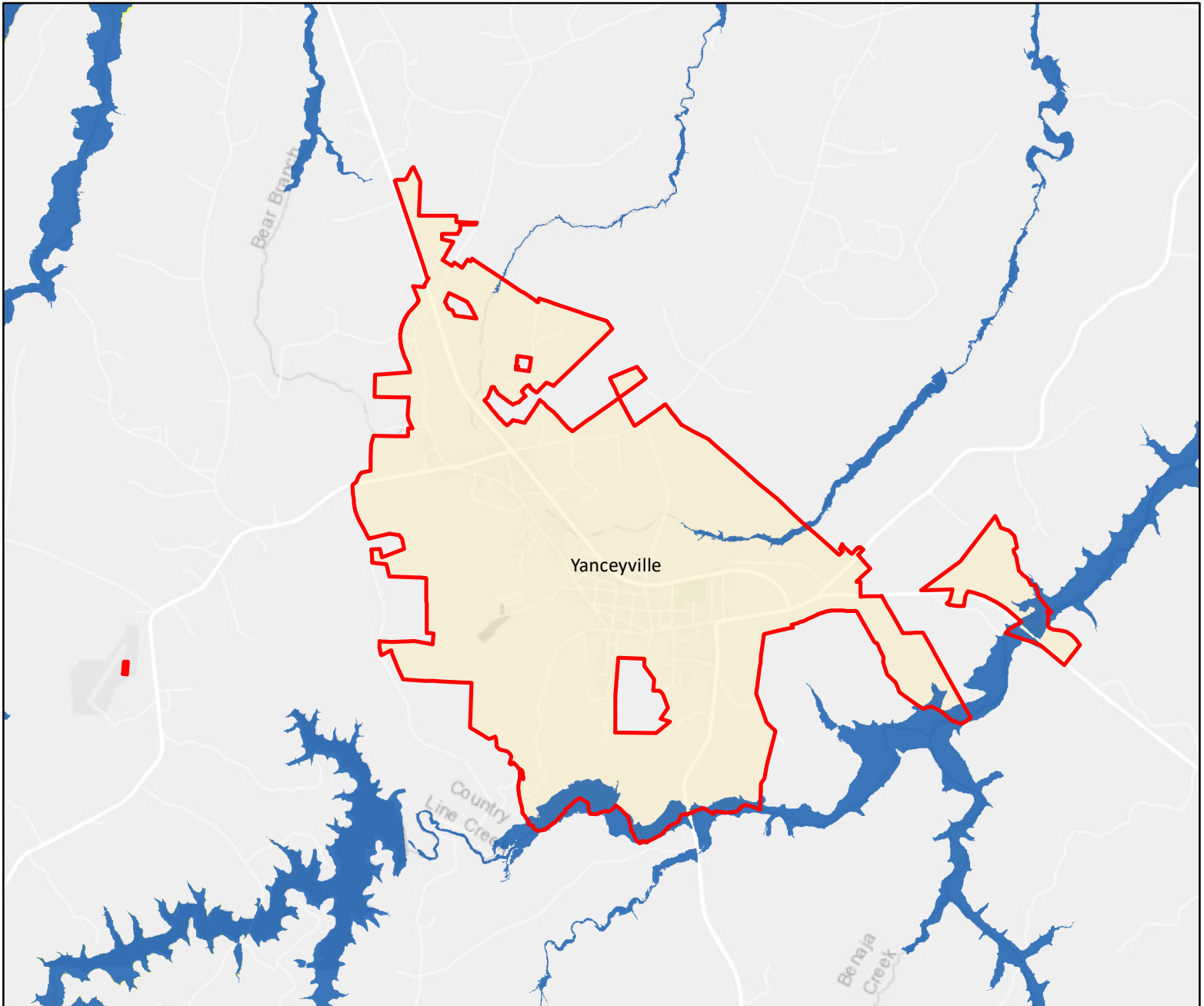
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Yanceyville - Flood Hazard Areas



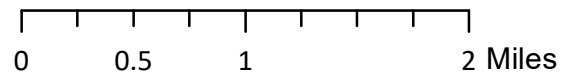
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

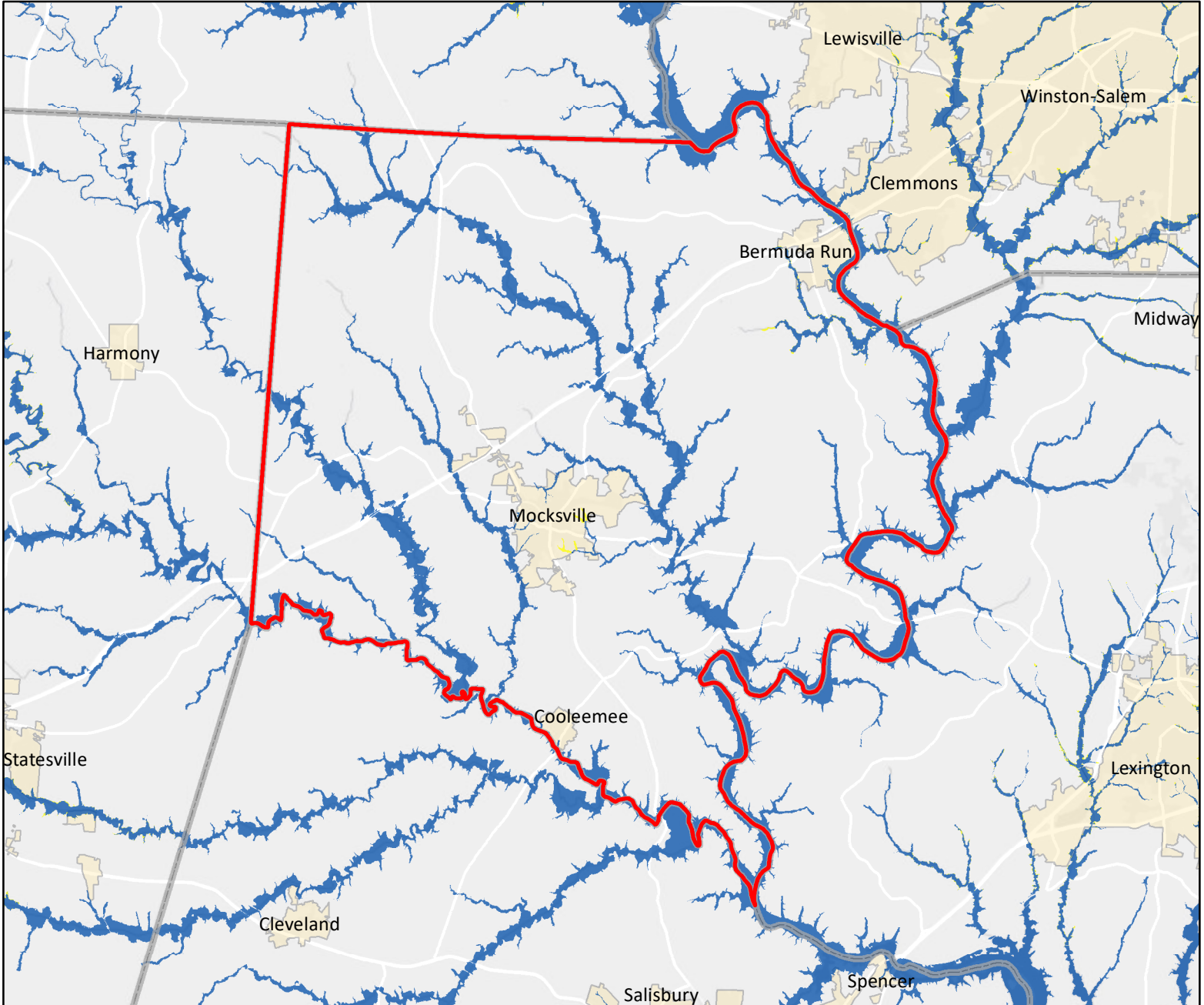
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Davie County - Flood Hazard Areas



## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

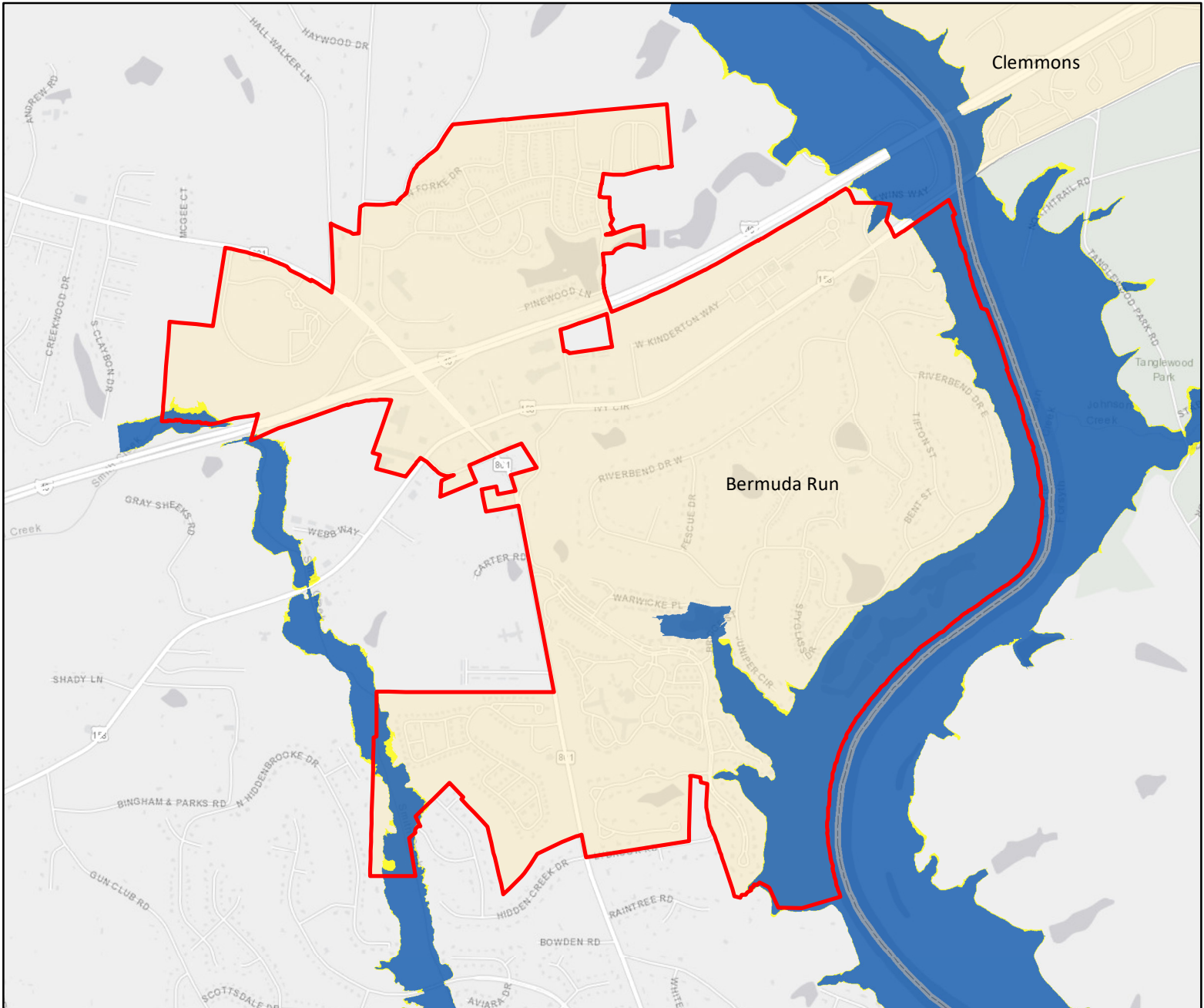
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program




0 2.5 5 10 Miles





# Bermuda Run - Flood Hazard Areas



## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

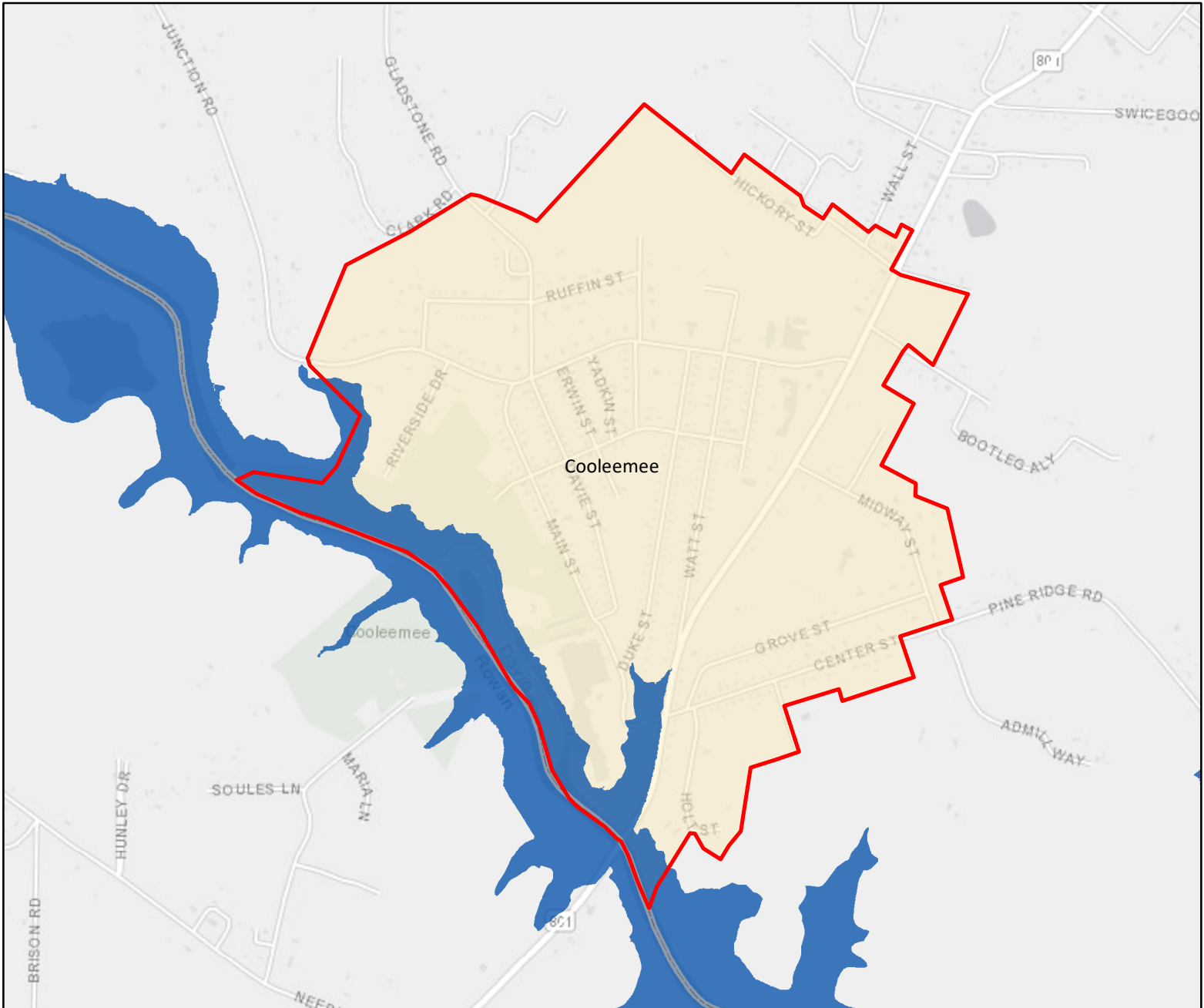
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program




0 0.2 0.4 0.8 Miles





# Cooleemee - Flood Hazard Areas



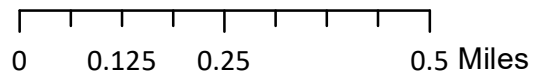
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

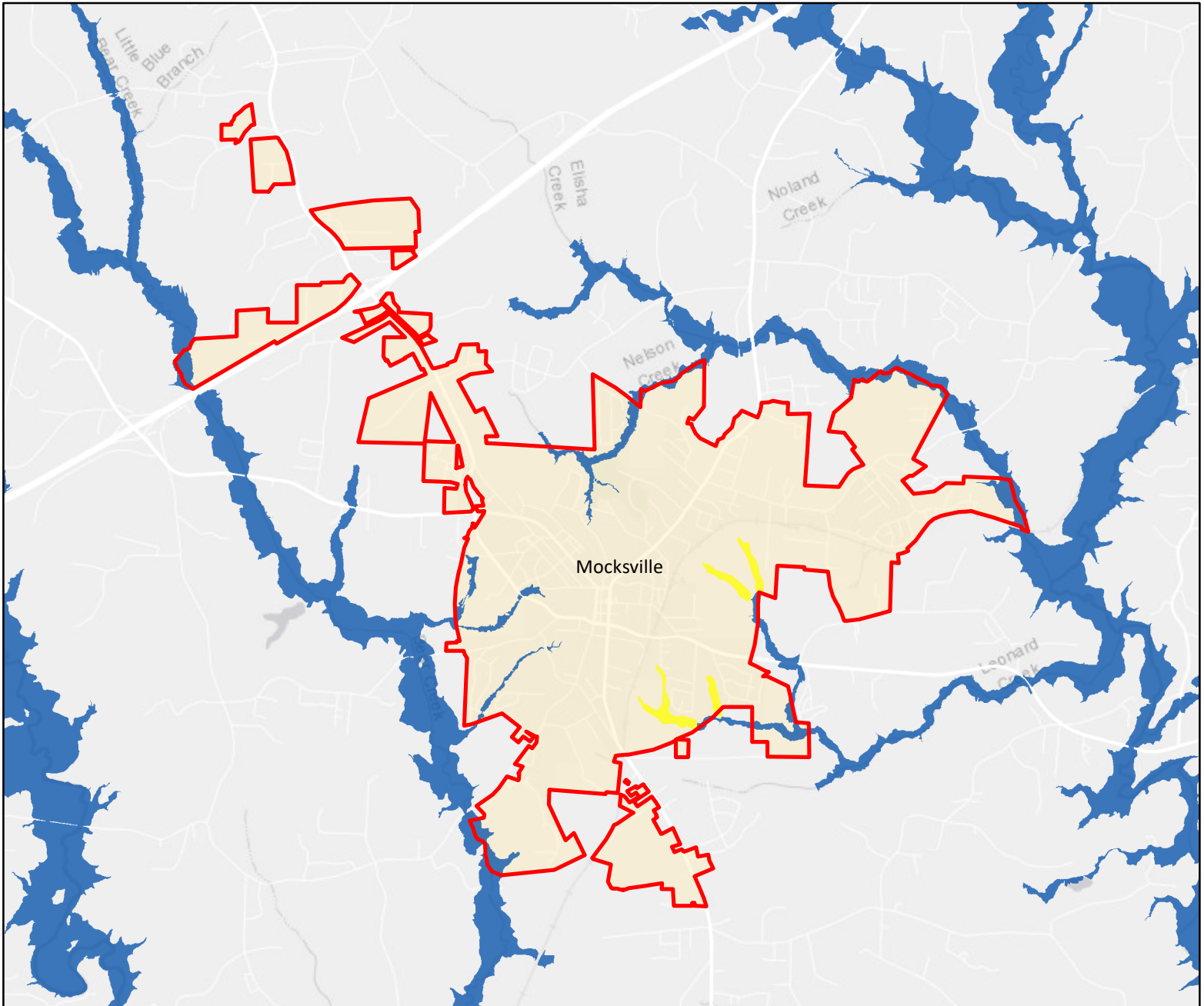
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program










# Mocksville - Flood Hazard Areas



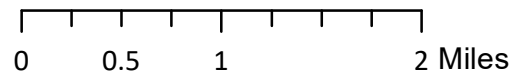
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

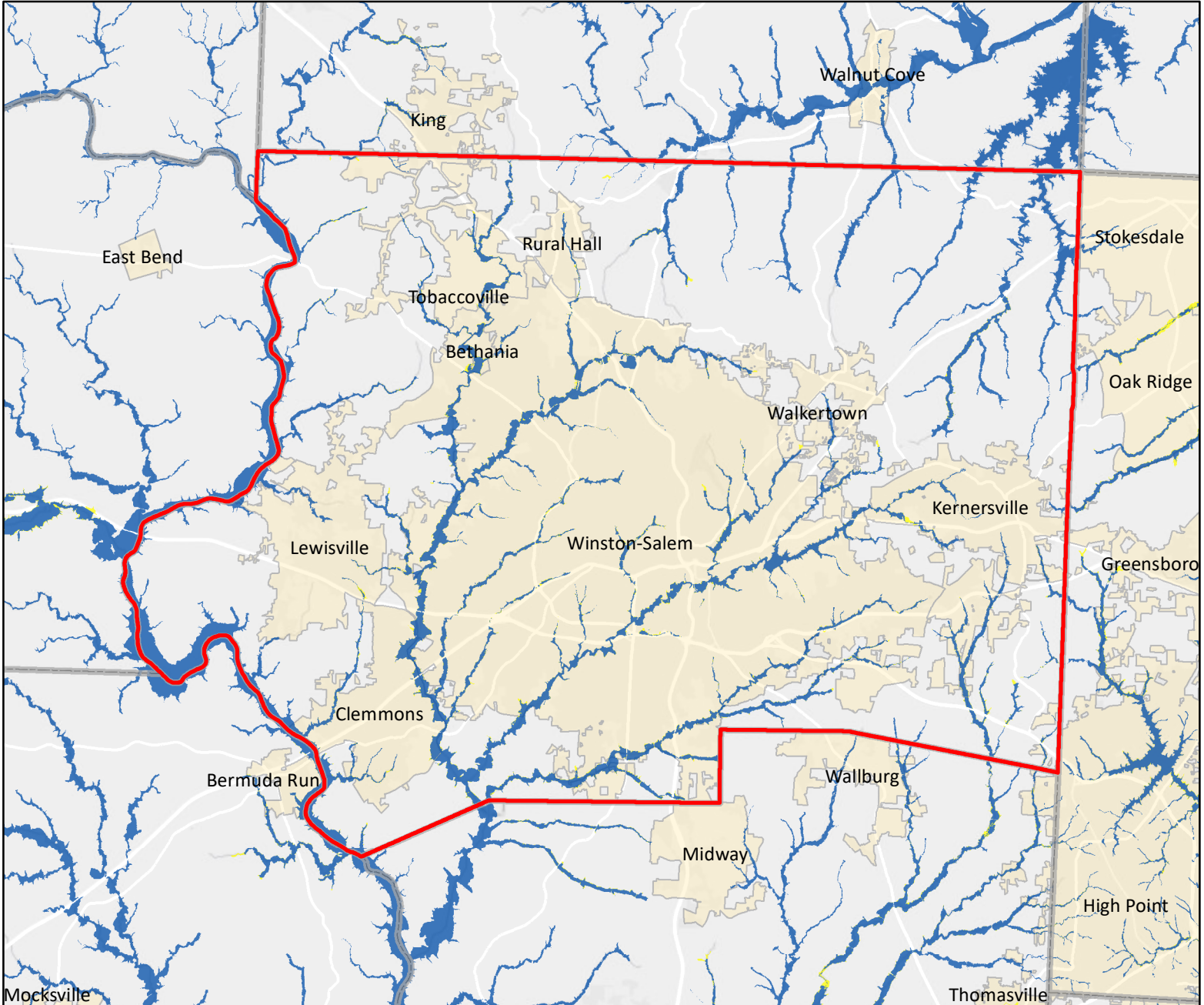
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Forsyth County - Flood Hazard Areas



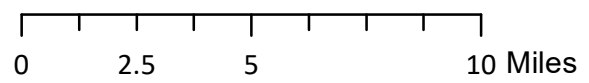
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

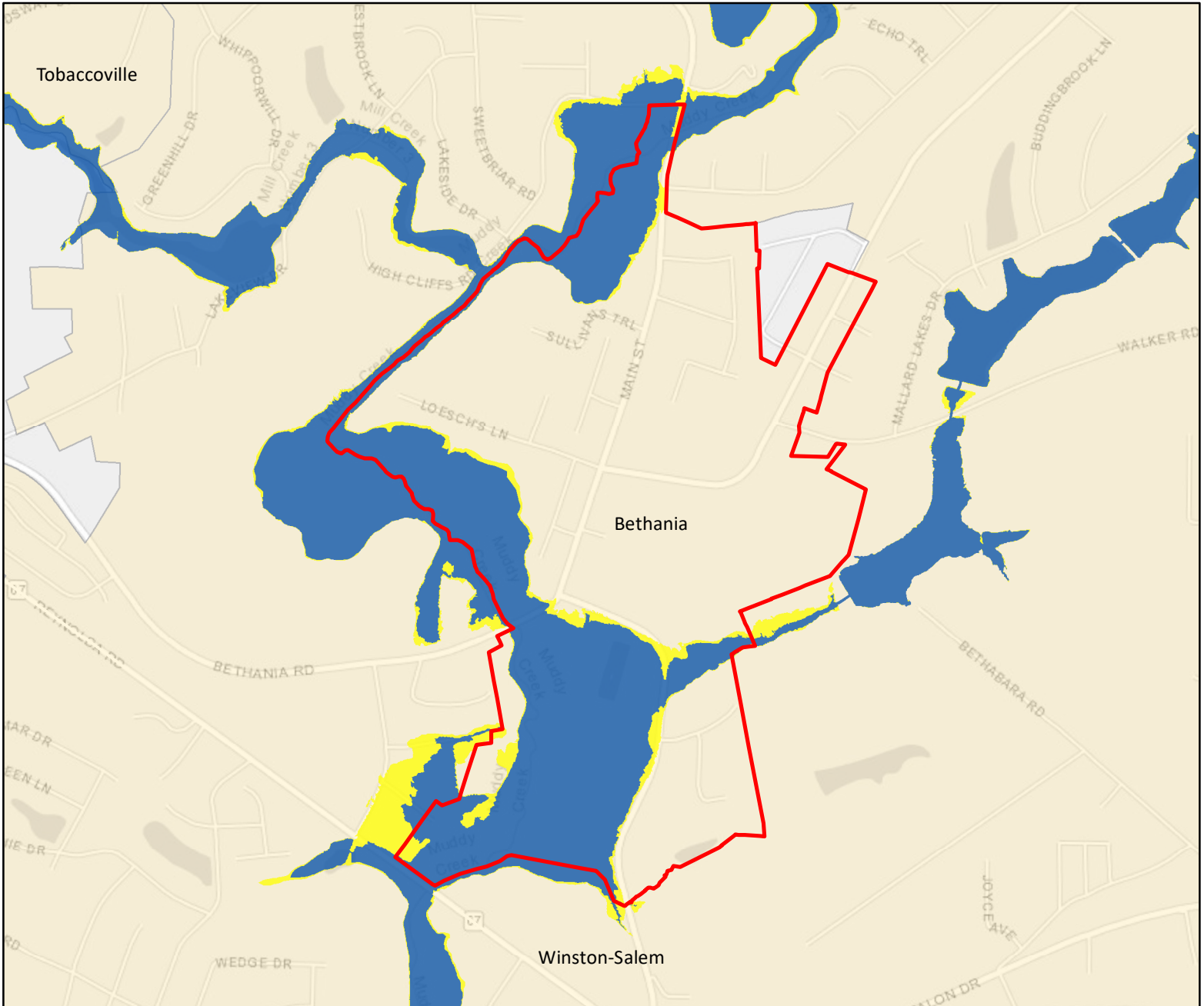
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Bethania - Flood Hazard Areas



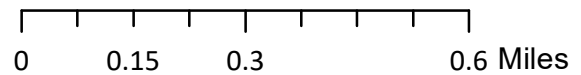
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

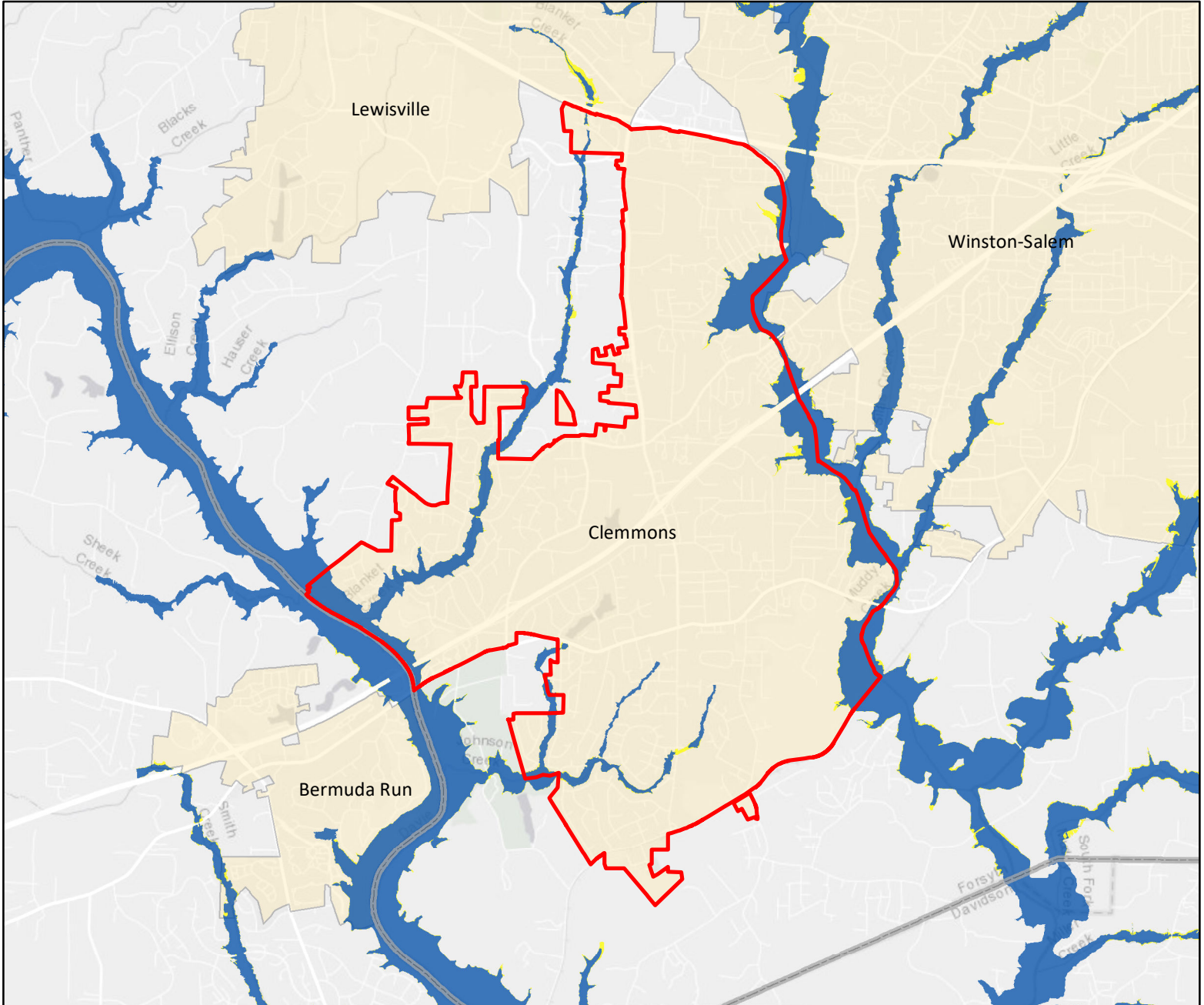
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Clemmons - Flood Hazard Areas



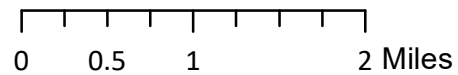
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

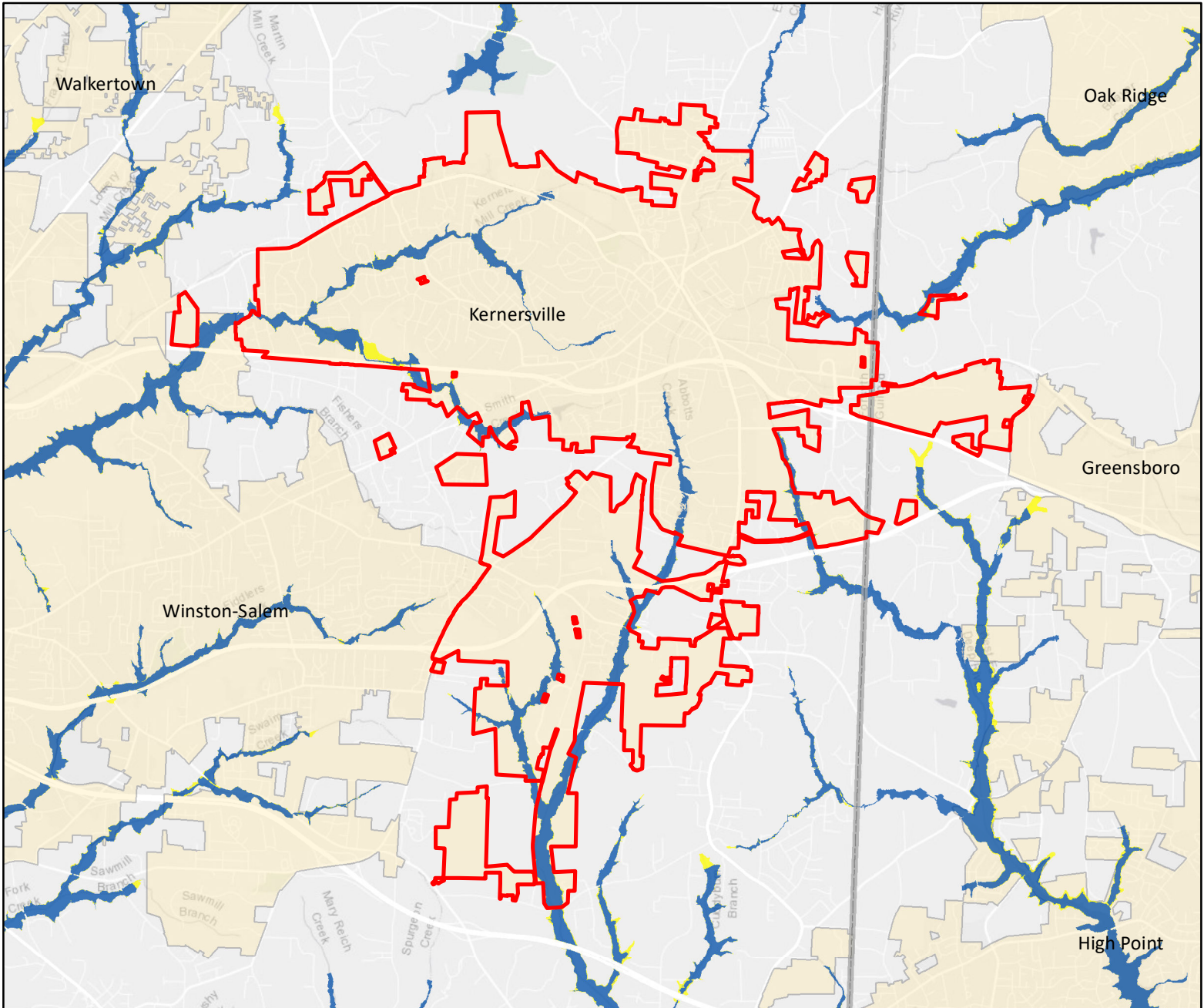
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Kernersville - Flood Hazard Areas



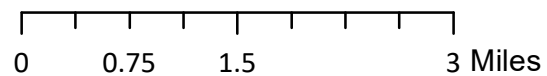
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

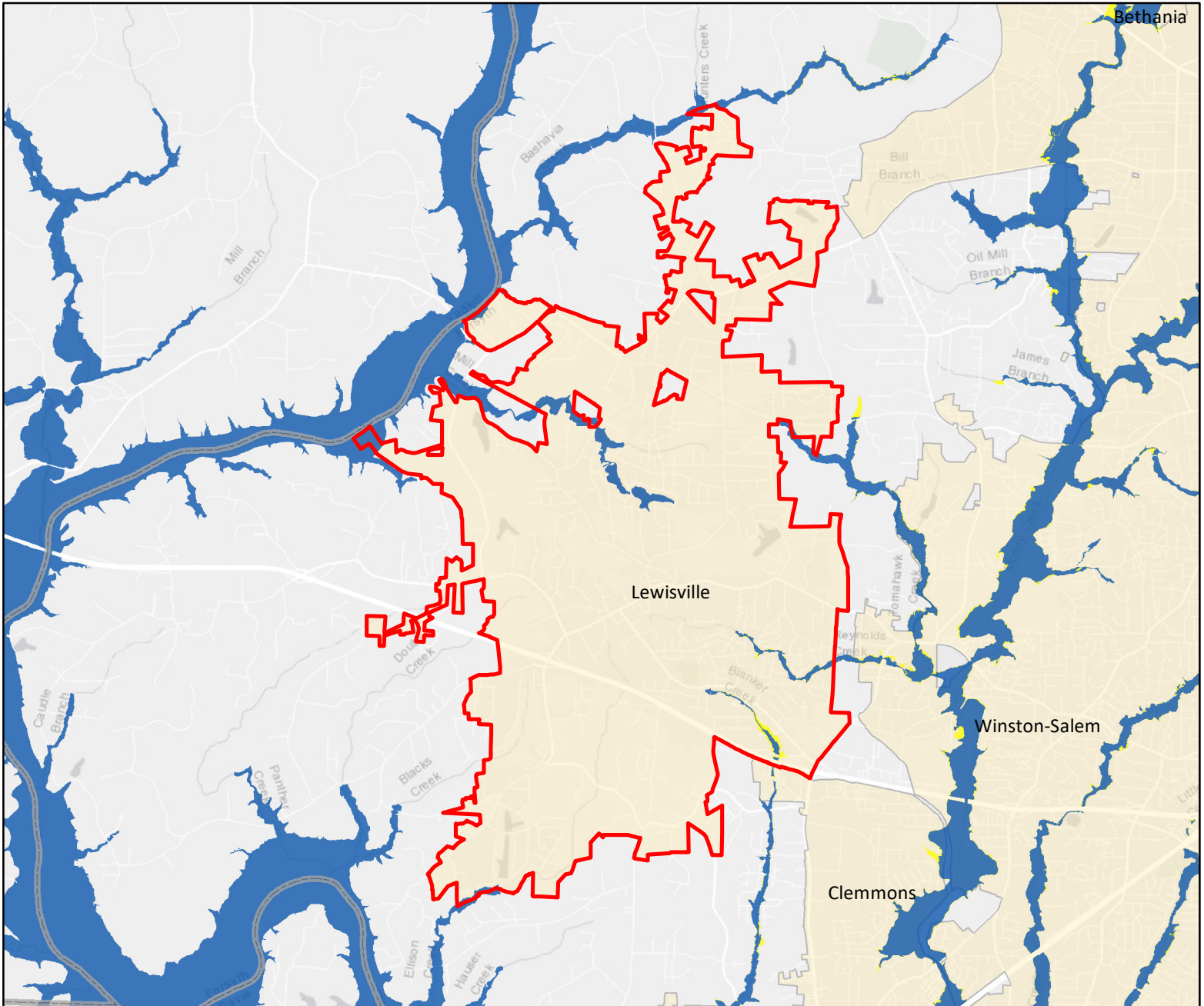
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Lewisville - Flood Hazard Areas



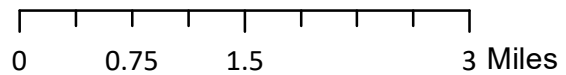
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

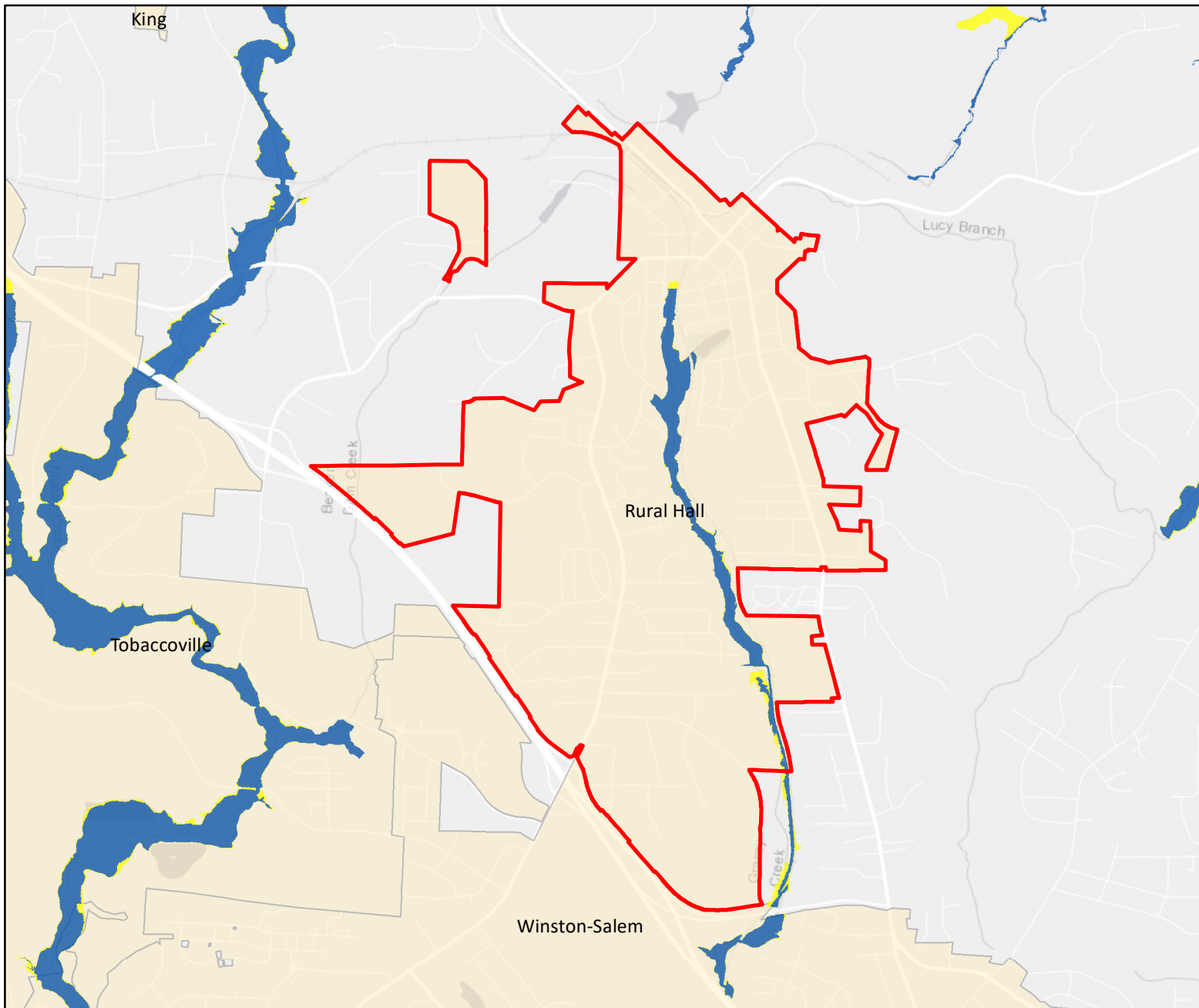
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Rural Hall - Flood Hazard Areas



## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

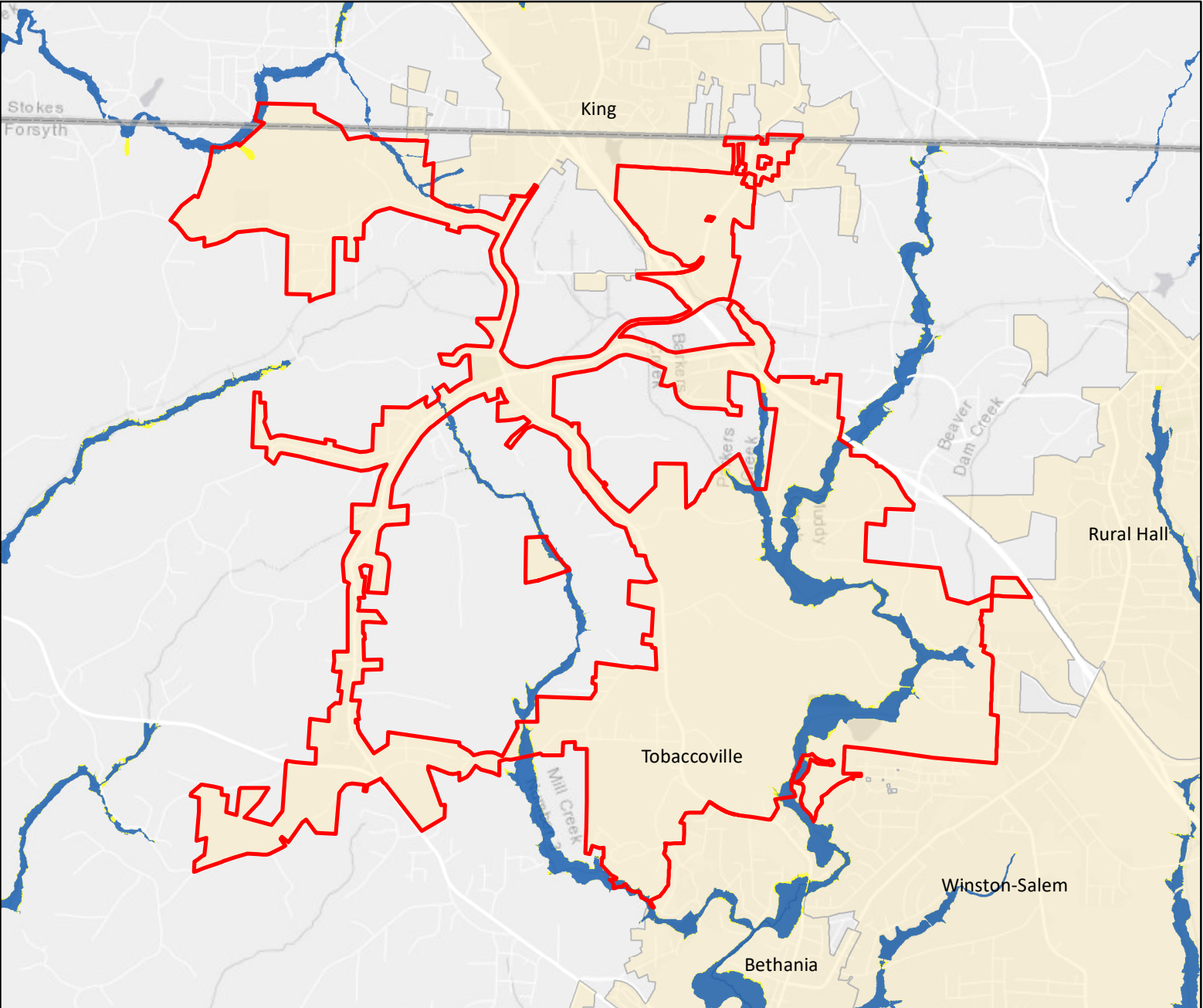
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program




0 0.325 0.65 1.3 Miles





# Tobaccoville - Flood Hazard Areas



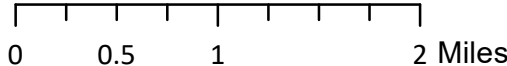
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

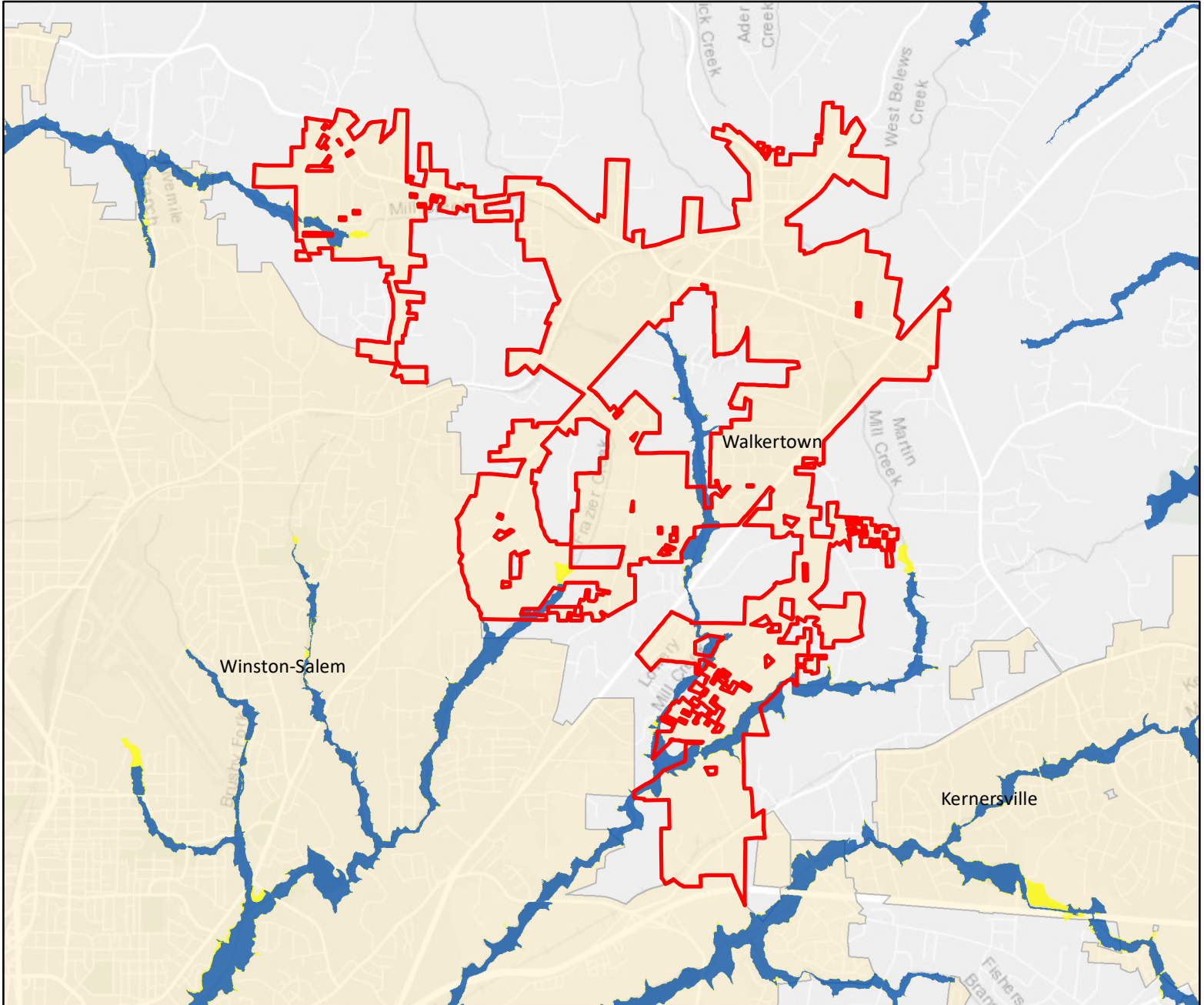
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program










# Walkertown - Flood Hazard Areas



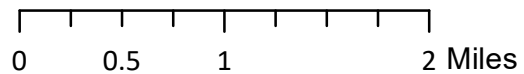
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

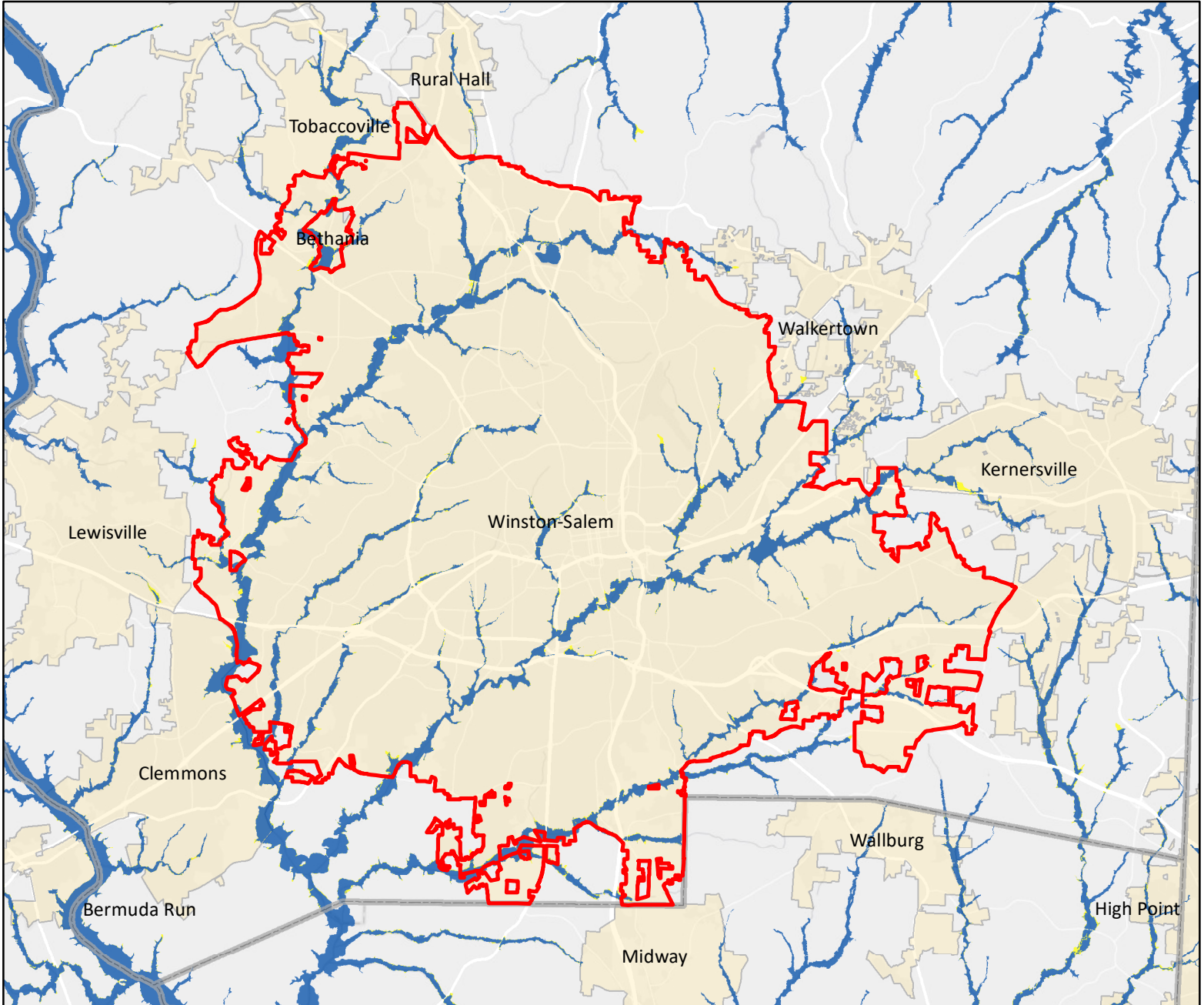
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Winston-Salem - Flood Hazard Areas



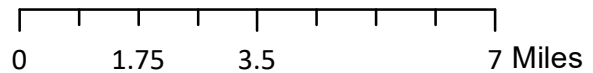
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

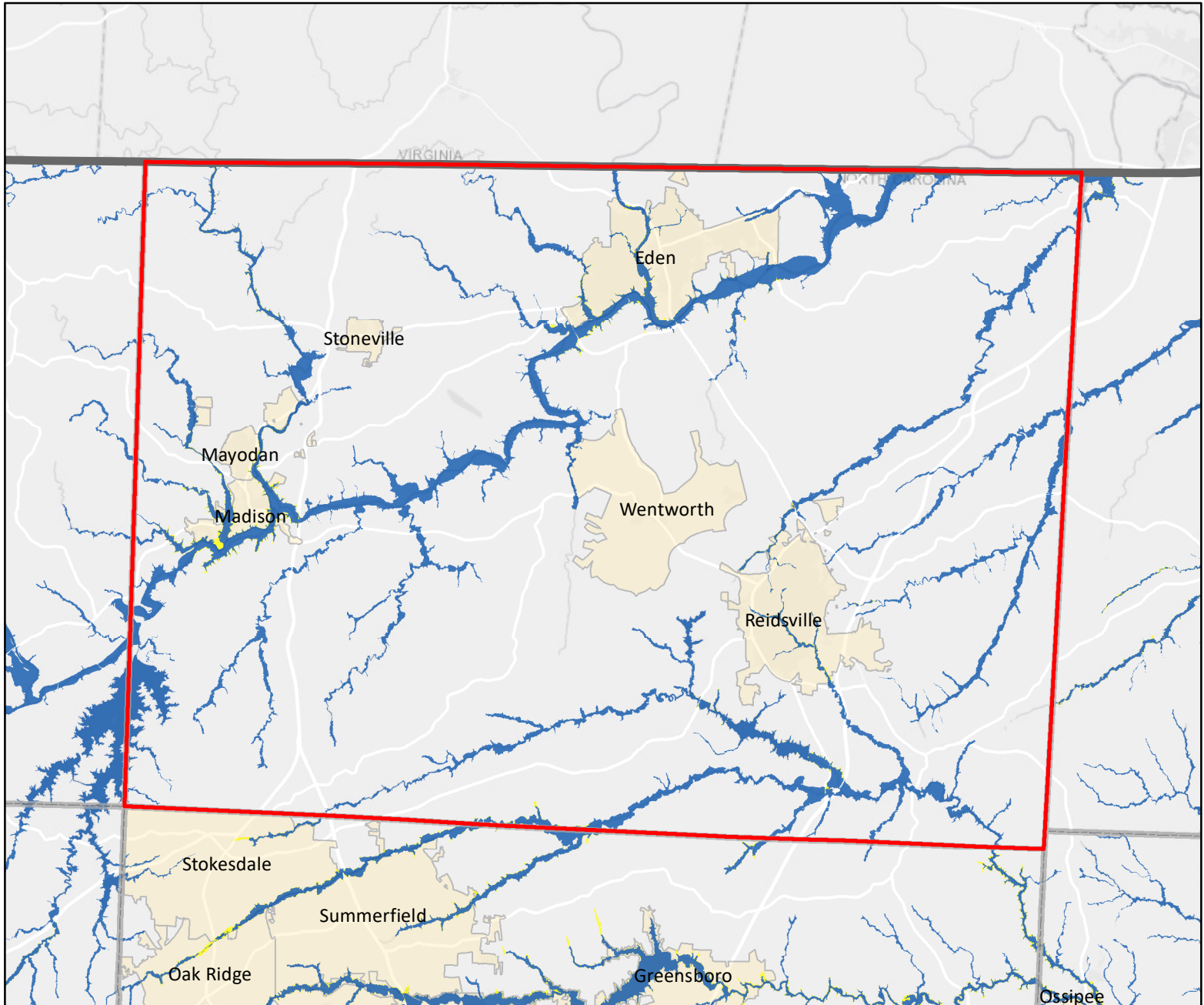
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Rockingham County - Flood Hazard Areas



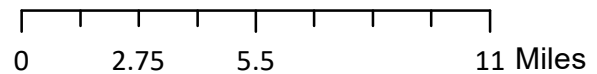
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

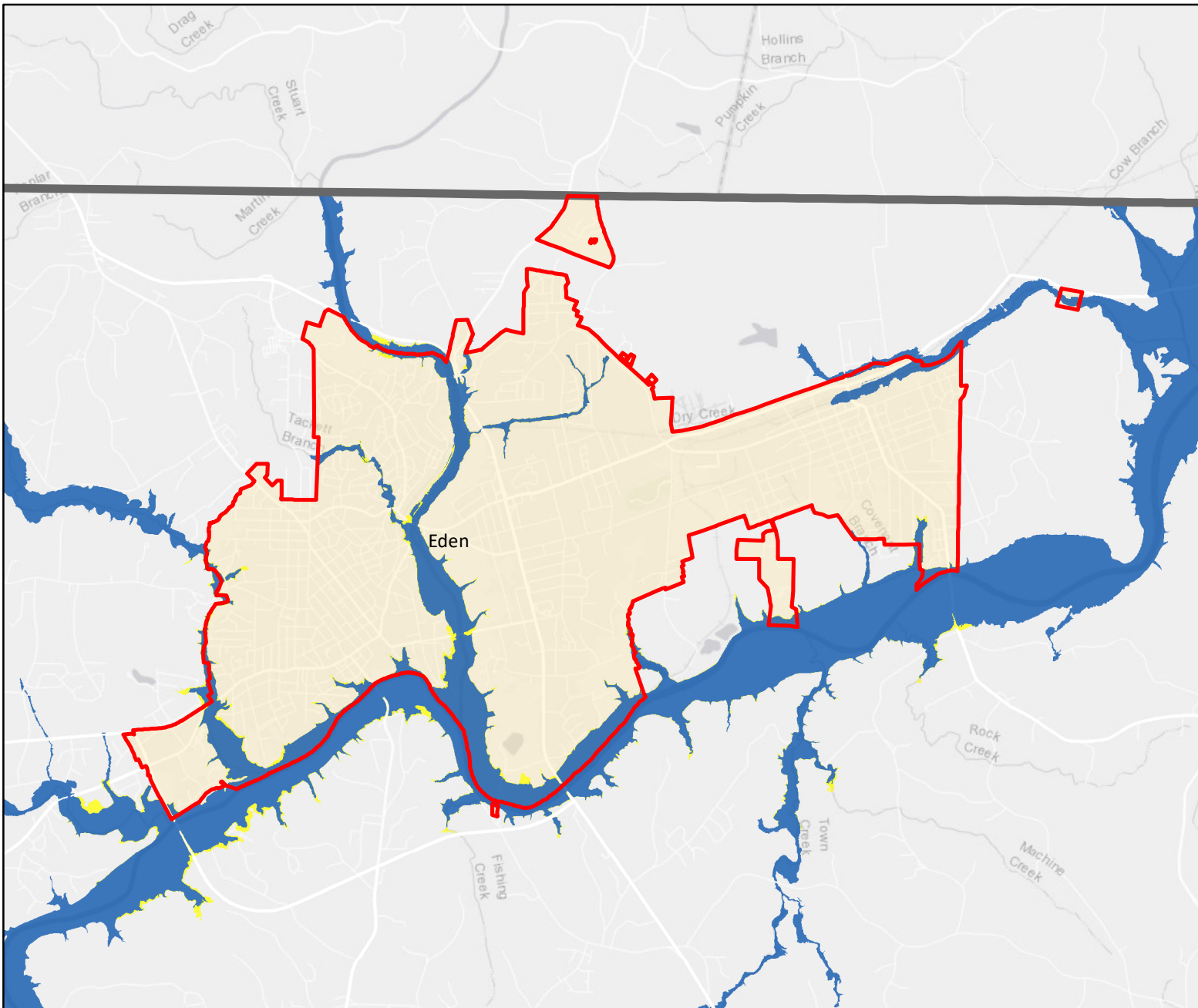
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Eden - Flood Hazard Areas



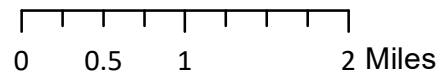
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

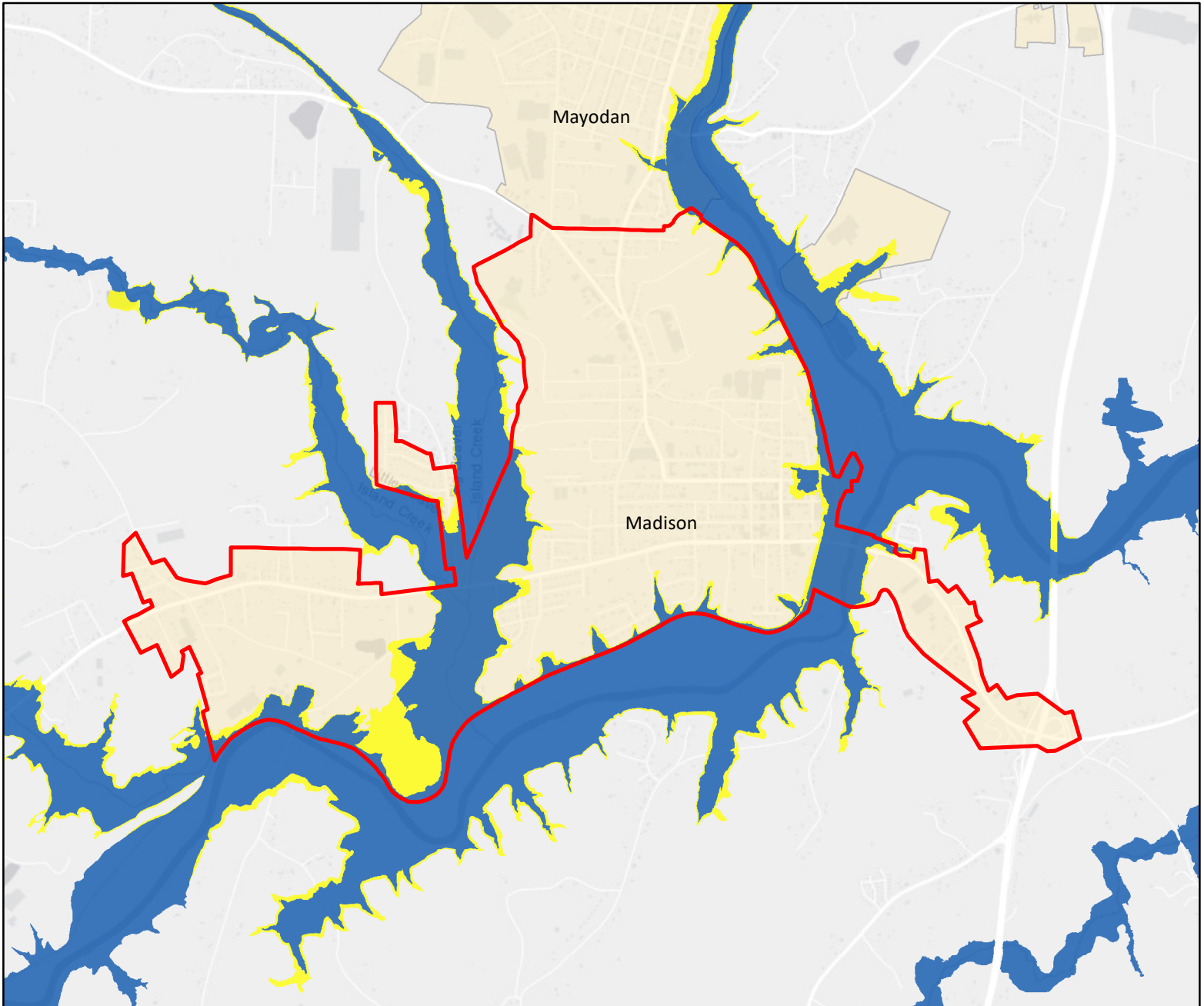
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Madison - Flood Hazard Areas



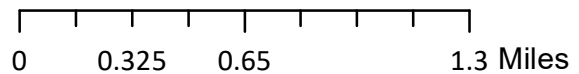
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

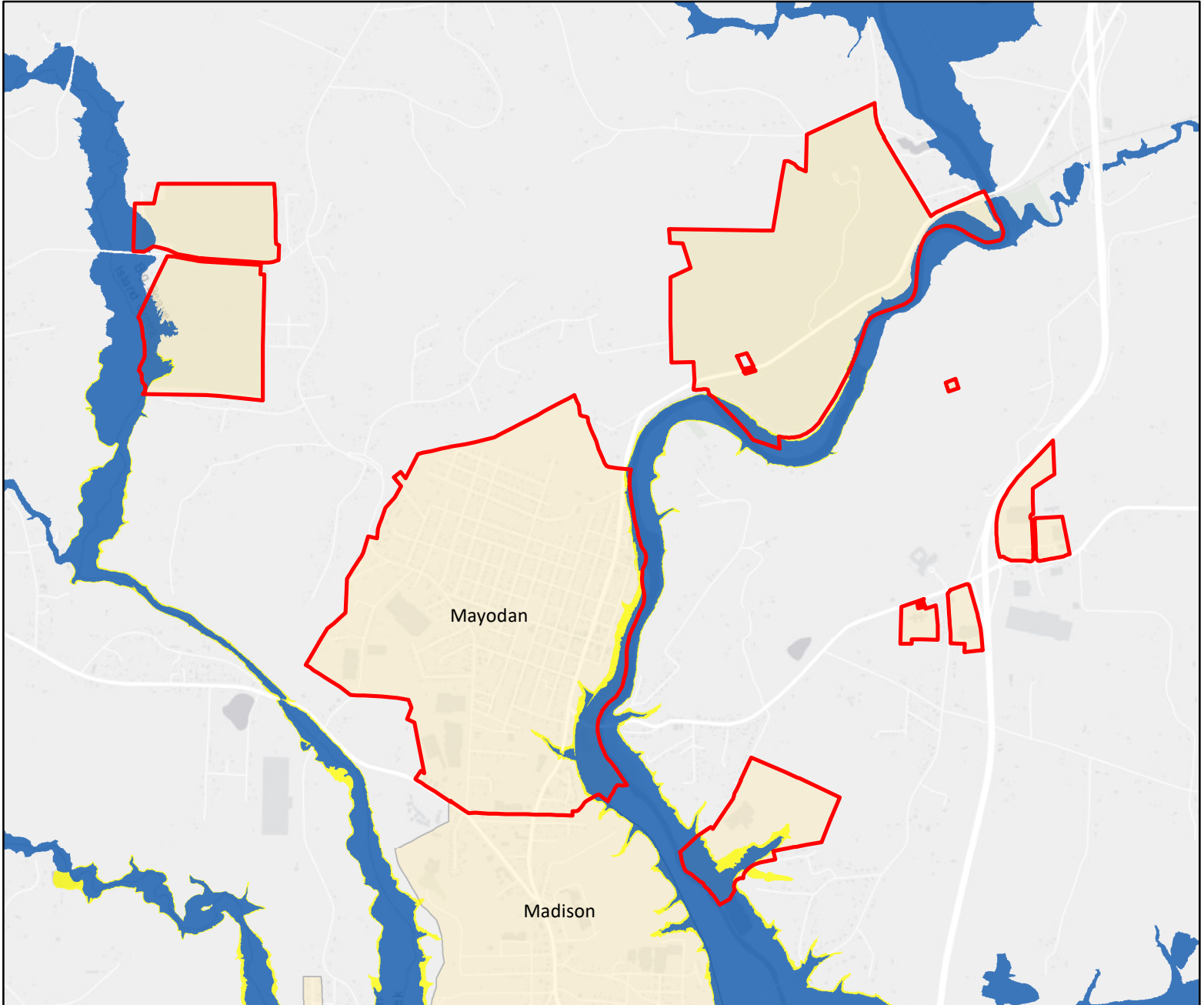
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Mayodan - Flood Hazard Areas



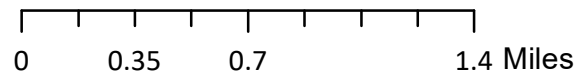
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

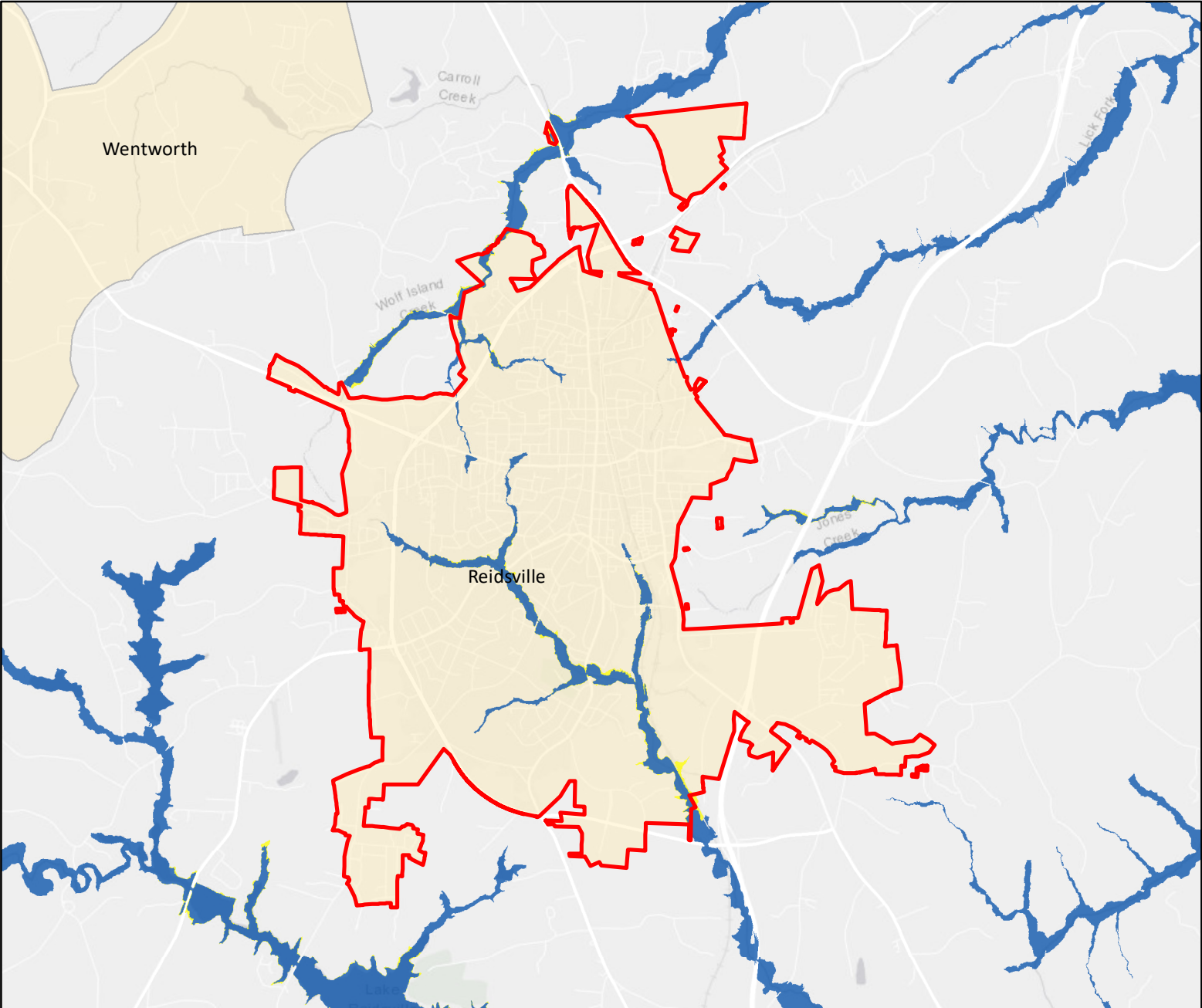
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Reidsville - Flood Hazard Areas



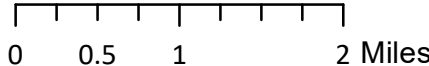
### Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

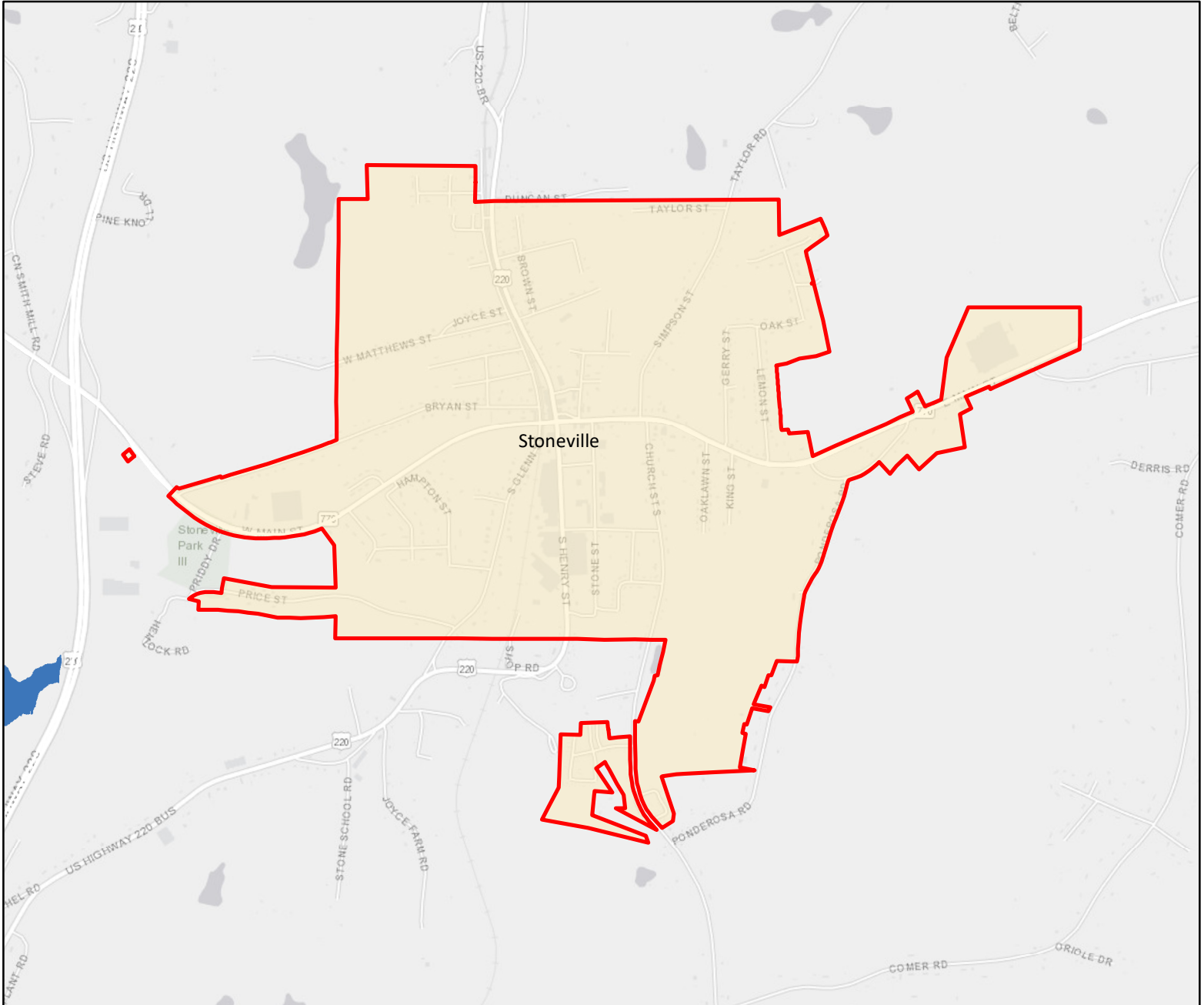
### Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Stoneville - Flood Hazard Areas



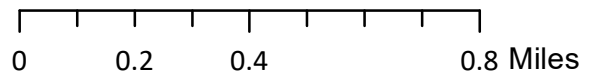
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

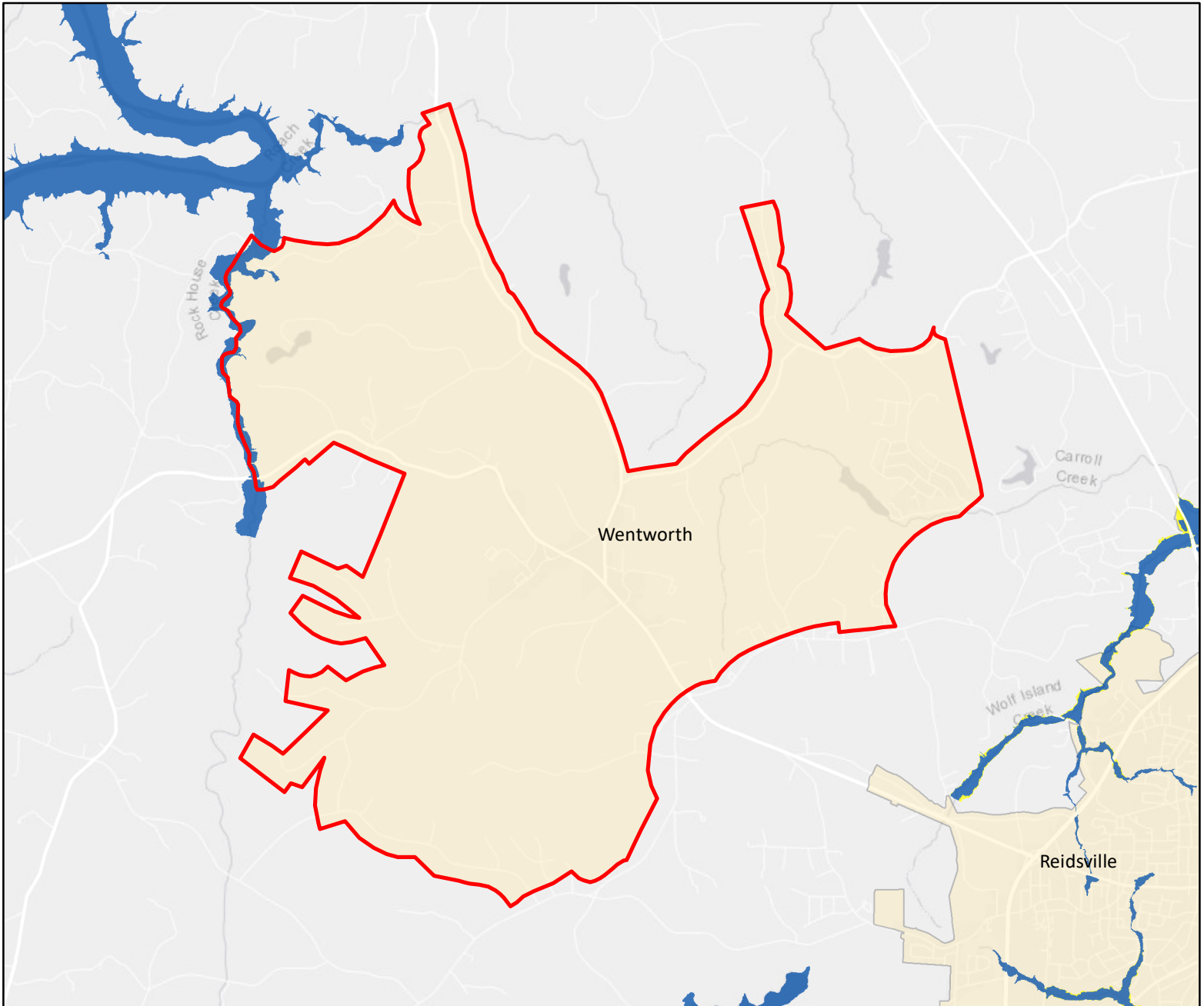
-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program










# Wentworth - Flood Hazard Areas



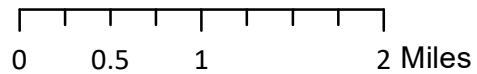
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

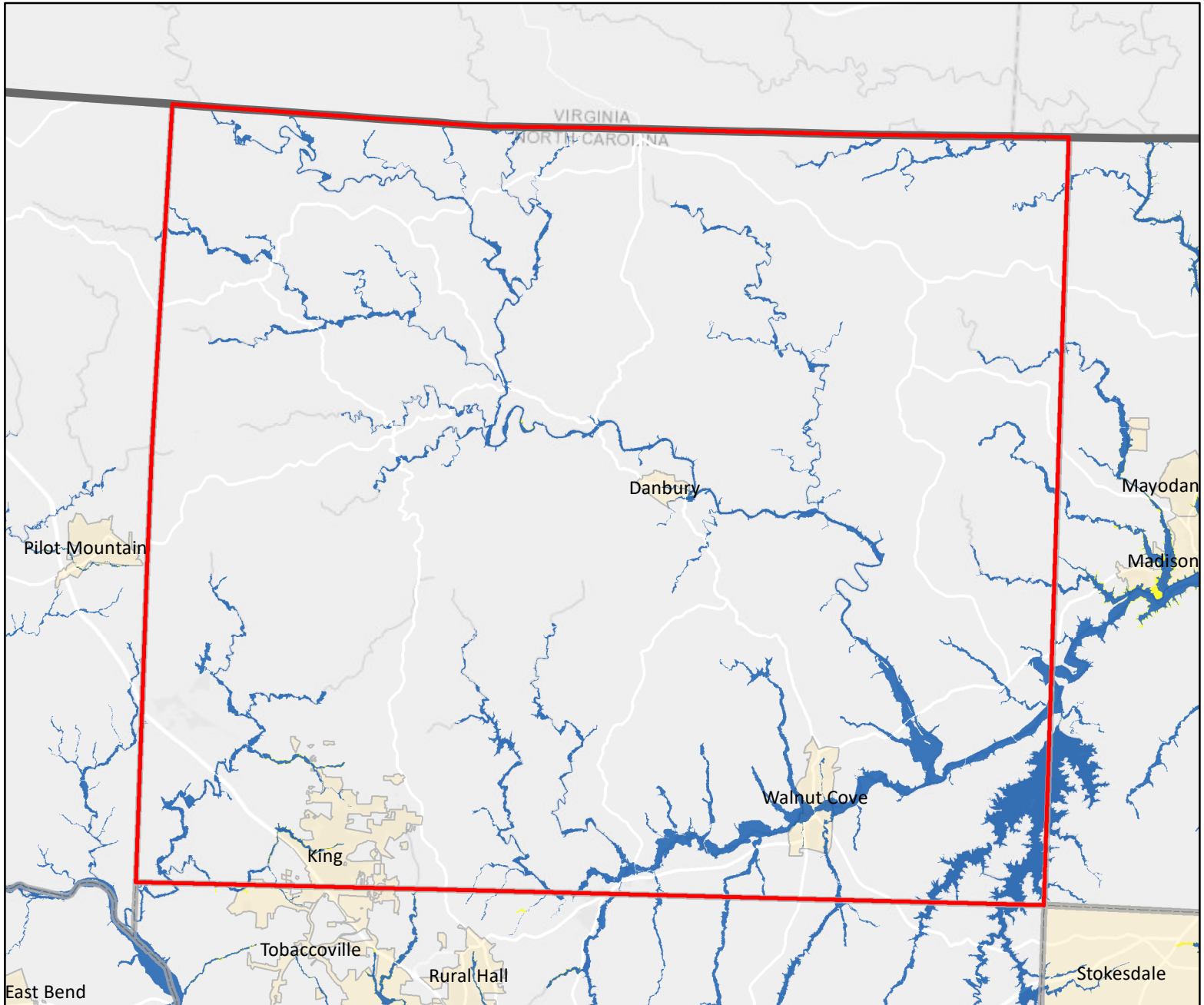
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Stokes County - Flood Hazard Areas



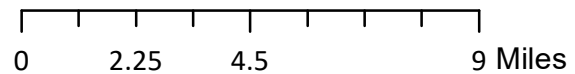
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

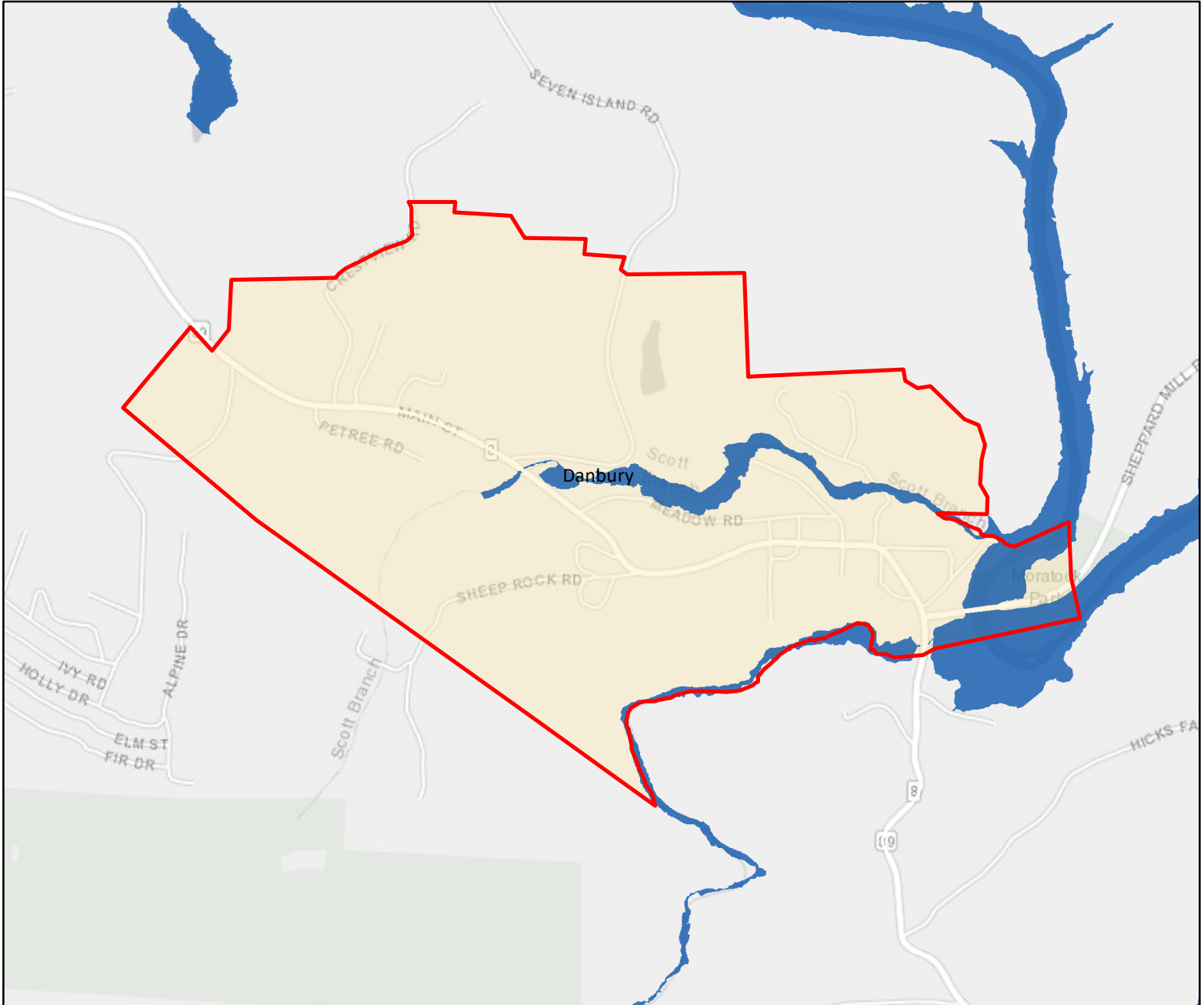
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Danbury - Flood Hazard Areas



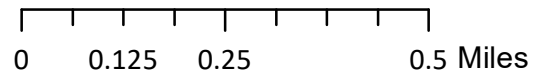
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

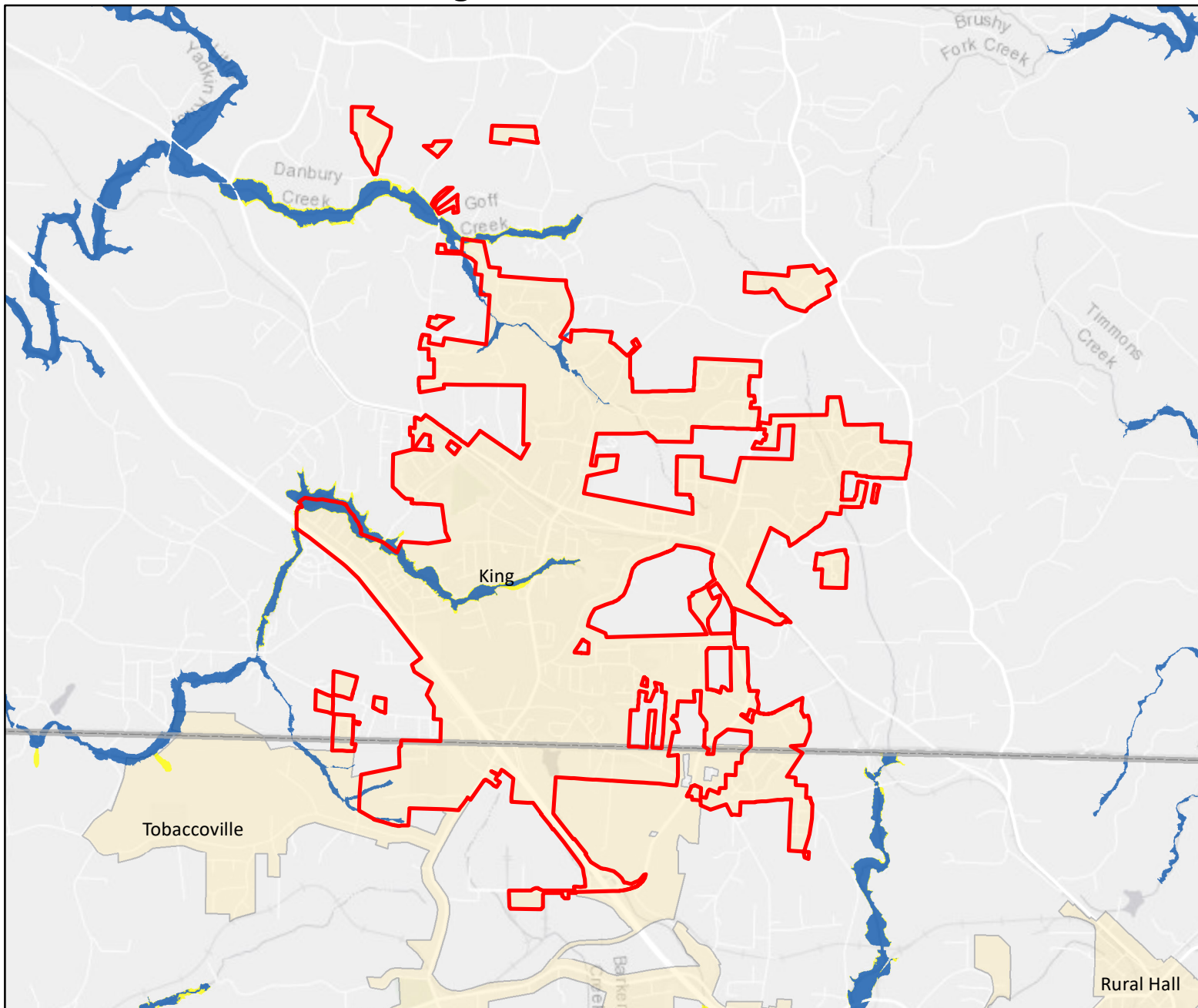
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# King - Flood Hazard Areas



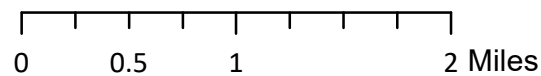
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

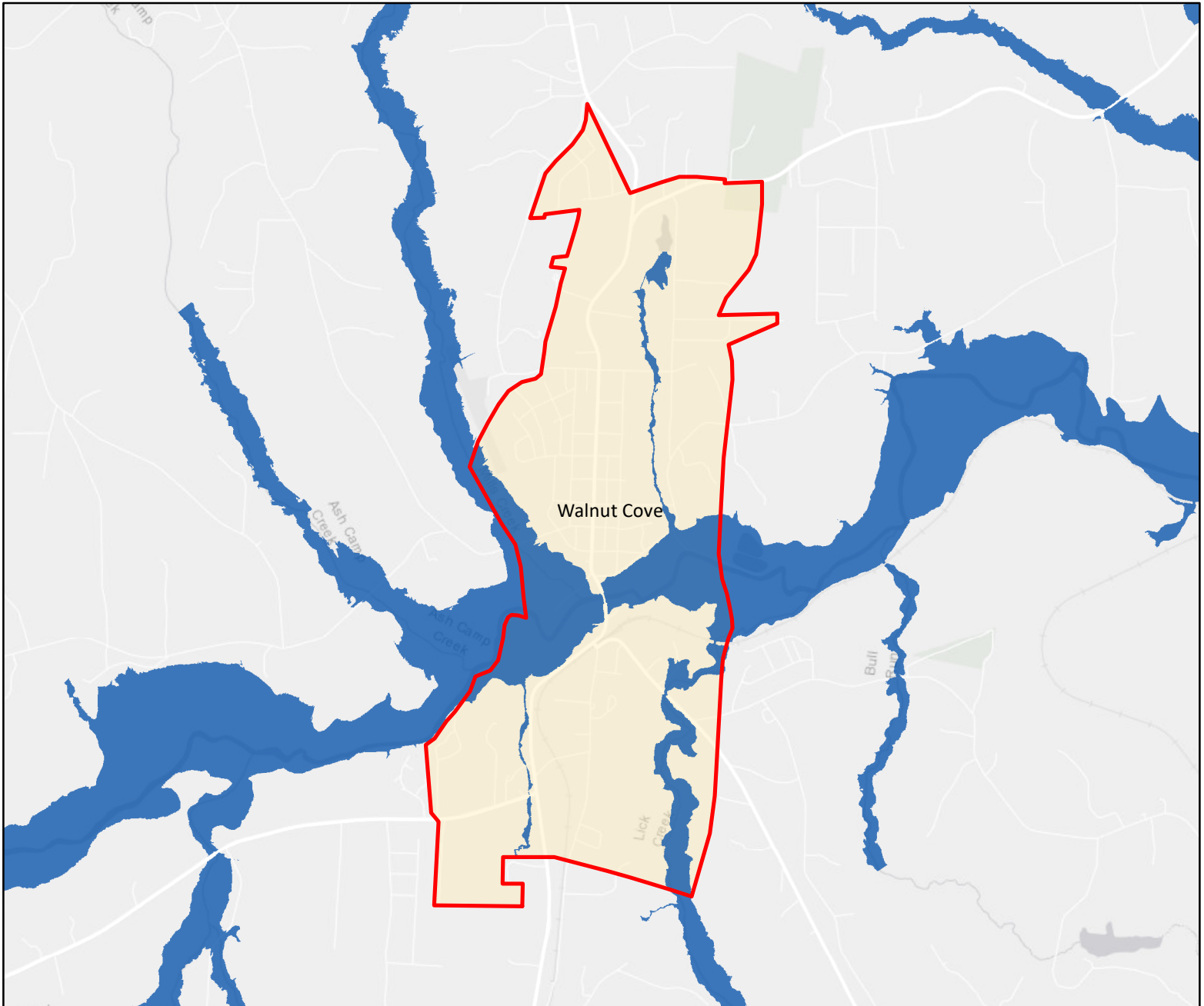
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Walnut Cove - Flood Hazard Areas



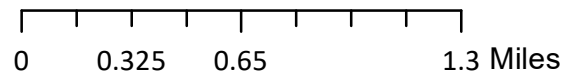
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

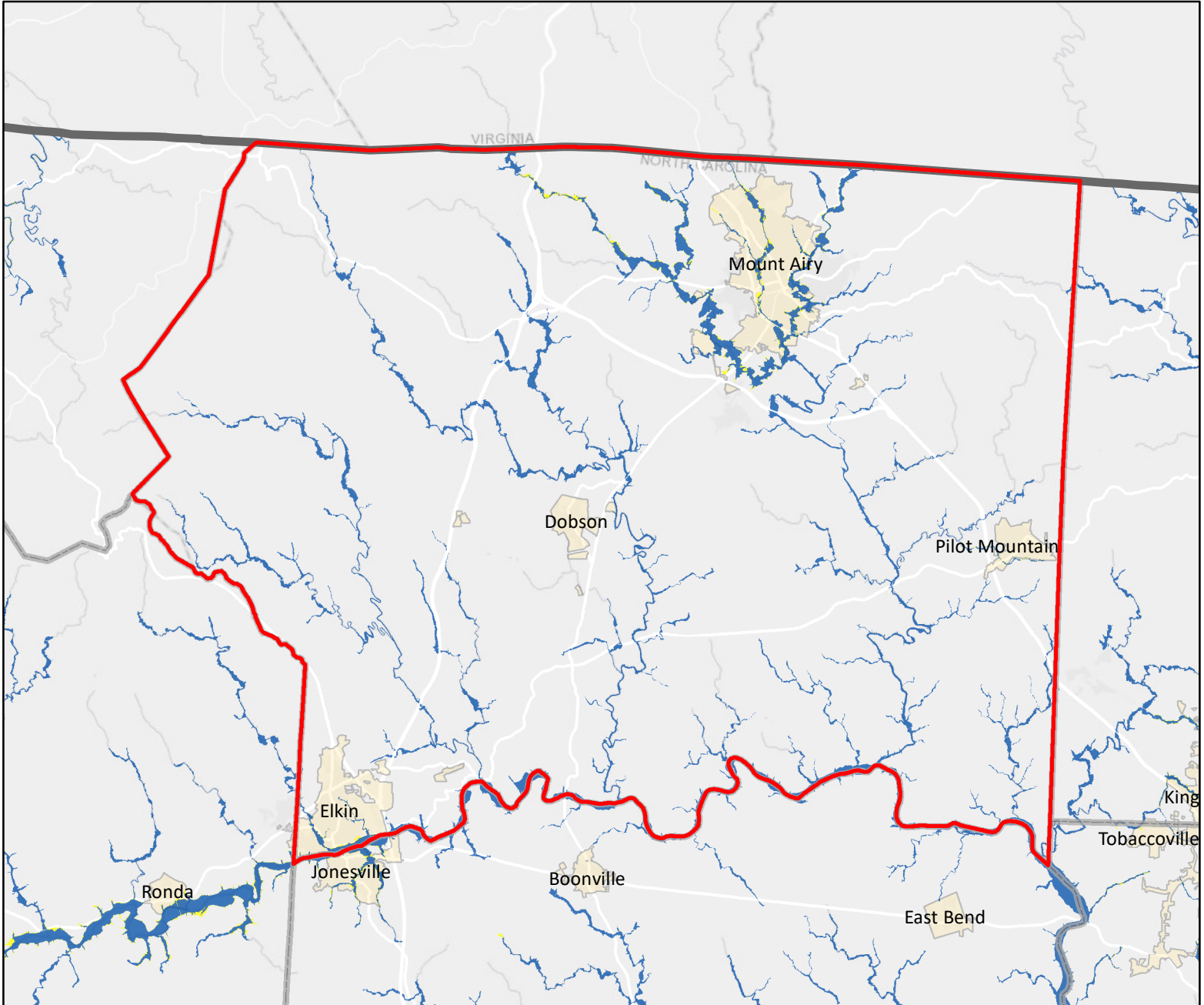
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Surry County - Flood Hazard Areas



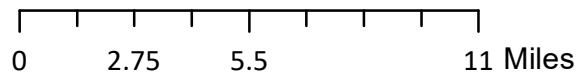
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

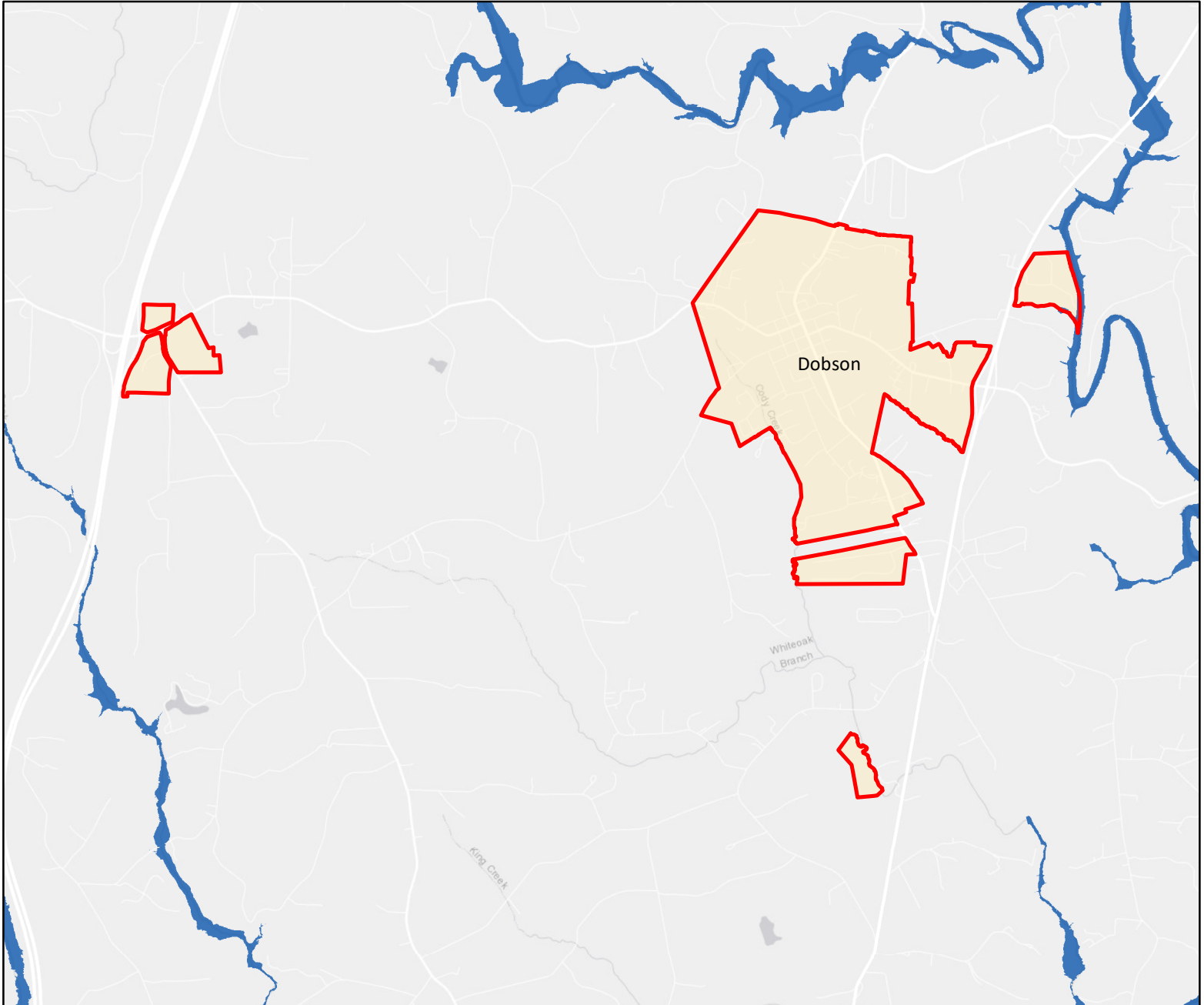
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Dobson - Flood Hazard Areas



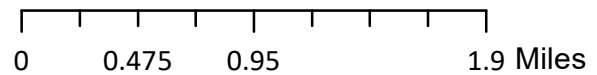
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

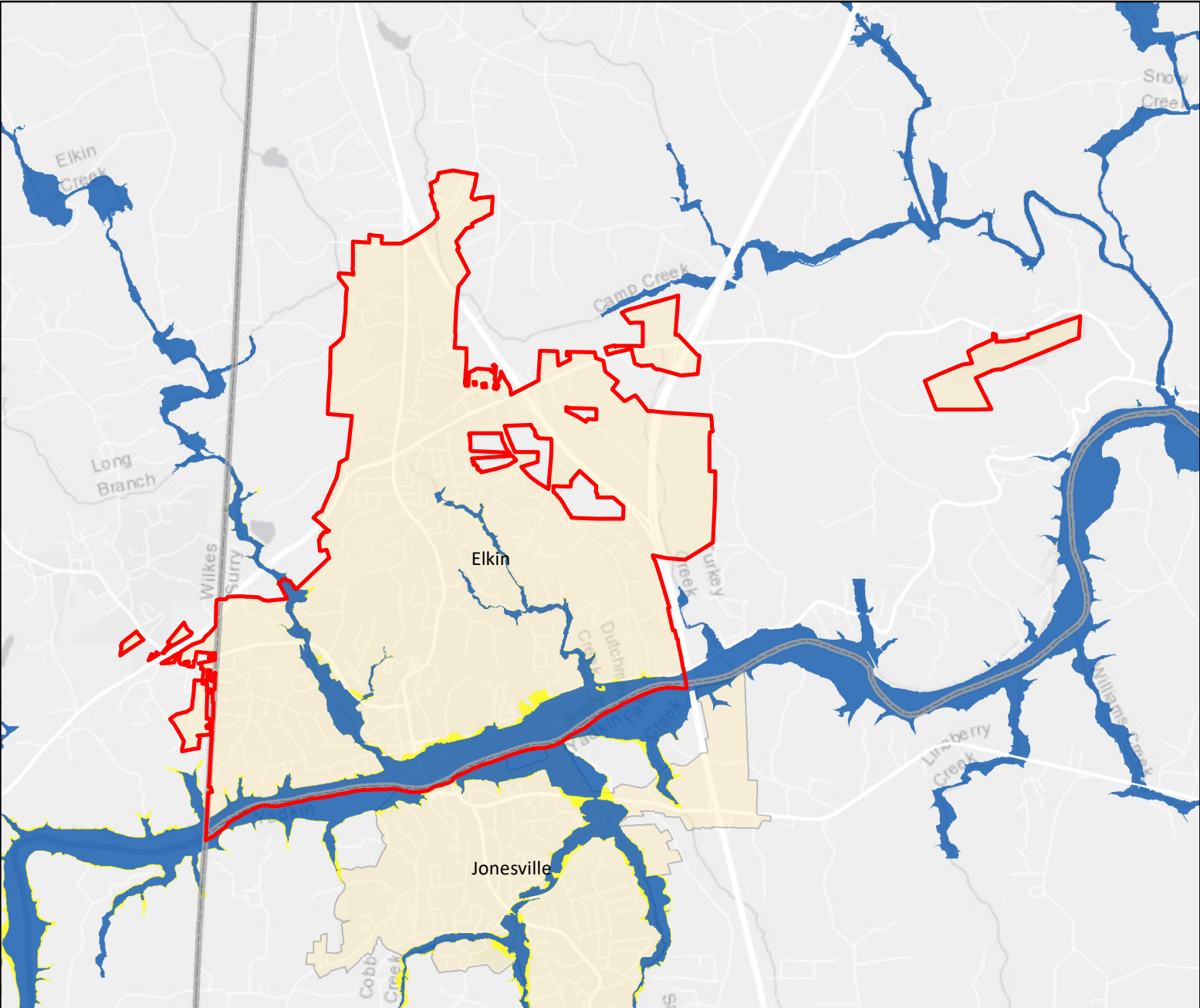
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program



# Elkin - Flood Hazard Areas



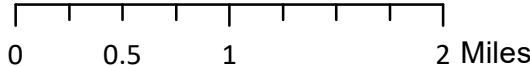
### Legend

- County Boundary
- Municipal Boundary
- Major Roads

### Flood Zone

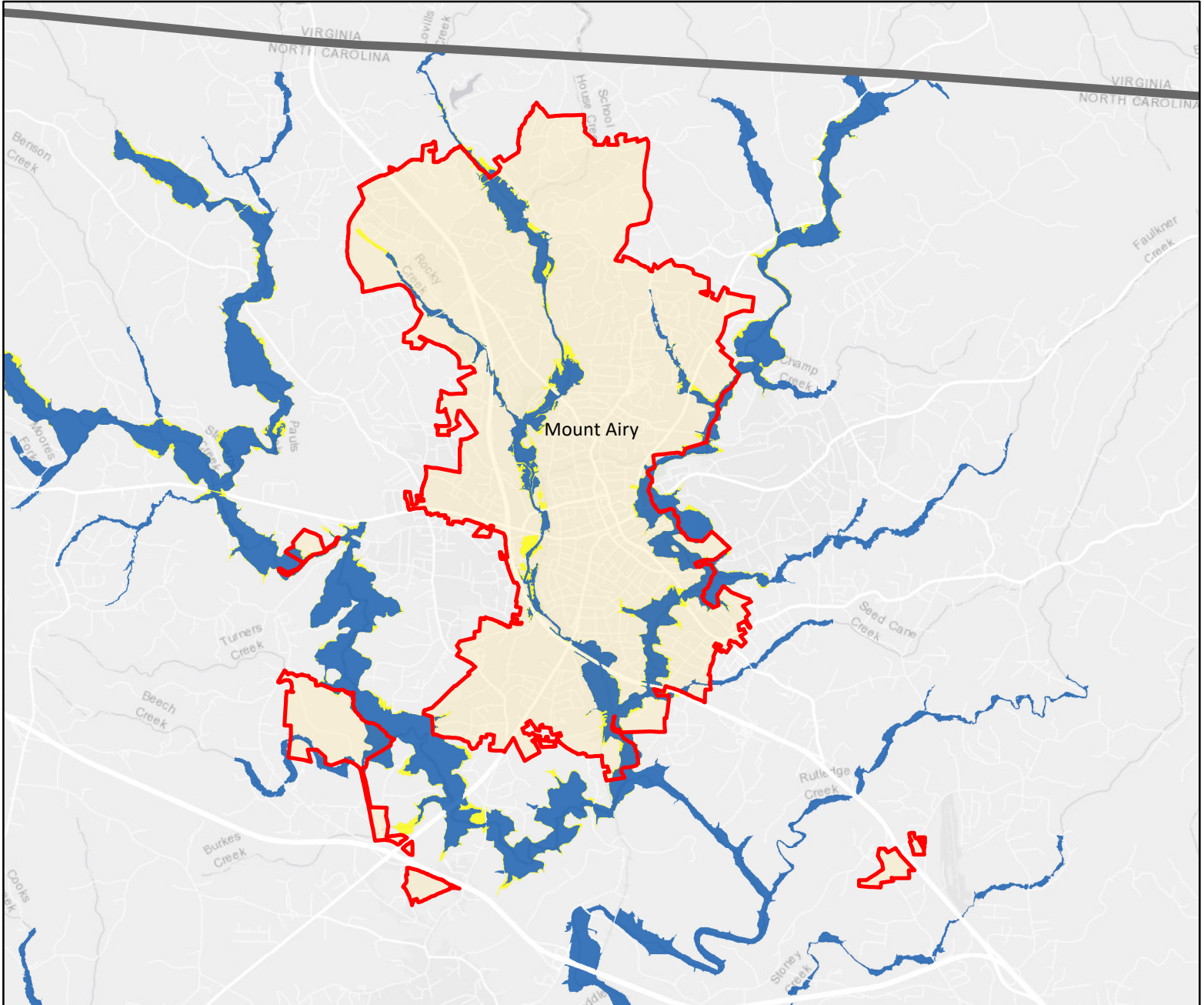
- 100 Year Flood Zone
- 500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program










# Mount Airy - Flood Hazard Areas



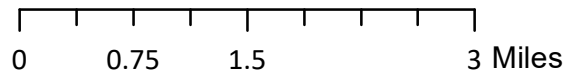
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

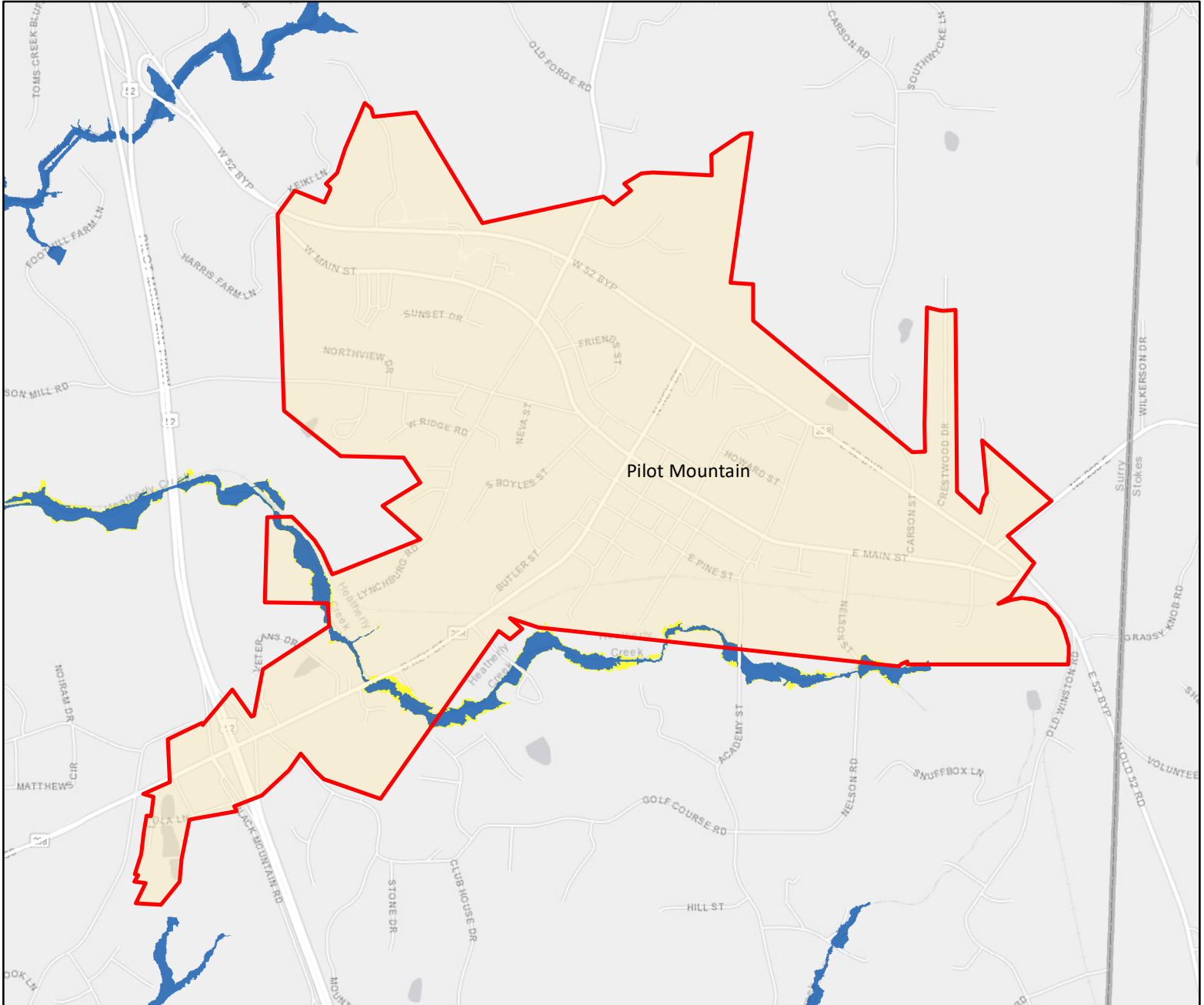
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Pilot Mountain - Flood Hazard Areas



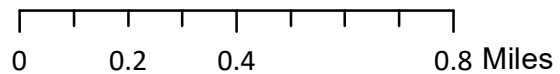
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

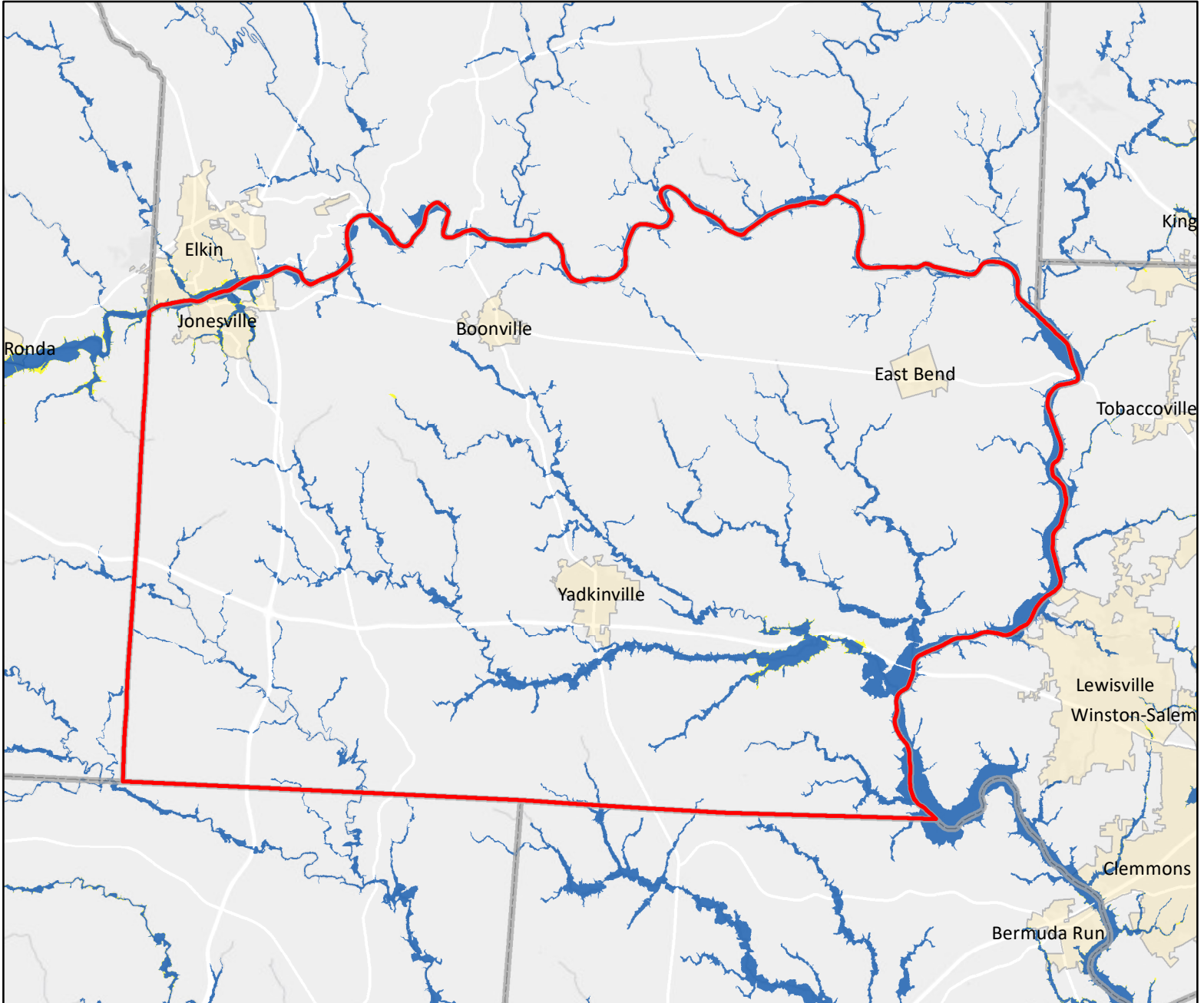
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Yadkin County - Flood Hazard Areas



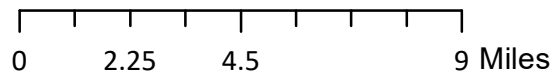
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

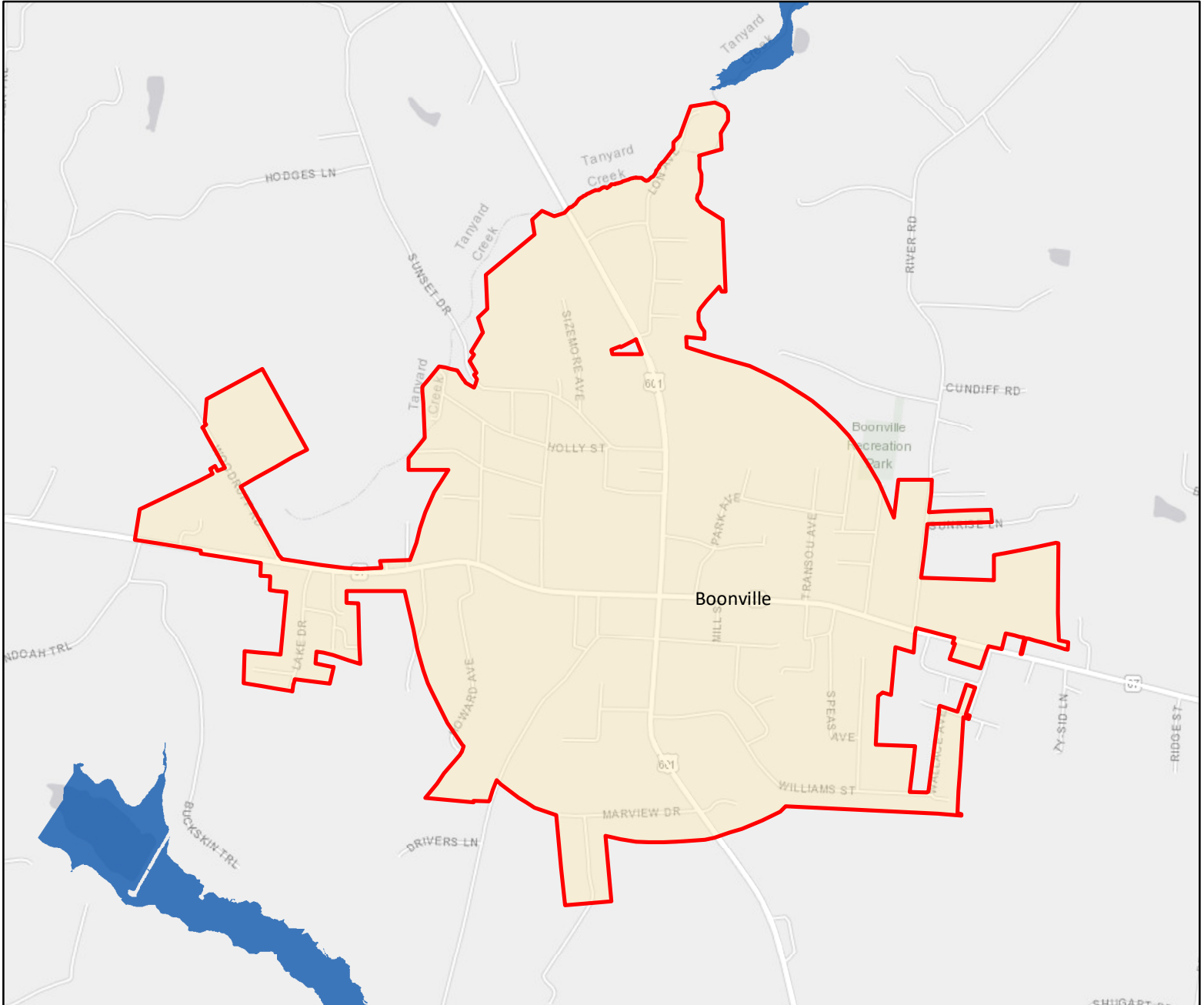
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program



# Boonville - Flood Hazard Areas



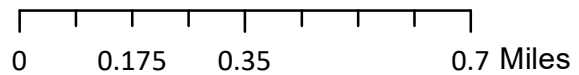
## Legend

- County Boundary
- Municipal Boundary
- Major Roads

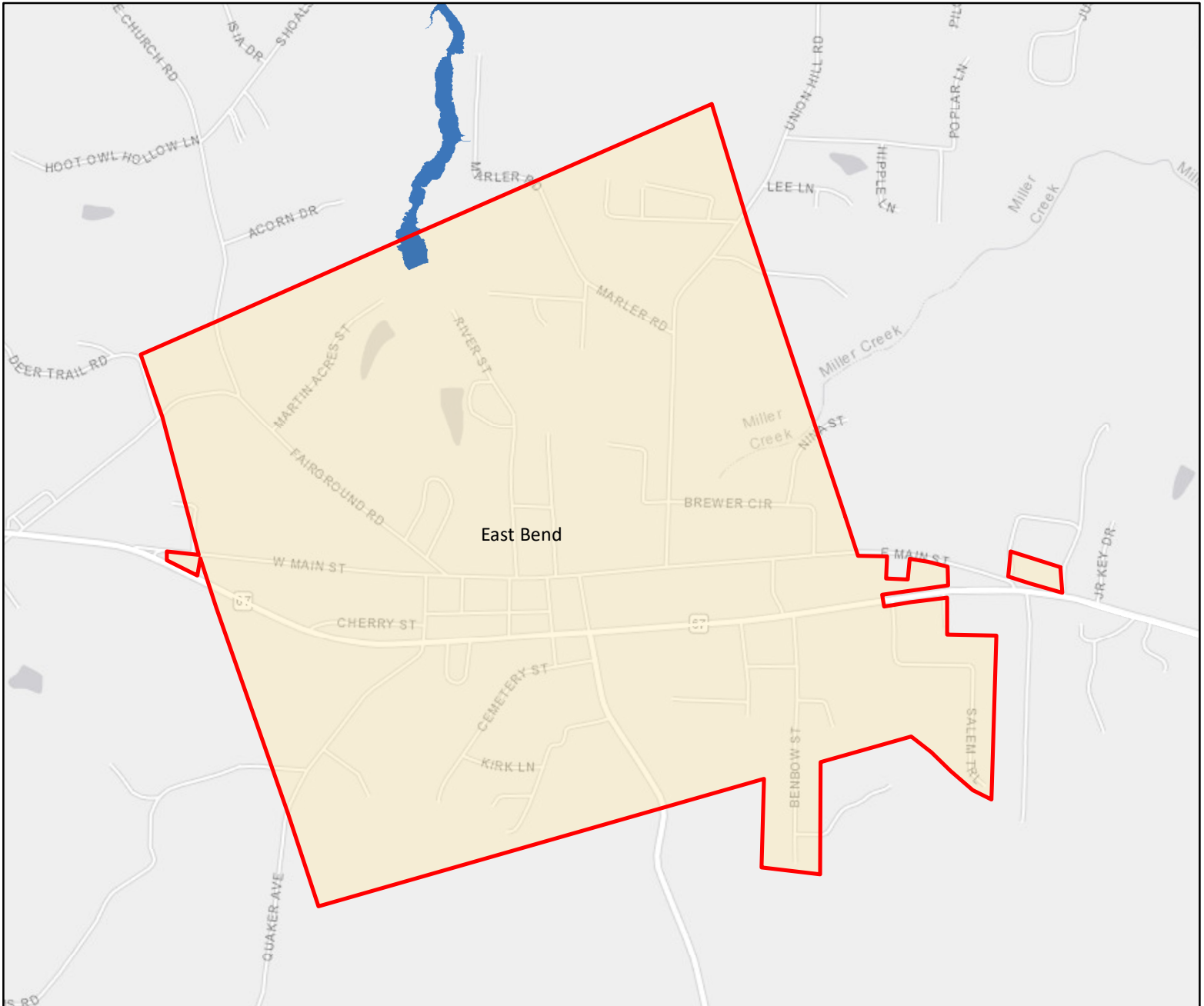
## Flood Zone

- 100 Year Flood Zone
- 500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program



# East Bend - Flood Hazard Areas



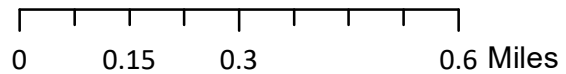
## Legend

- County Boundary
- Municipal Boundary
- Major Roads

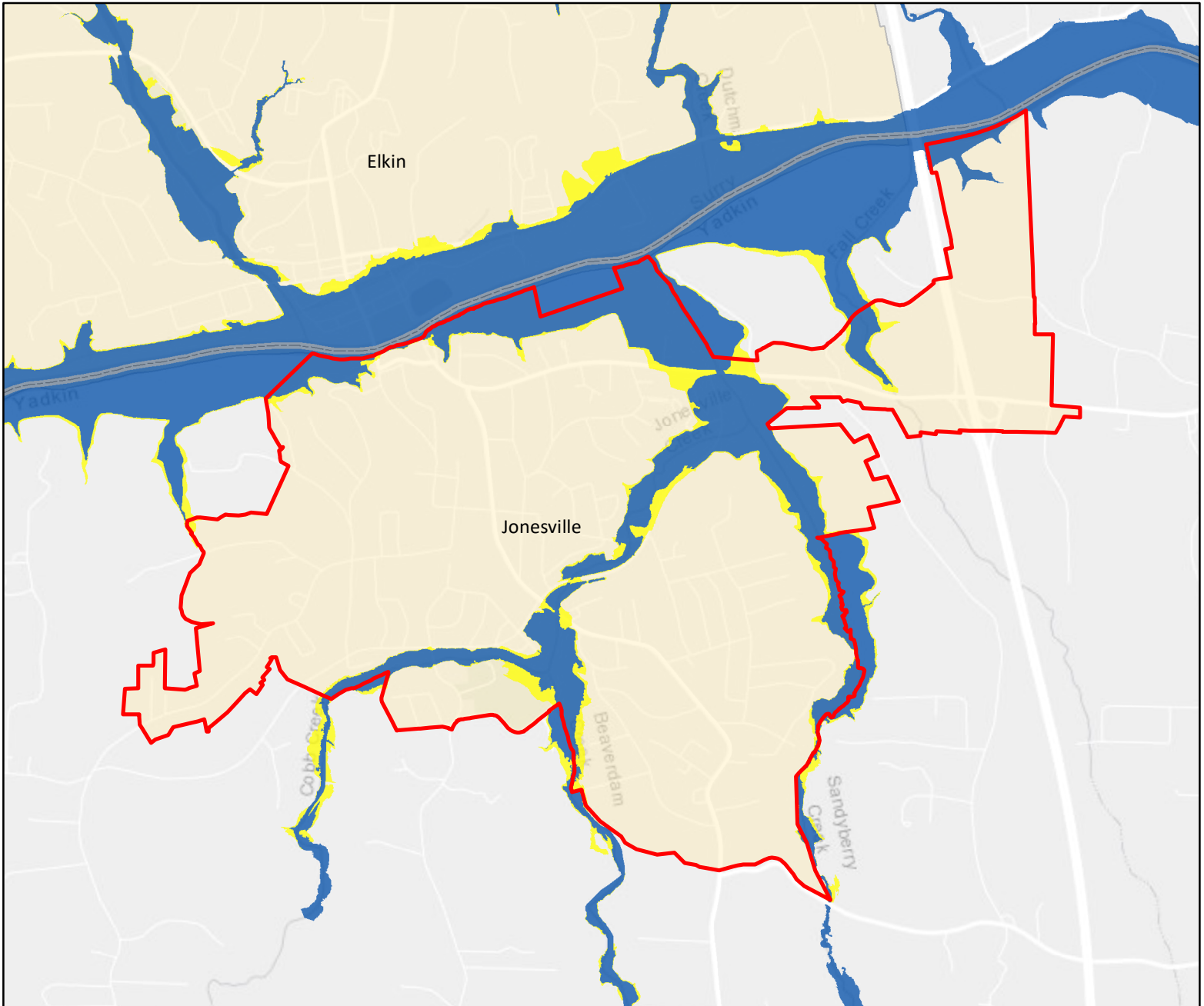
## Flood Zone

- 100 Year Flood Zone
- 500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Jonesville - Flood Hazard Areas



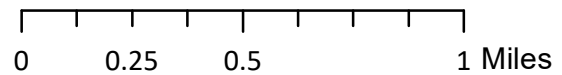
## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

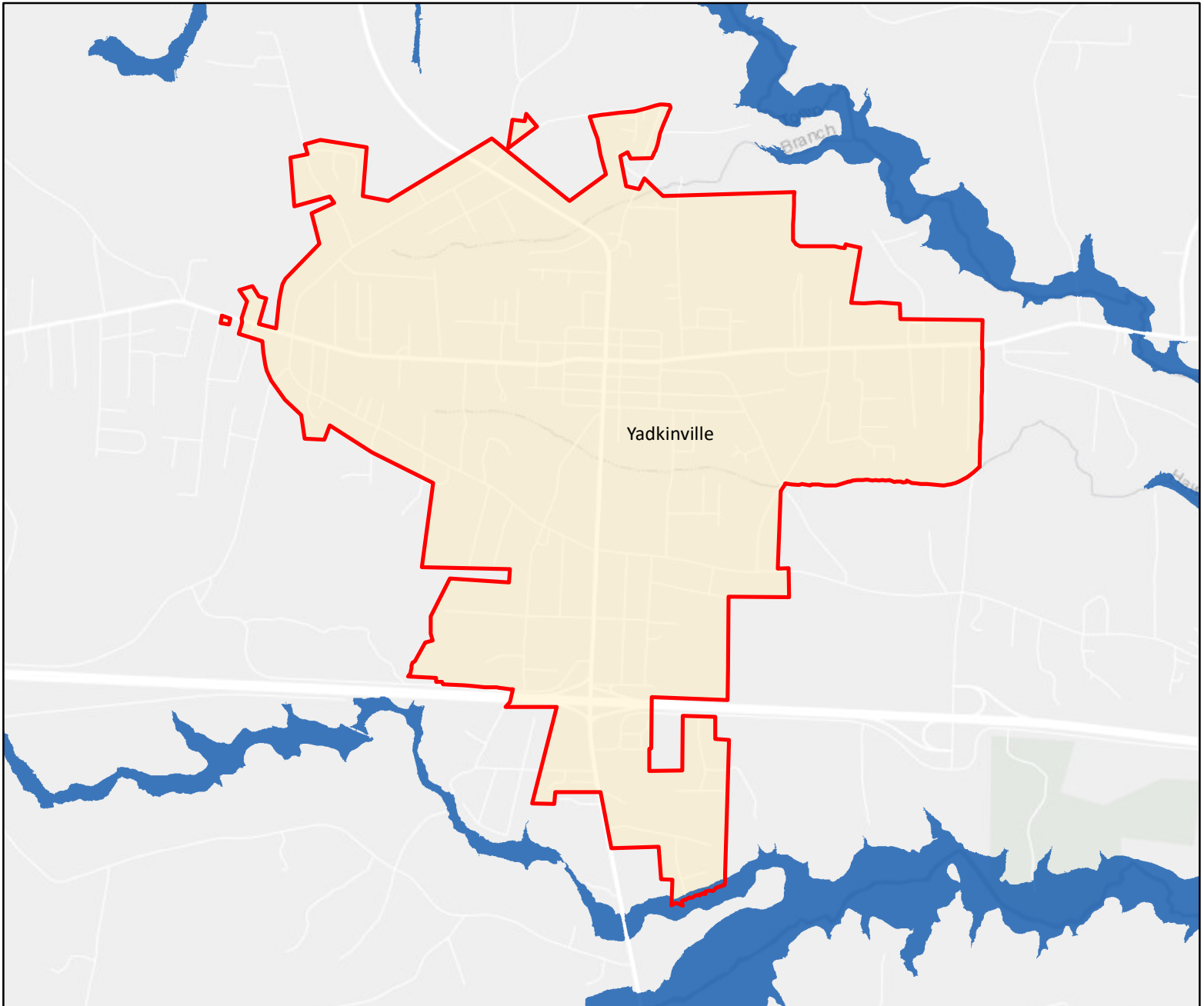
## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone




Data Source: North Carolina Floodplain Mapping Program





# Yadkinville - Flood Hazard Areas



## Legend

-  County Boundary
-  Municipal Boundary
-  Major Roads

## Flood Zone

-  100 Year Flood Zone
-  500 Year Flood Zone

Data Source: North Carolina Floodplain Mapping Program

0 0.275 0.55 1.1 Miles



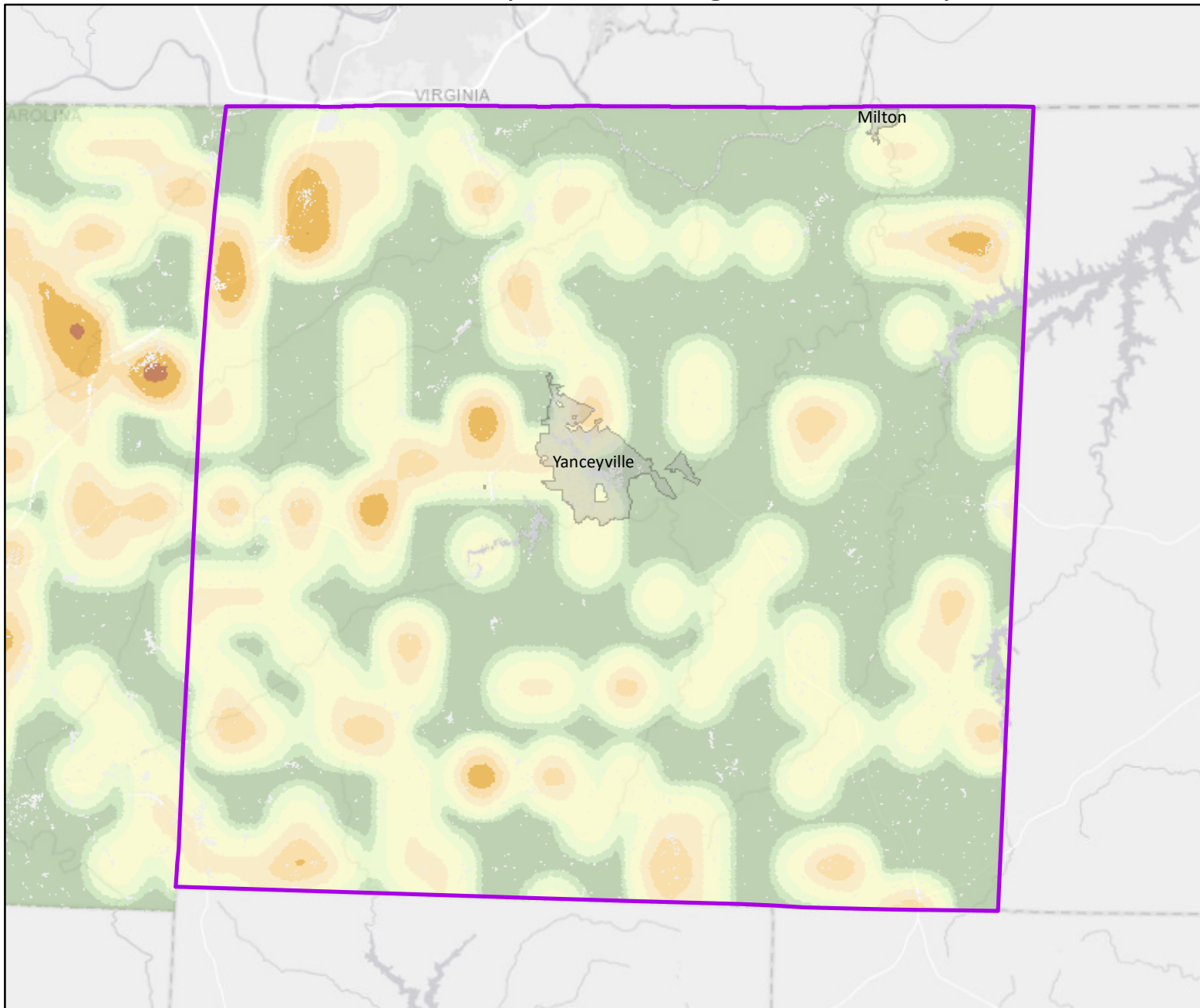
# Appendix G

## Wildfire Hazard Maps



This section of the Plan includes Wildfire Ignition Density, Wildfire Events and Wildland Urban Interface maps for each participating County and municipality in the Northern Piedmont Region.



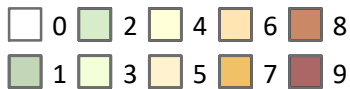
# Caswell County - Wildfire Ignition Density



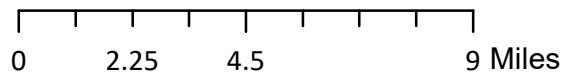
## Legend

-  Municipal Boundary
-  County Boundary

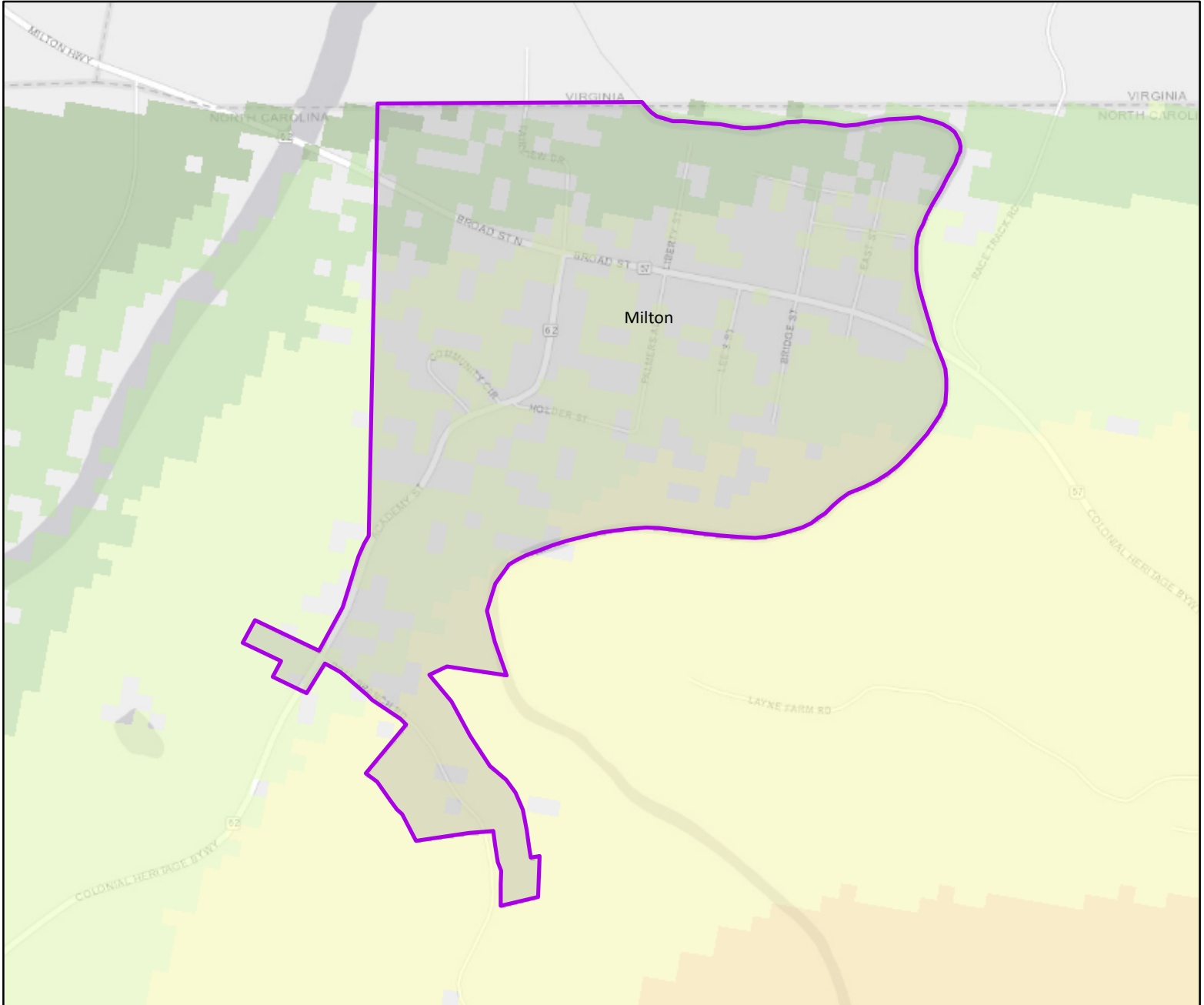
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



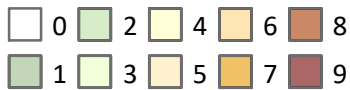
# Milton - Wildfire Ignition Density



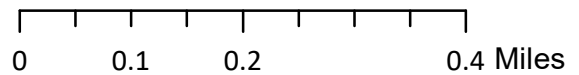
## Legend

-  Municipal Boundary
-  County Boundary

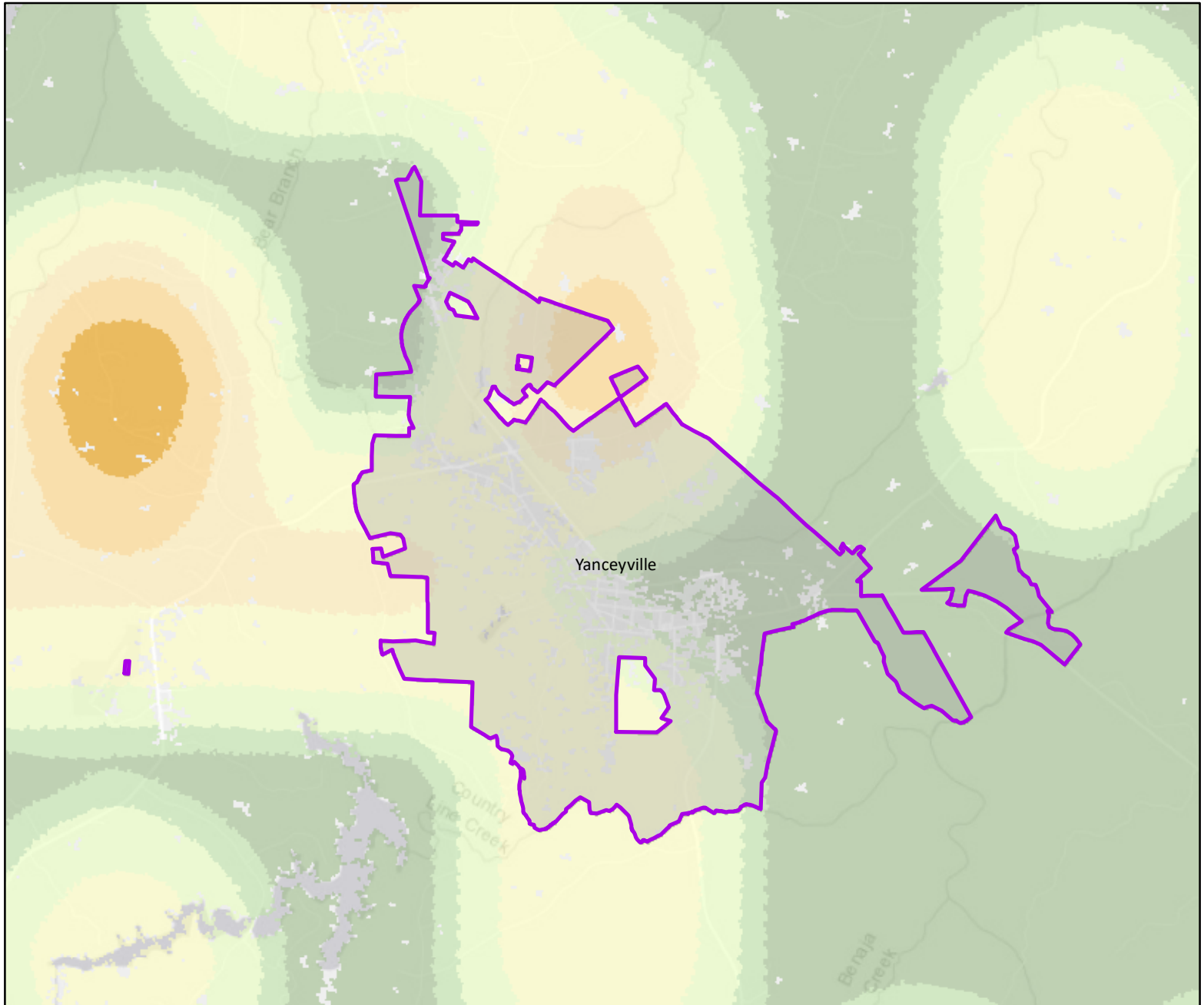
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



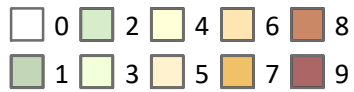
# Yanceyville - Wildfire Ignition Density



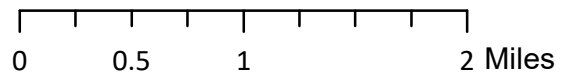
## Legend

-  Municipal Boundary
-  County Boundary

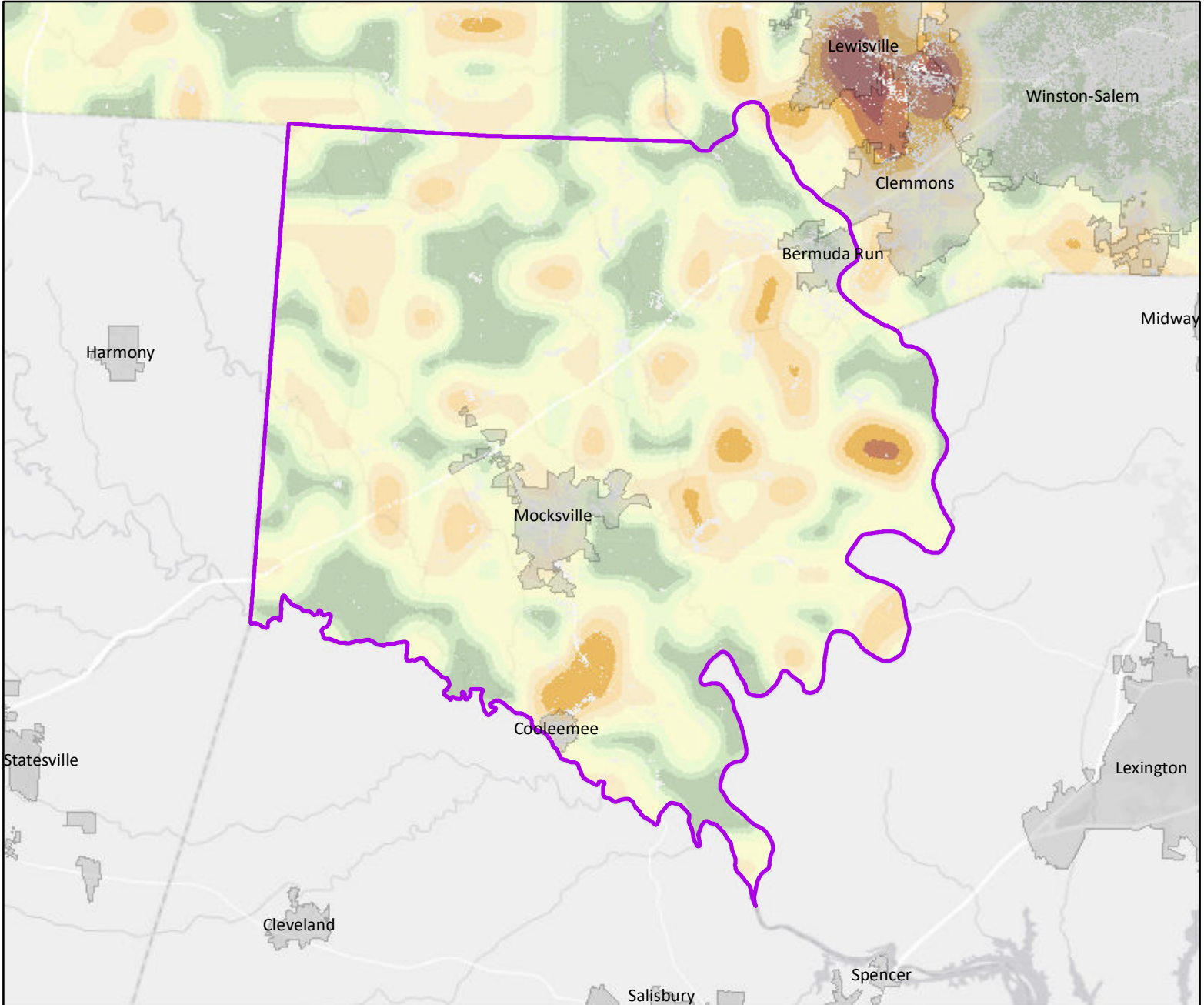
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



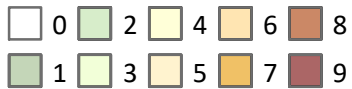
# Davie County - Wildfire Ignition Density



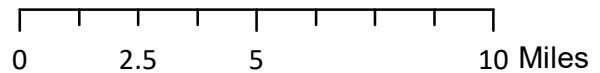
## Legend

- Municipal Boundary
- County Boundary

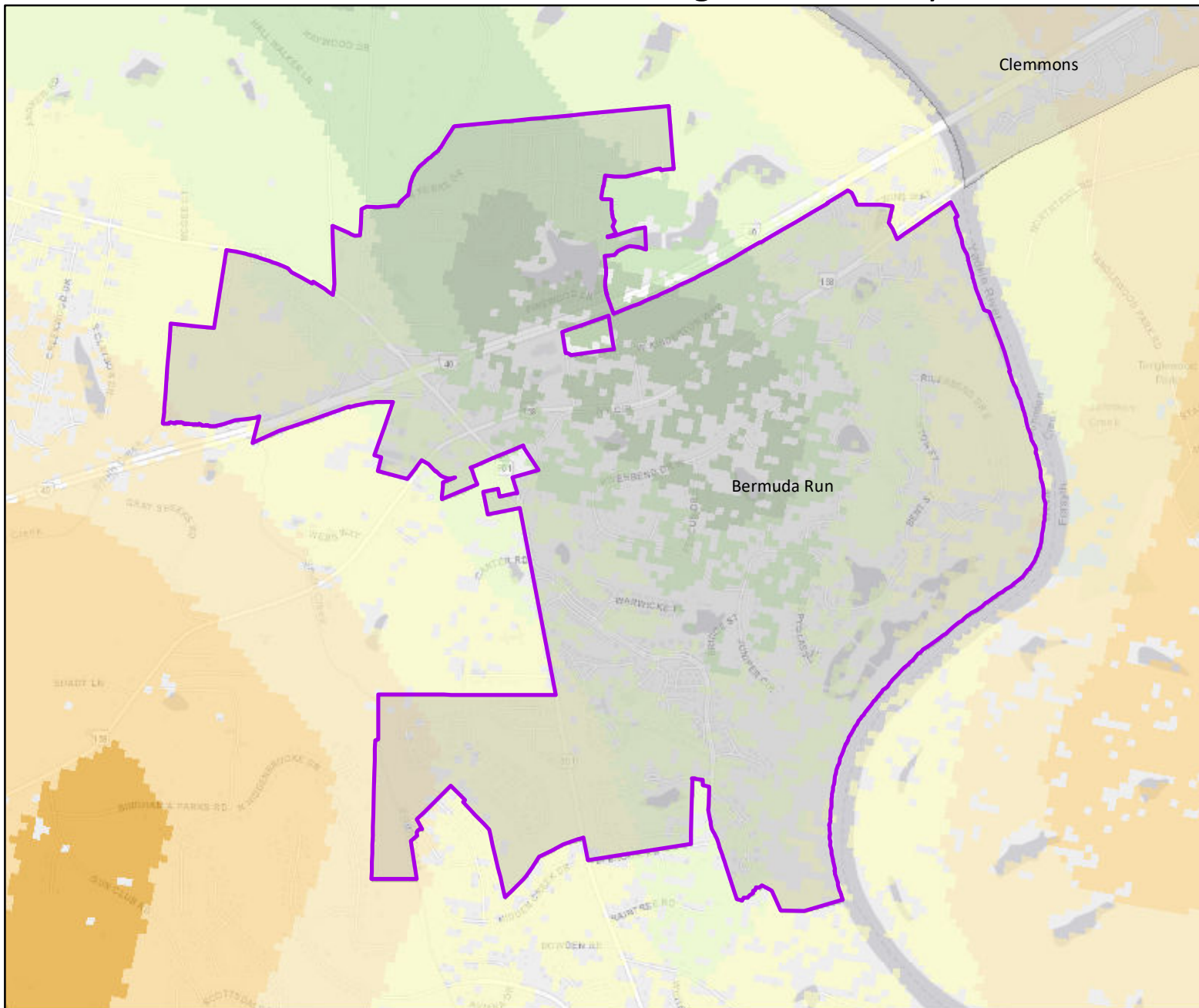
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



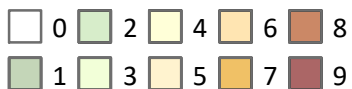
# Bermuda Run - Wildfire Ignition Density



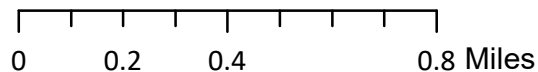
## Legend

-  Municipal Boundary
-  County Boundary

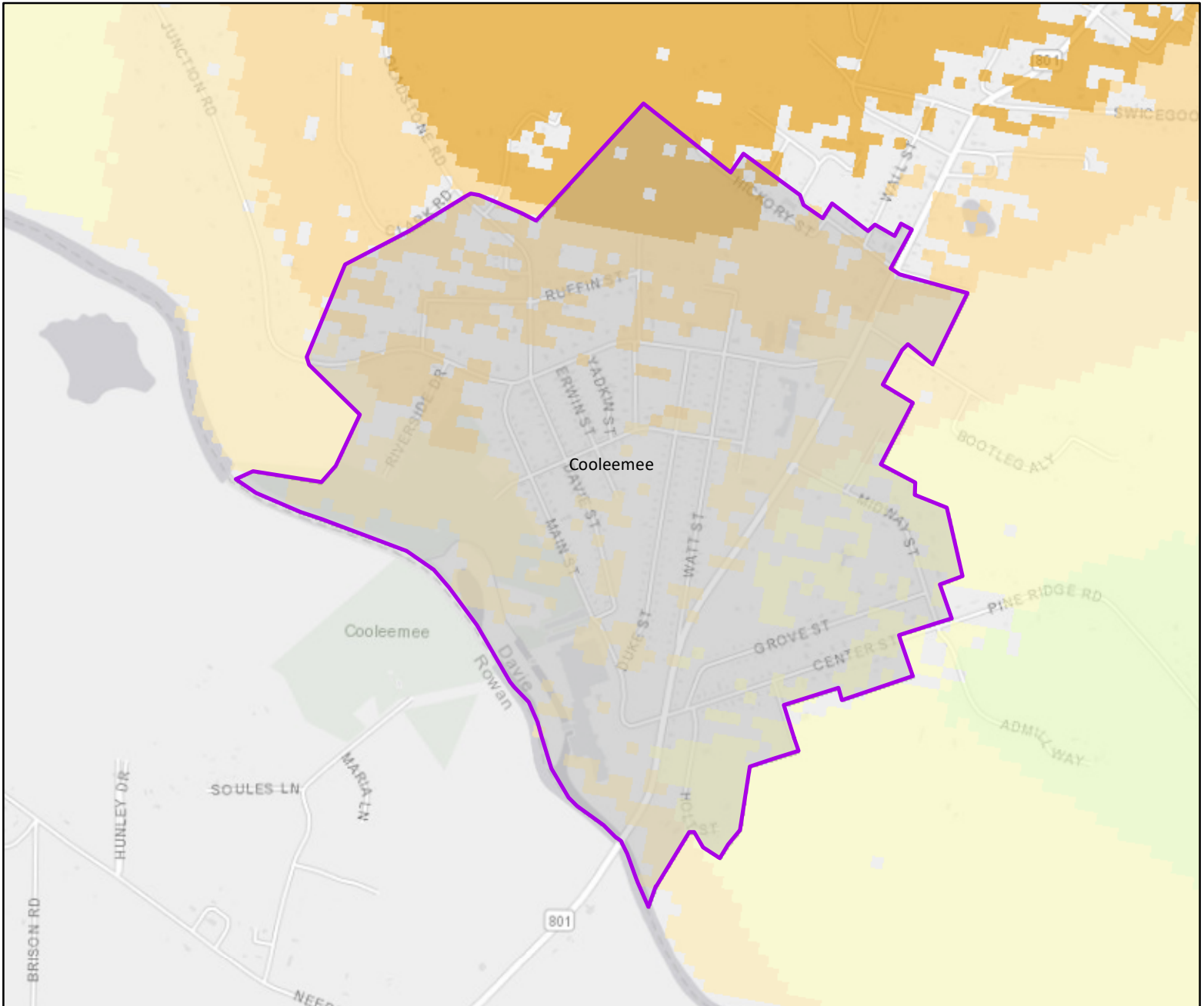
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



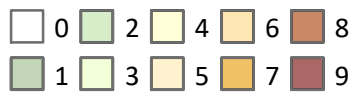
# Coolee - Wildfire Ignition Density



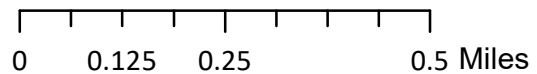
## Legend

-  Municipal Boundary
-  County Boundary

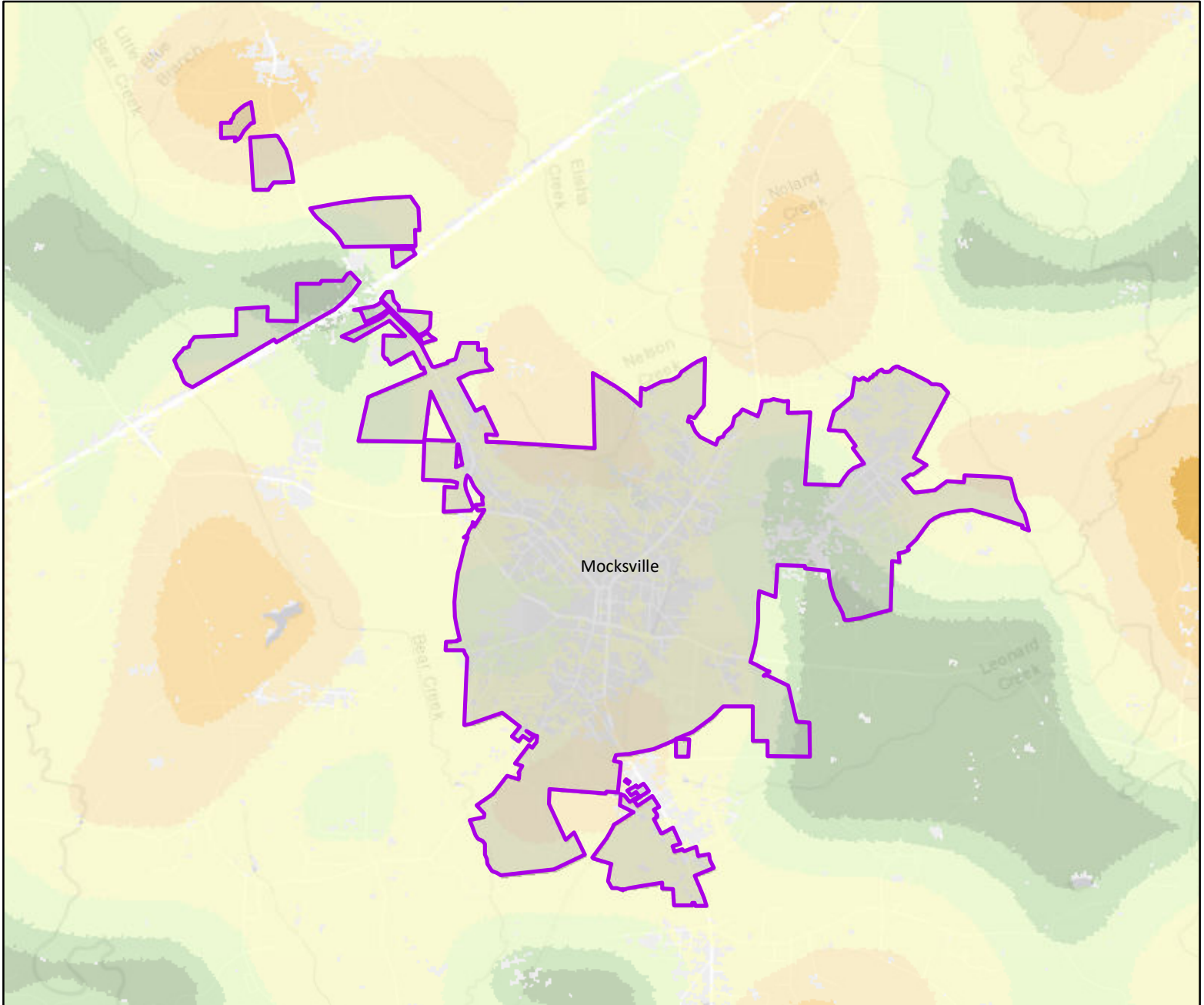
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Mocksville - Wildfire Ignition Density



## Legend

 Municipal Boundary

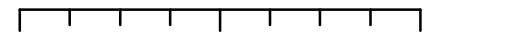
 County Boundary

## Wildfire Ignition Density Index

 0  2  4  6  8

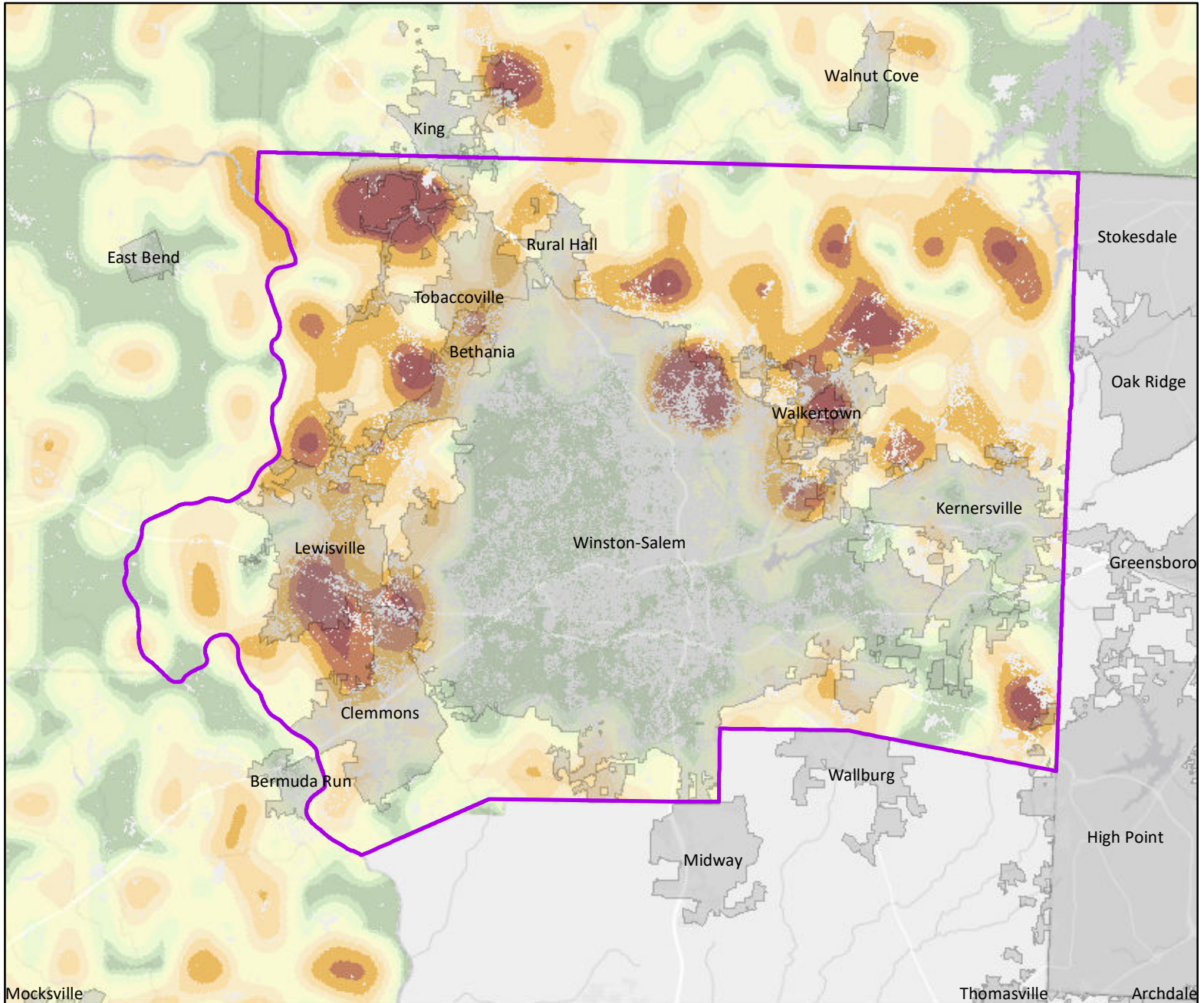
 1  3  5  7  9

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

  
0 0.5 1 2 Miles



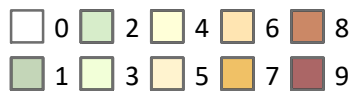
# Forsyth County - Wildfire Ignition Density



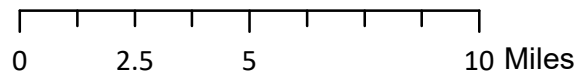
## Legend

- Municipal Boundary
- County Boundary

## Wildfire Ignition Density Index

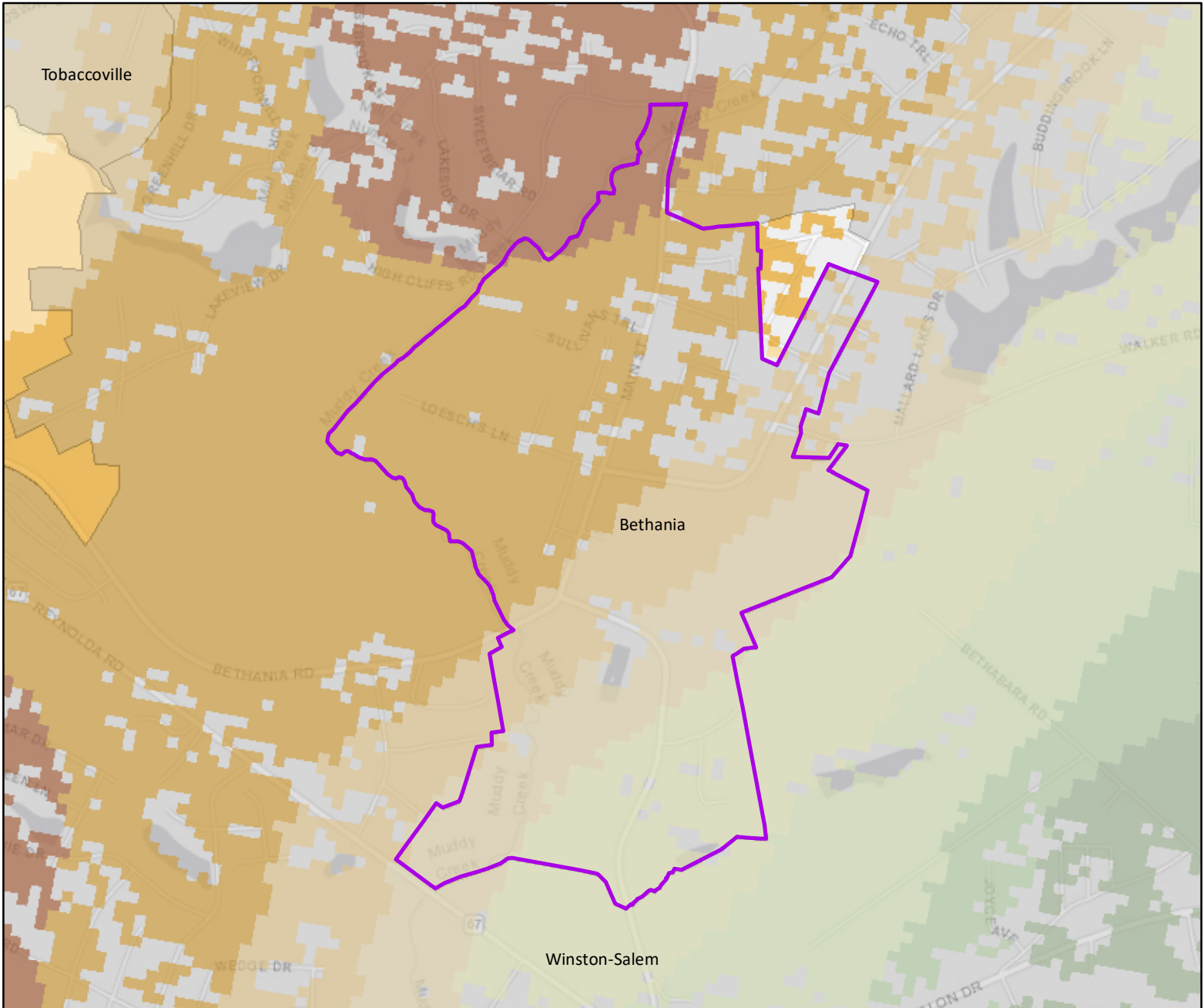


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





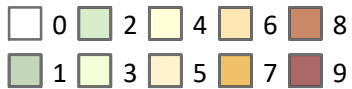
# Bethania - Wildfire Ignition Density



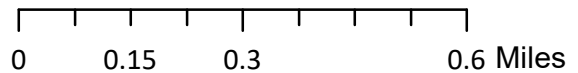
## Legend

- Municipal Boundary
- County Boundary

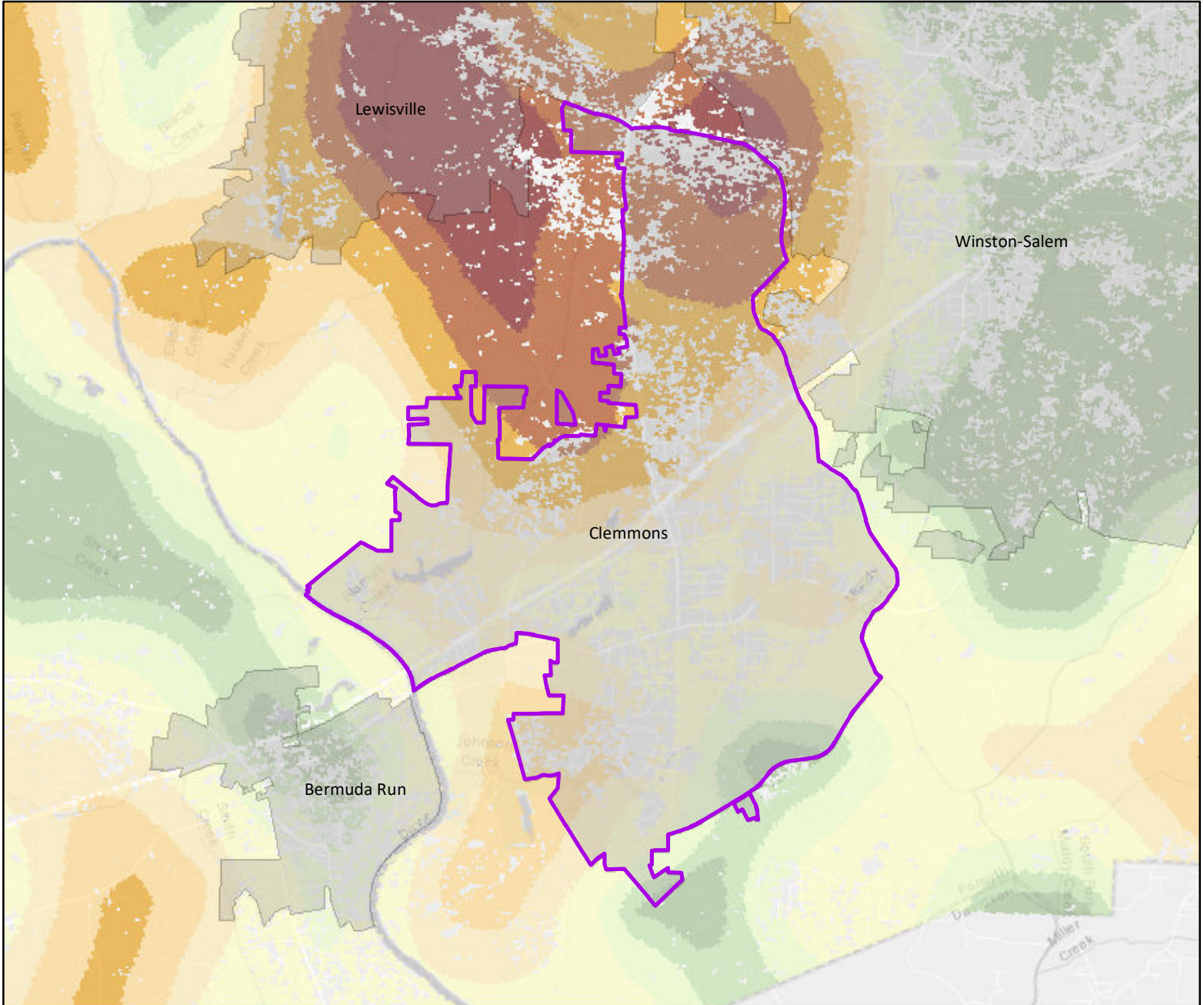
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



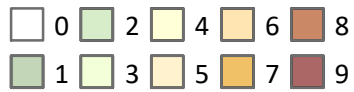
# Clemmons - Wildfire Ignition Density



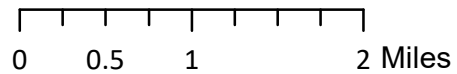
## Legend

-  Municipal Boundary
-  County Boundary

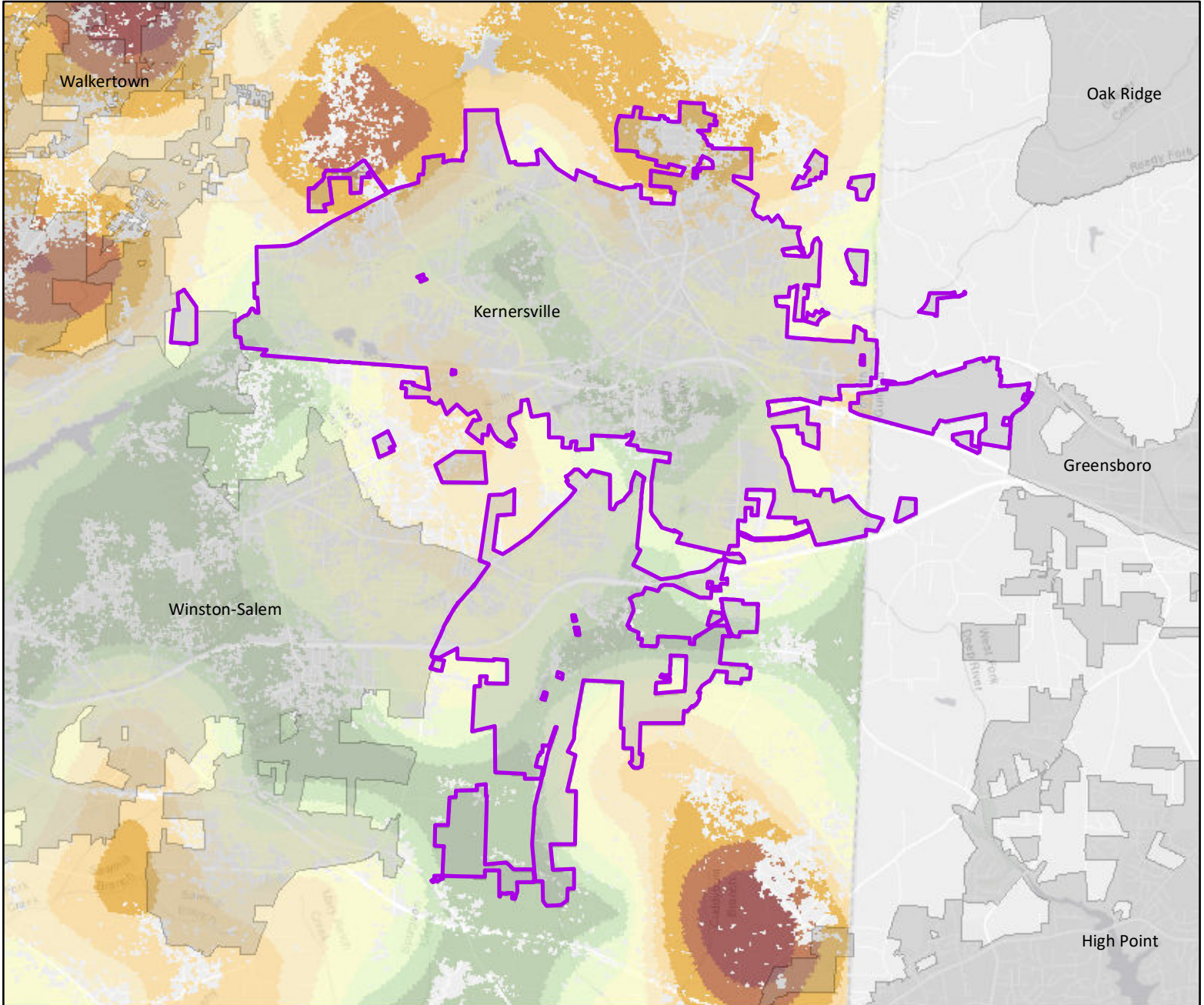
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



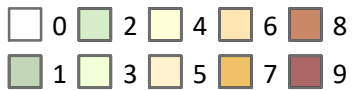
# Kernersville - Wildfire Ignition Density



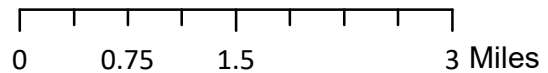
## Legend

- Municipal Boundary
- County Boundary

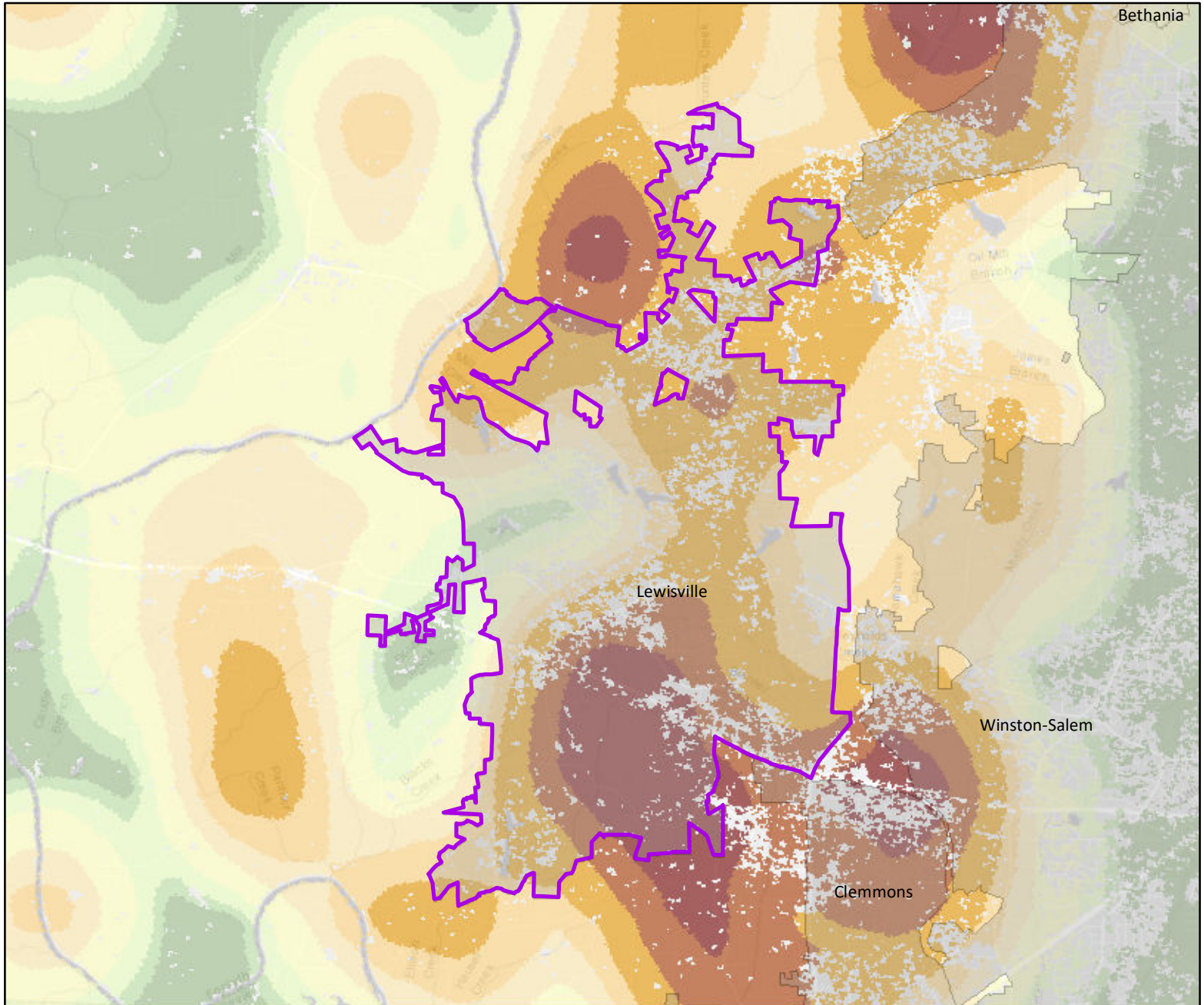
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



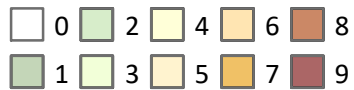
# Lewisville - Wildfire Ignition Density



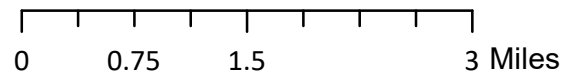
## Legend

- Municipal Boundary
- County Boundary

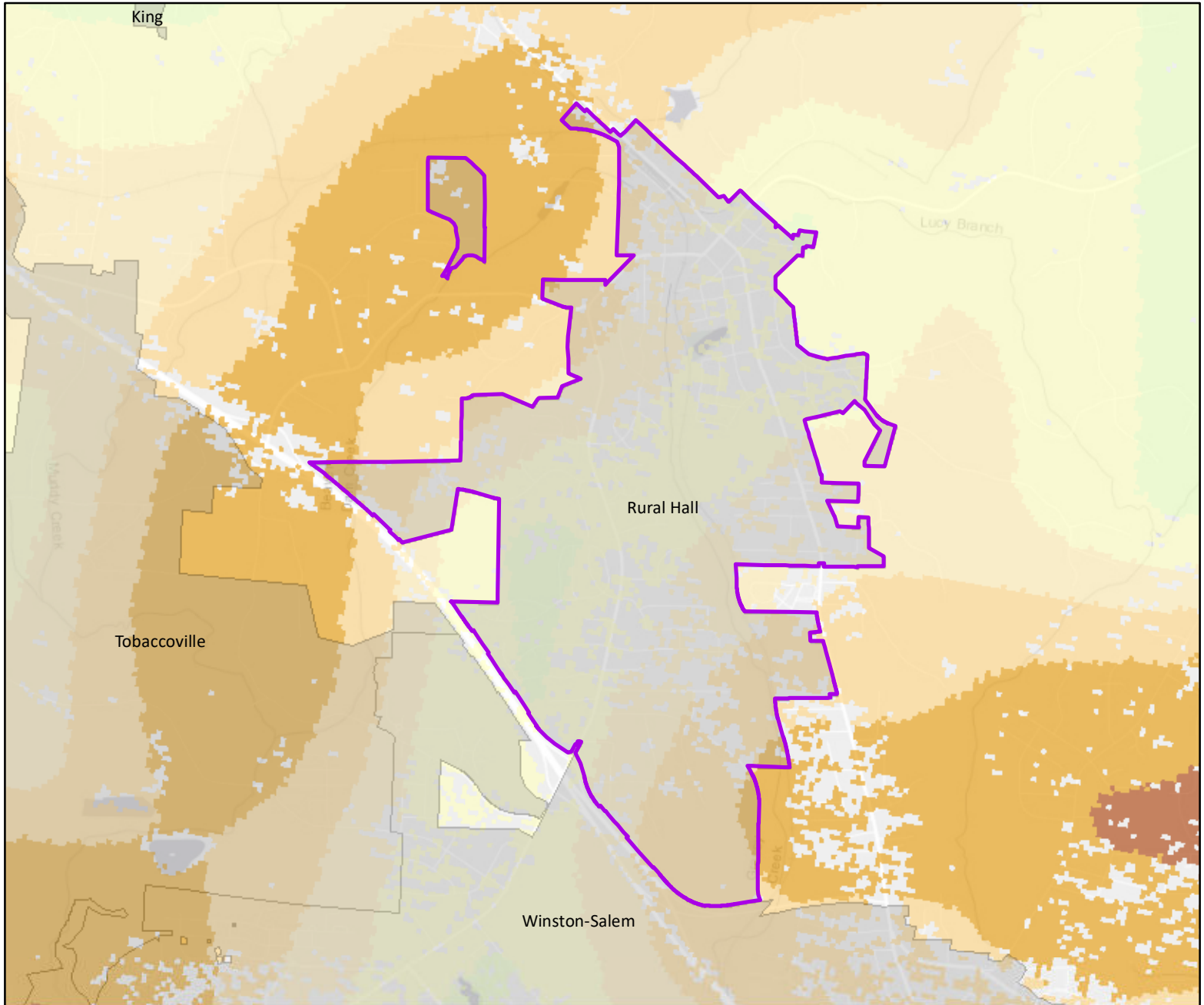
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Rural Hall - Wildfire Ignition Density



## Legend

 Municipal Boundary

 County Boundary

## Wildfire Ignition Density Index

 0

 1

 2

 3

 4

 5

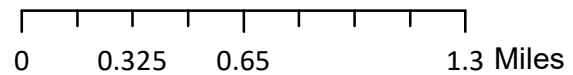
 6

 7

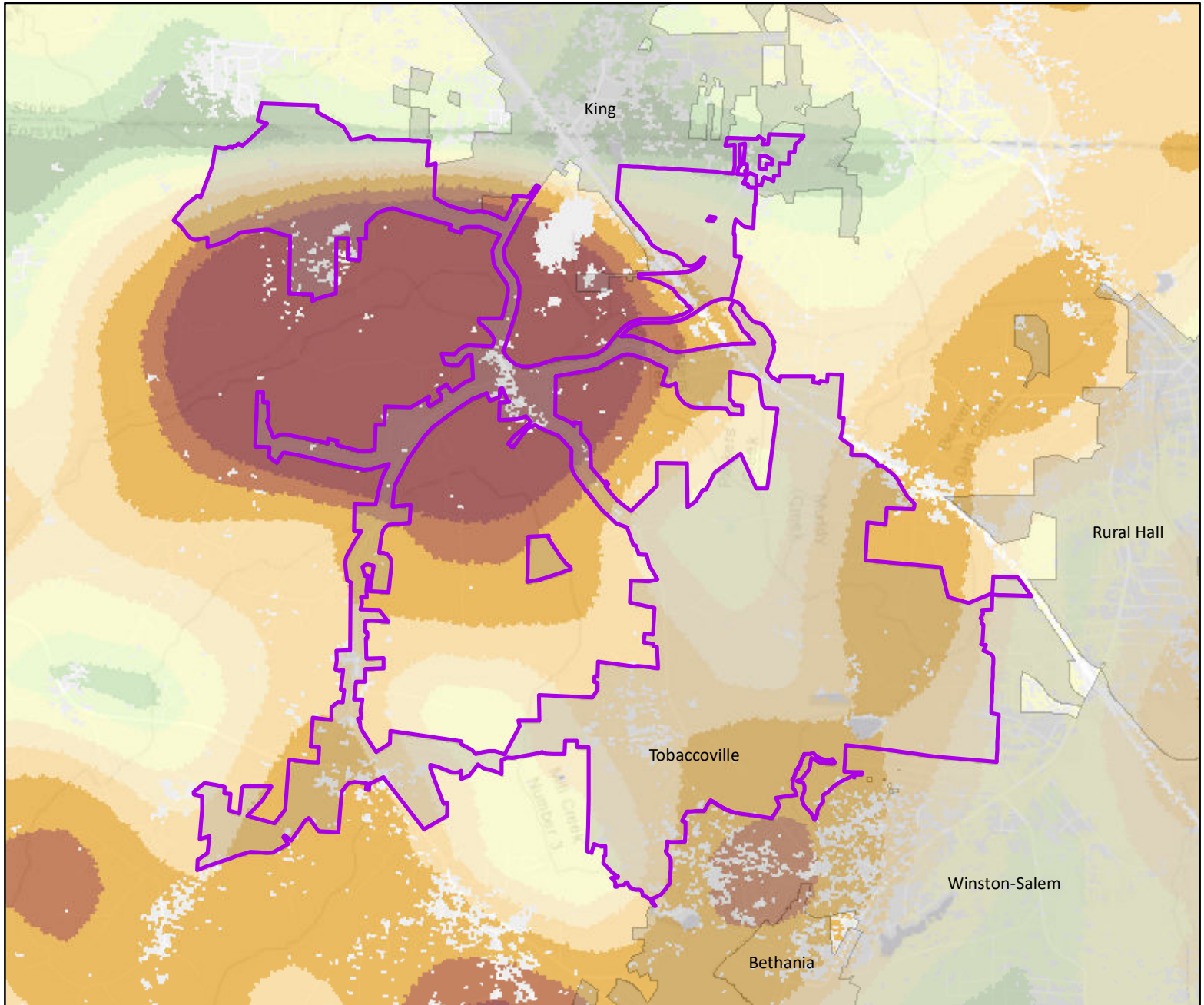
 8

 9

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



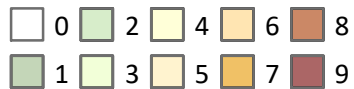
# Tobaccoville - Wildfire Ignition Density



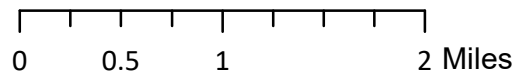
## Legend

- Municipal Boundary
- County Boundary

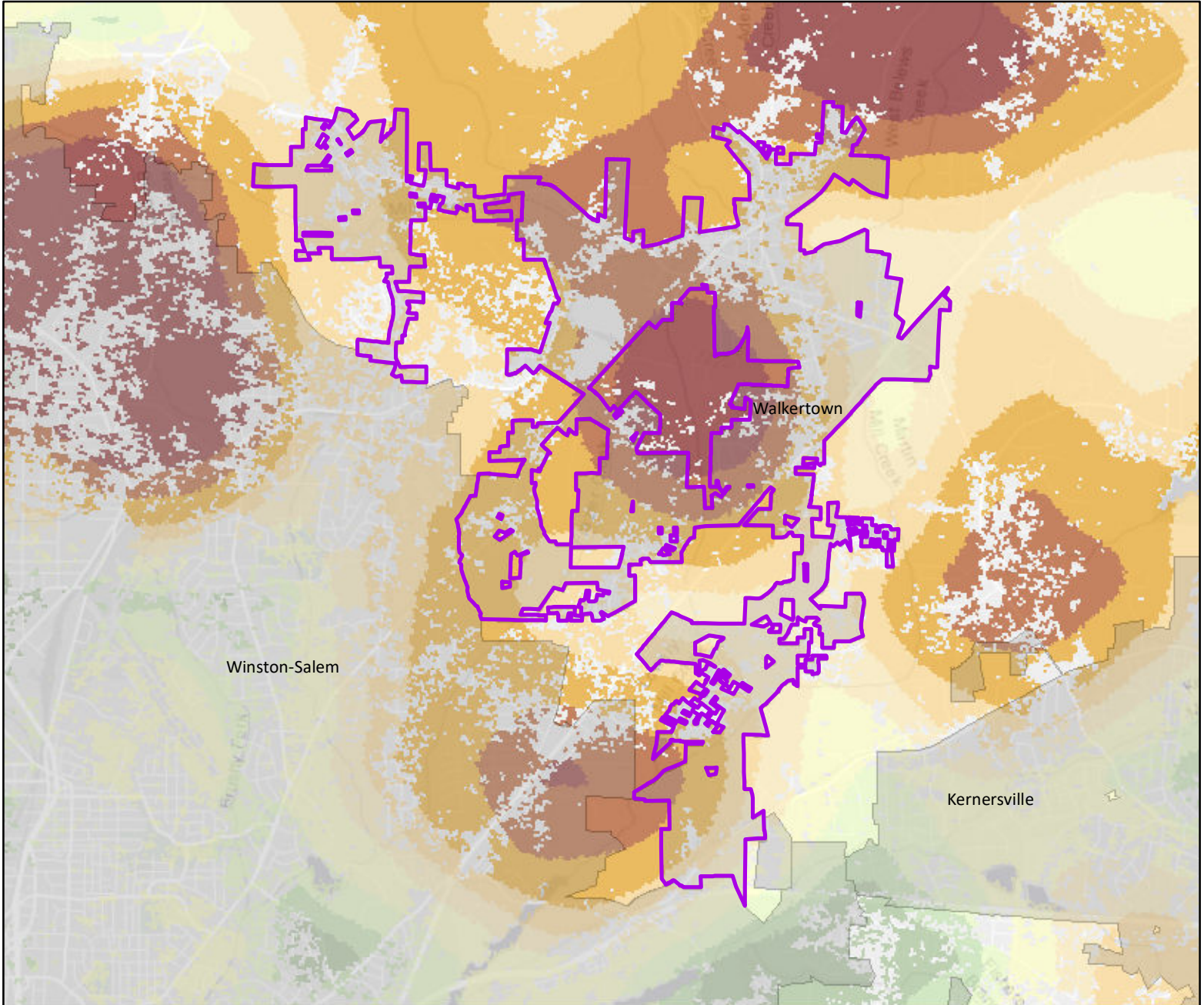
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



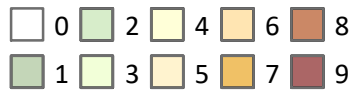
# Walkertown - Wildfire Ignition Density



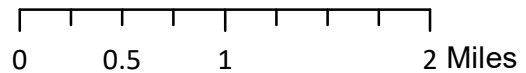
## Legend

- Municipal Boundary
- County Boundary

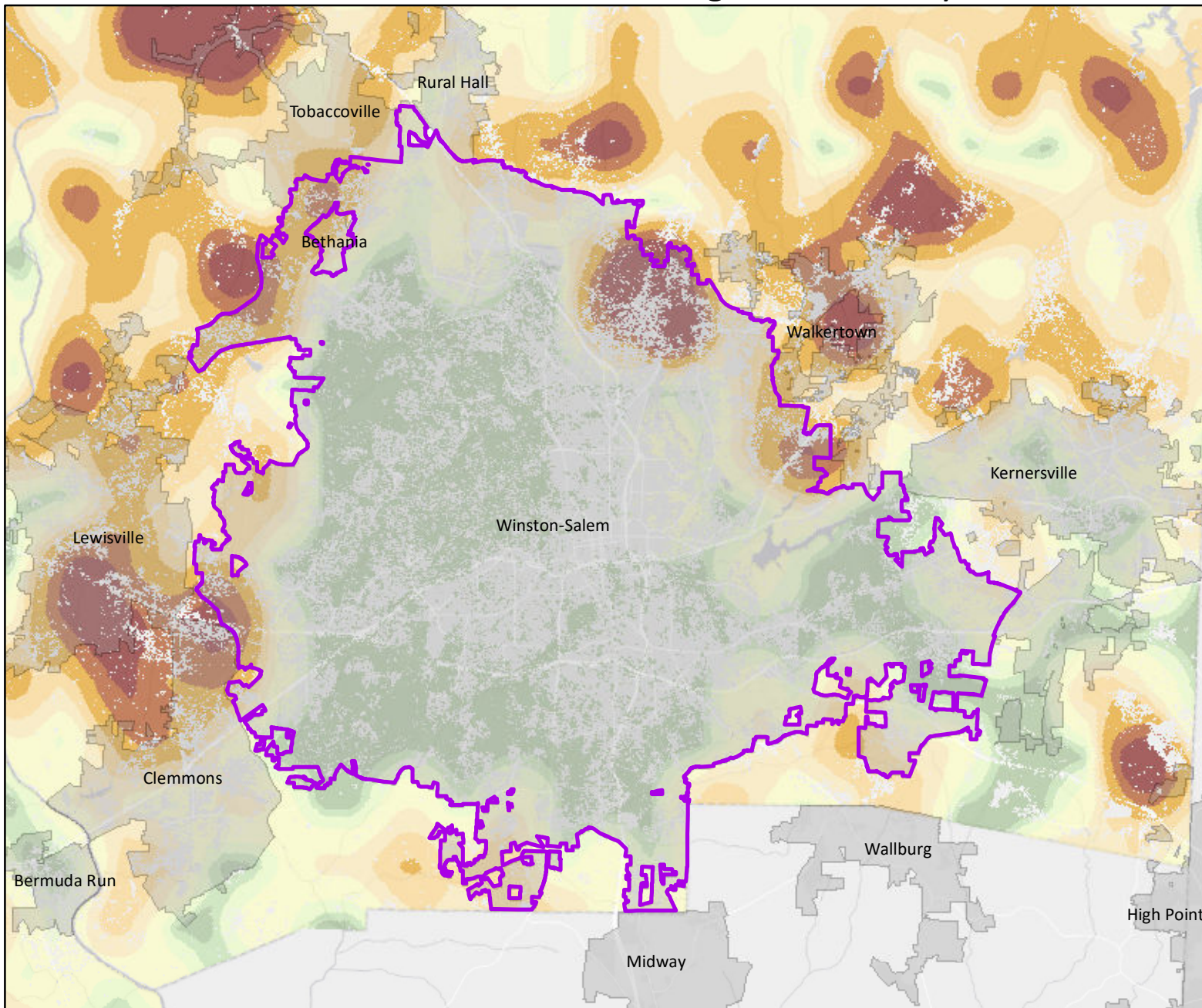
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Winston-Salem - Wildfire Ignition Density



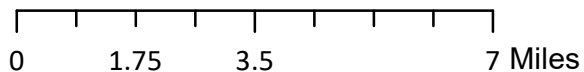
## Legend

- Municipal Boundary
- County Boundary

## Wildfire Ignition Density Index

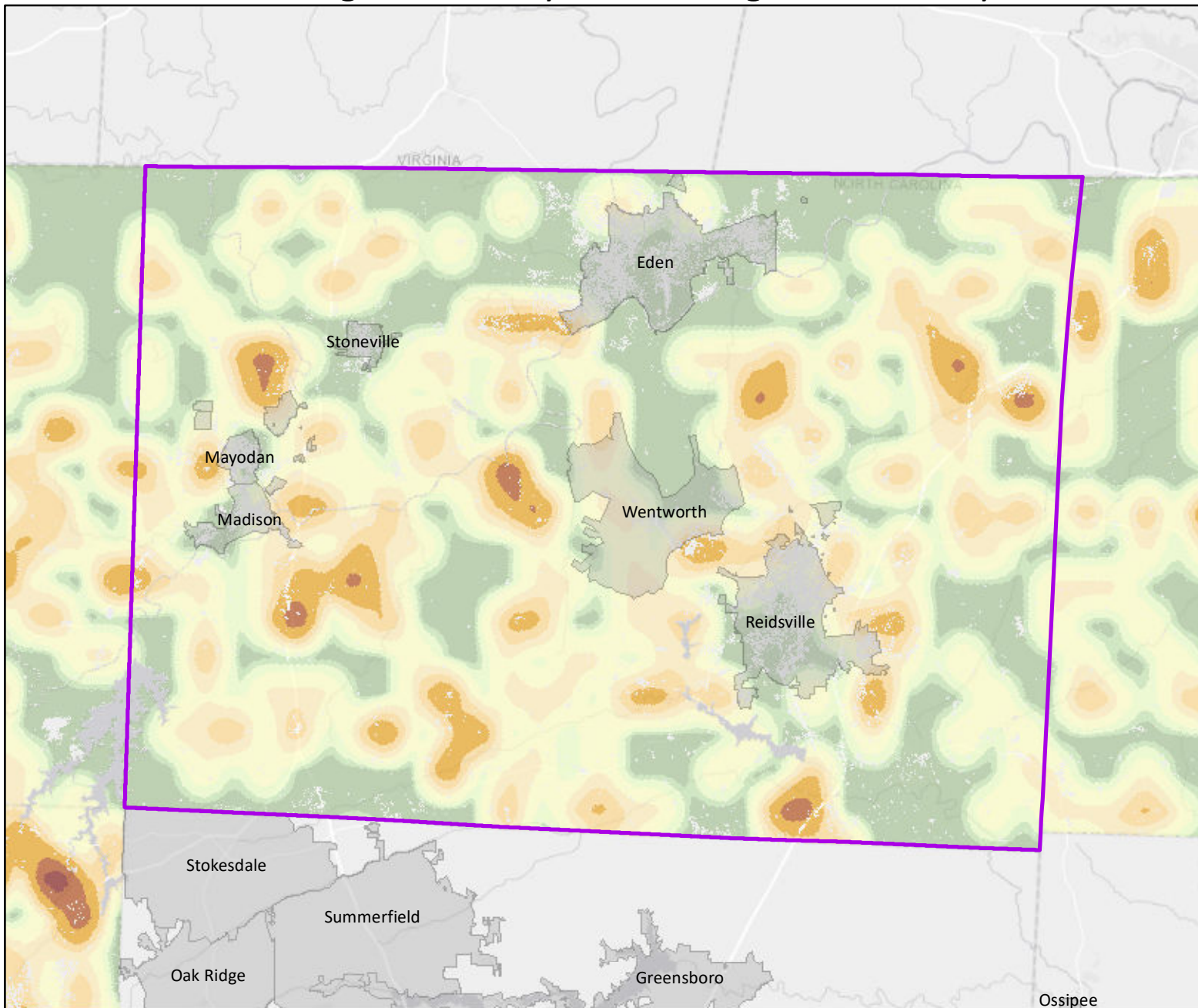


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





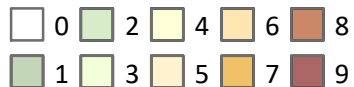
# Rockingham County - Wildfire Ignition Density



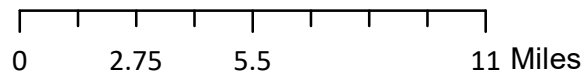
## Legend

- Municipal Boundary
- County Boundary

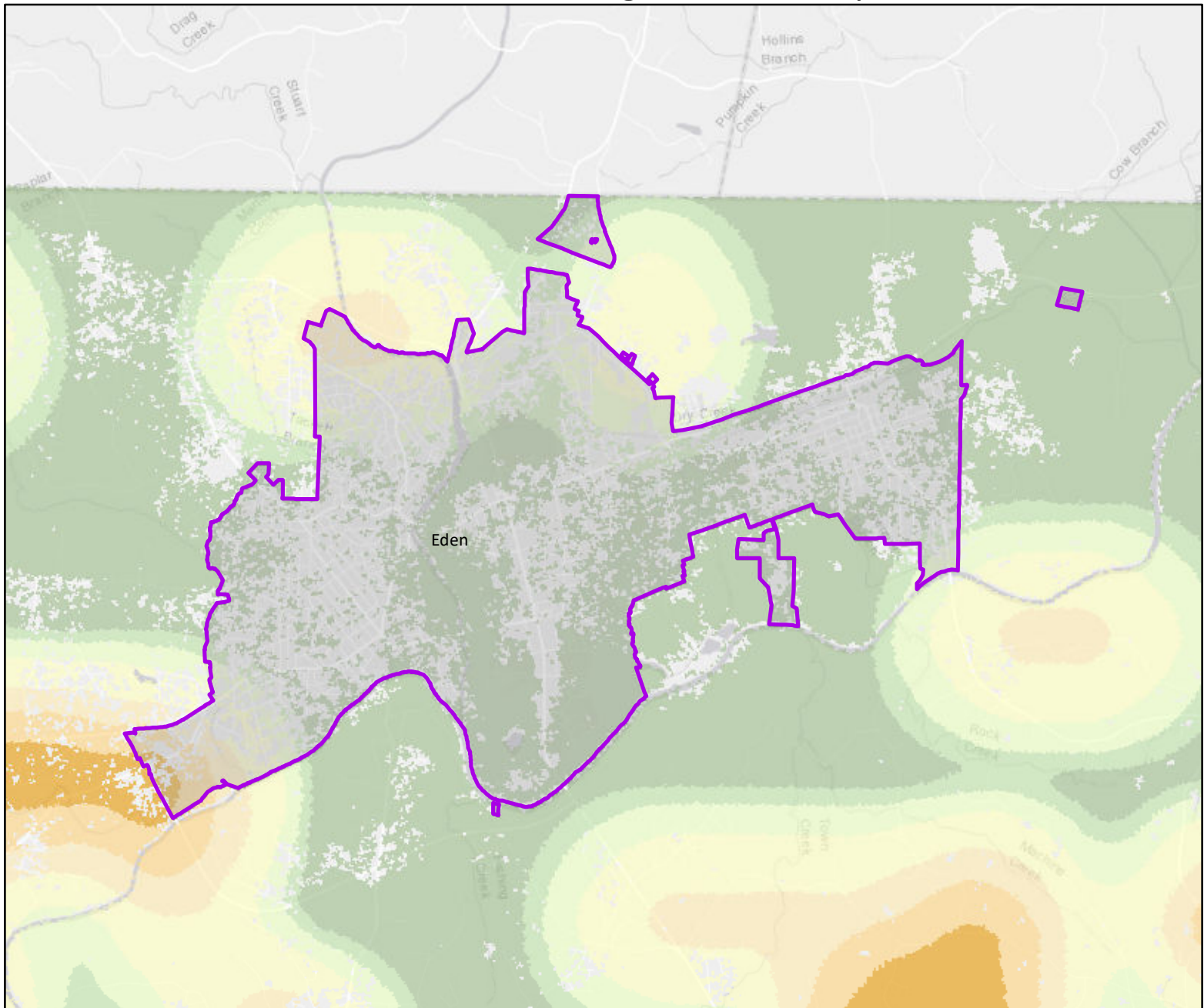
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



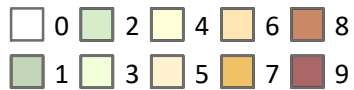
# Eden - Wildfire Ignition Density



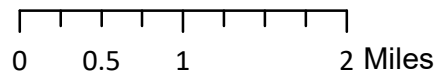
## Legend

-  Municipal Boundary
-  County Boundary

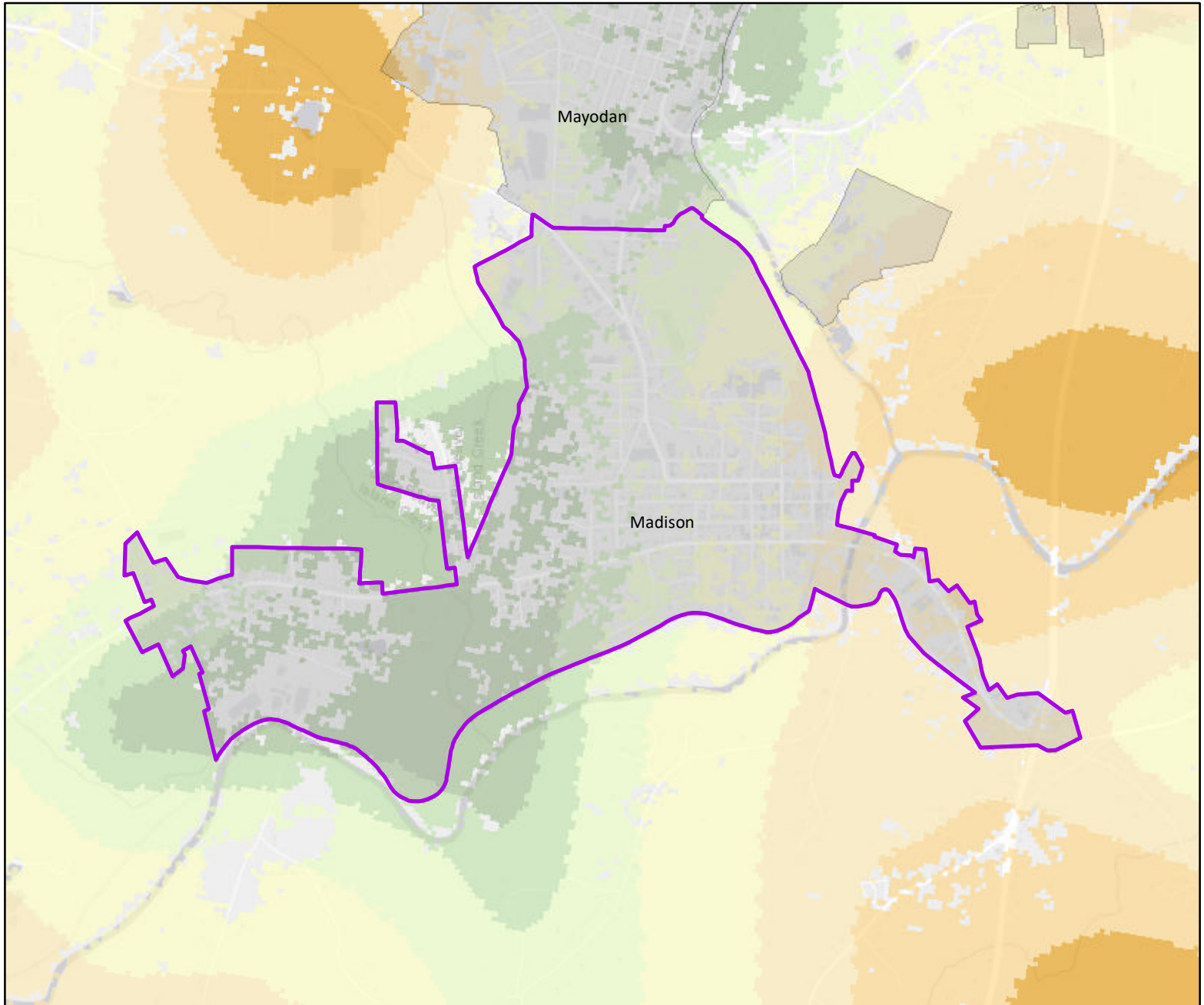
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



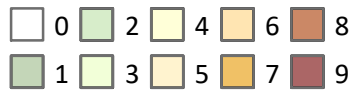
# Madison - Wildfire Ignition Density



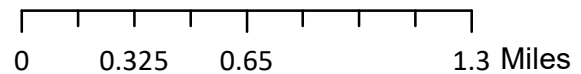
## Legend

-  Municipal Boundary
-  County Boundary

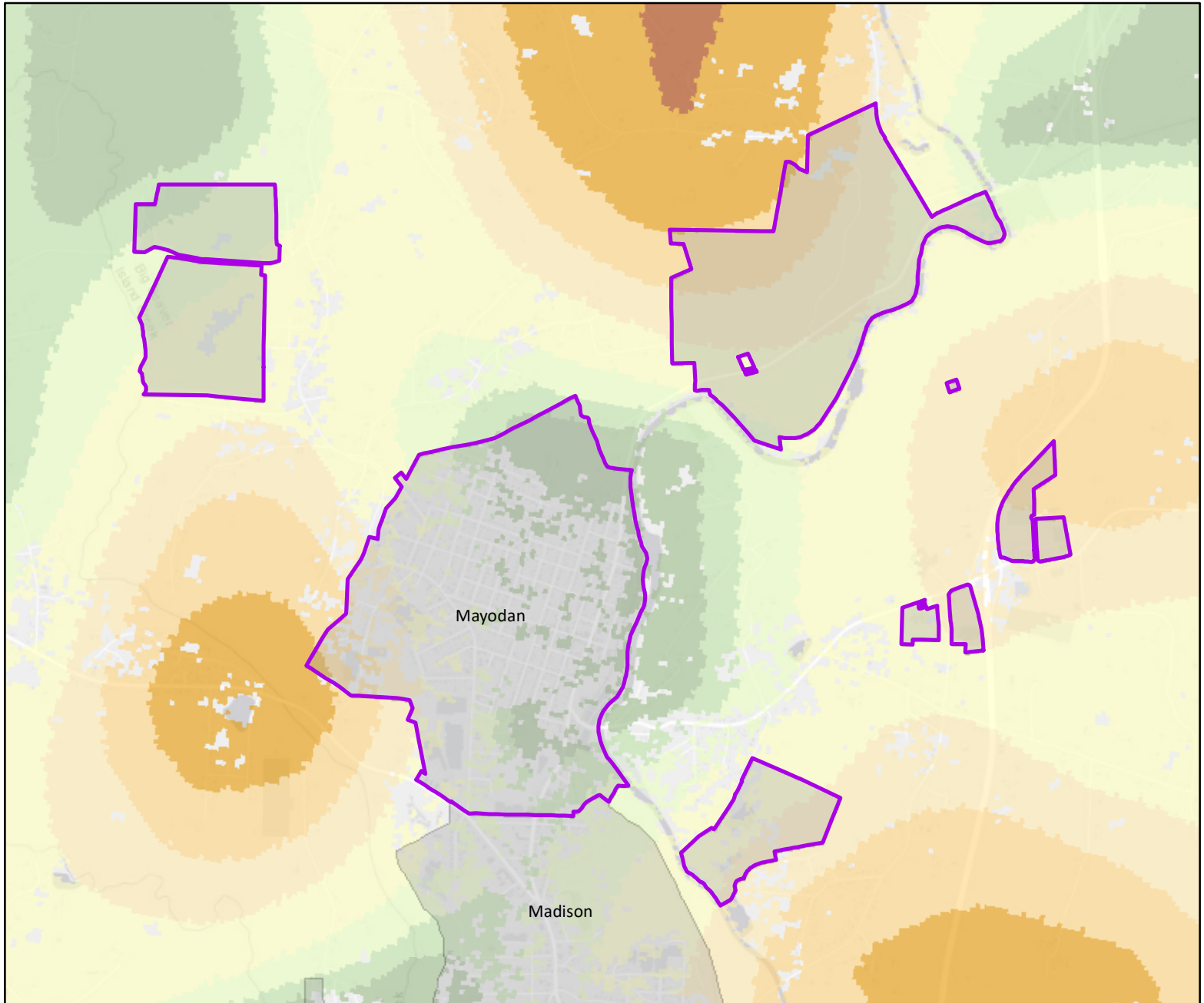
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



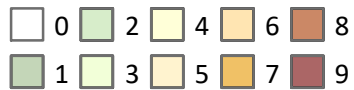
# Mayodan - Wildfire Ignition Density



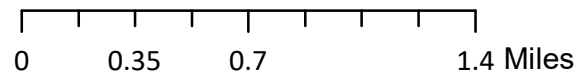
## Legend

-  Municipal Boundary
-  County Boundary

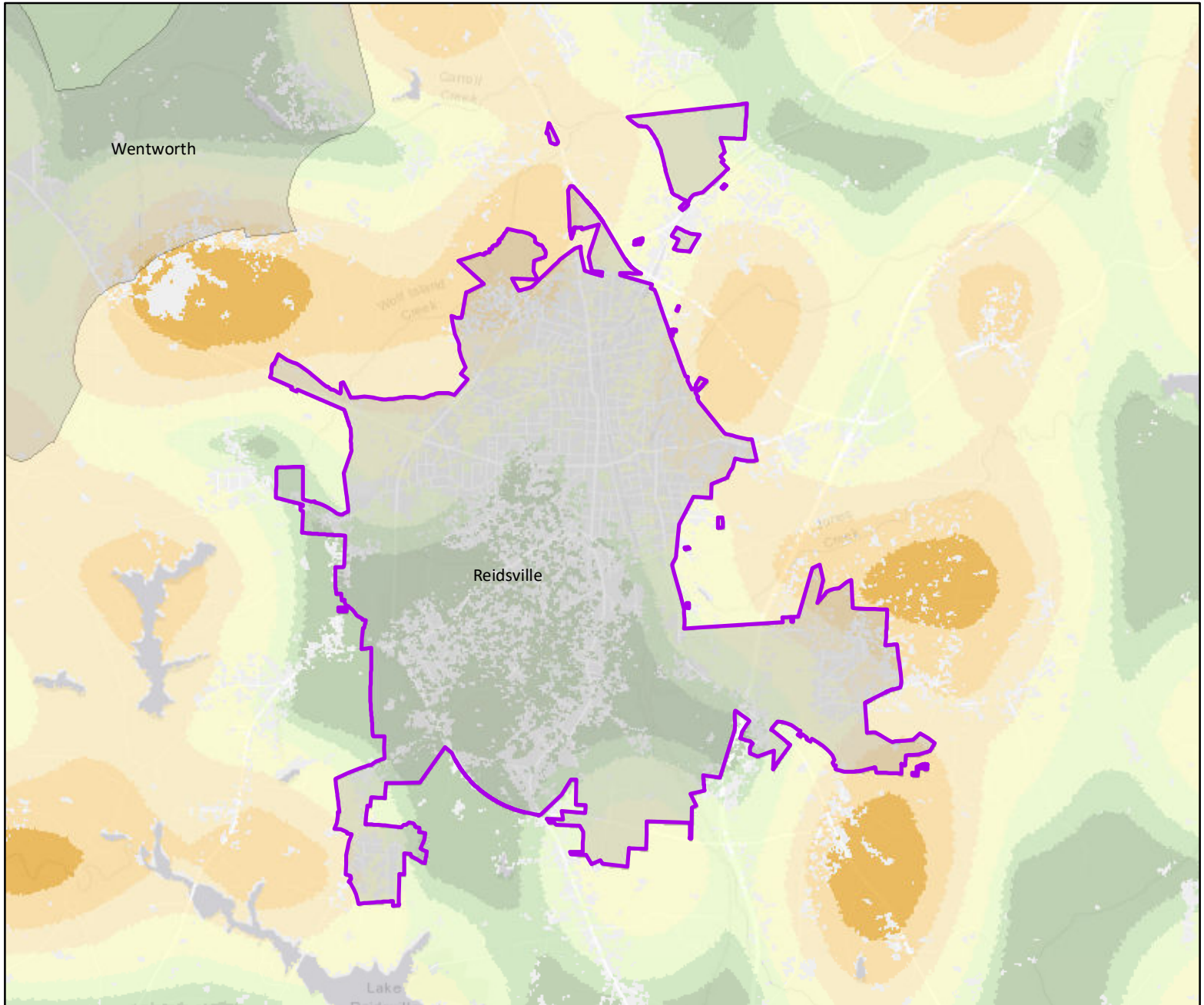
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



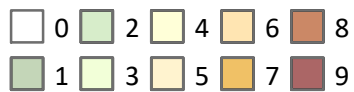
# Reidsville - Wildfire Ignition Density



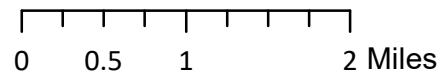
## Legend

-  Municipal Boundary
-  County Boundary

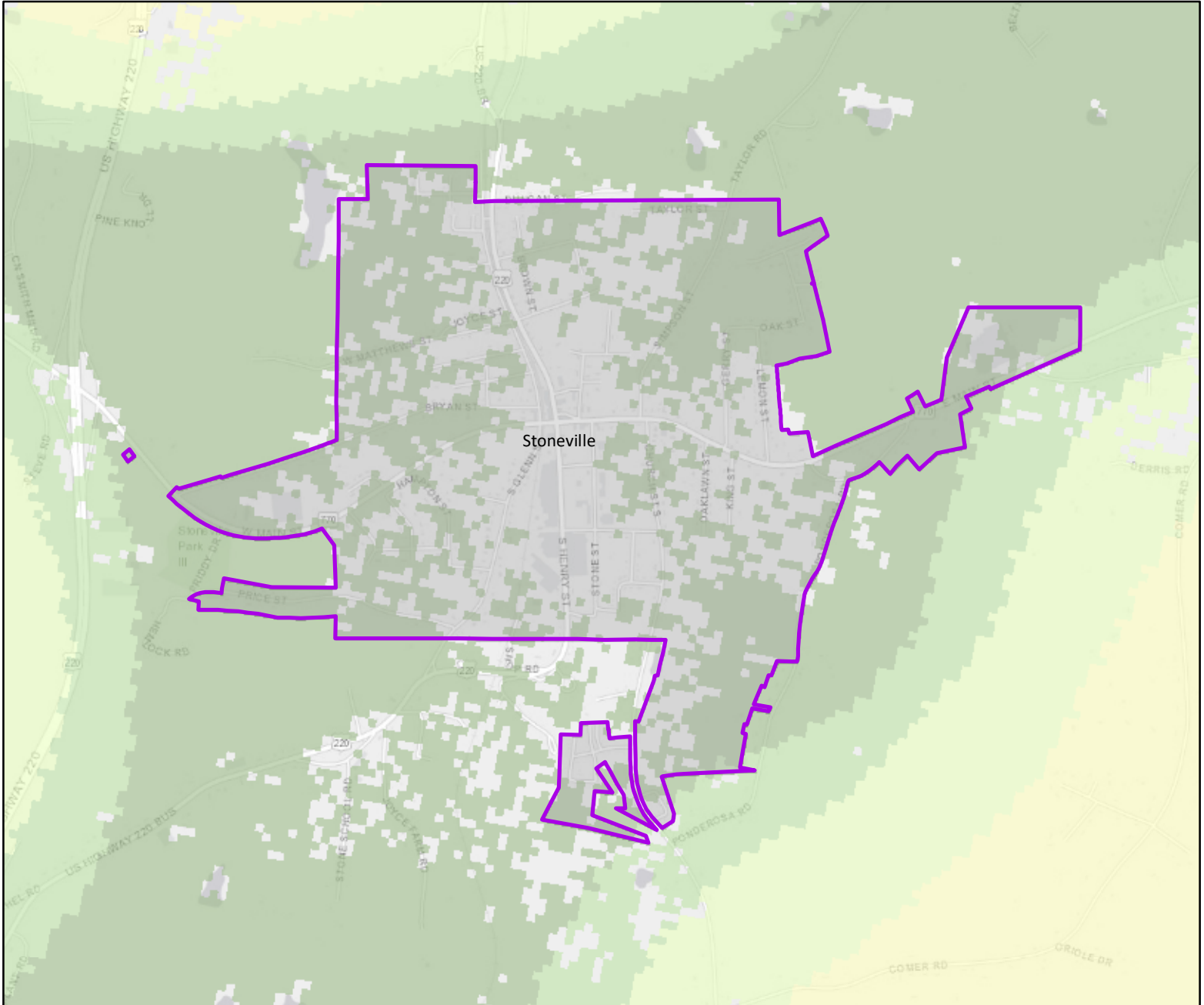
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



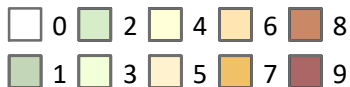
# Stoneville - Wildfire Ignition Density



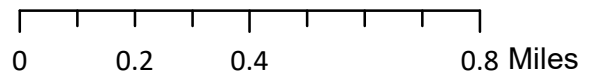
## Legend

-  Municipal Boundary
-  County Boundary

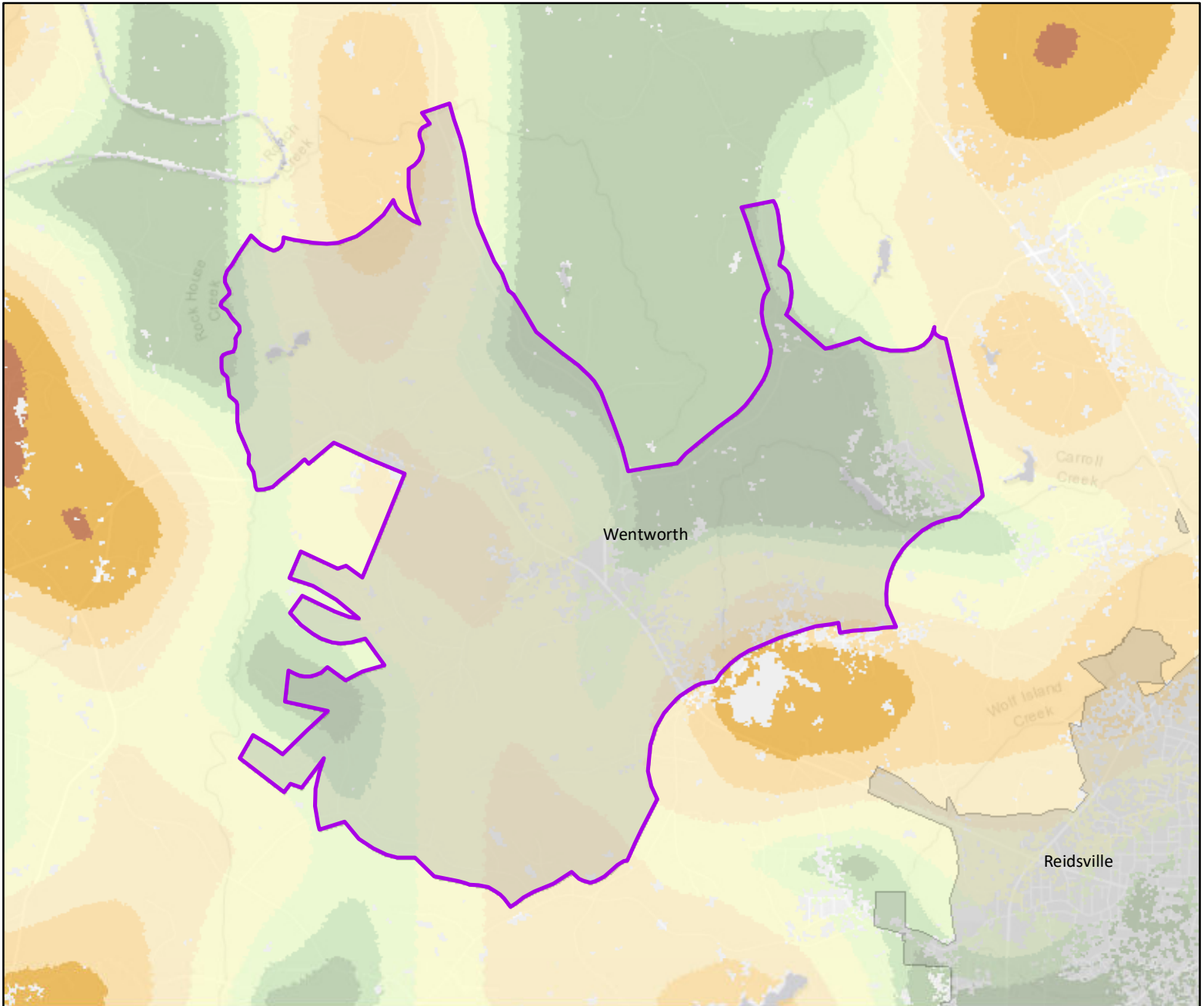
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Wentworth - Wildfire Ignition Density



## Legend

 Municipal Boundary

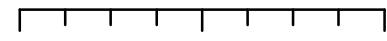
 County Boundary

## Wildfire Ignition Density Index

 0  2  4  6  8

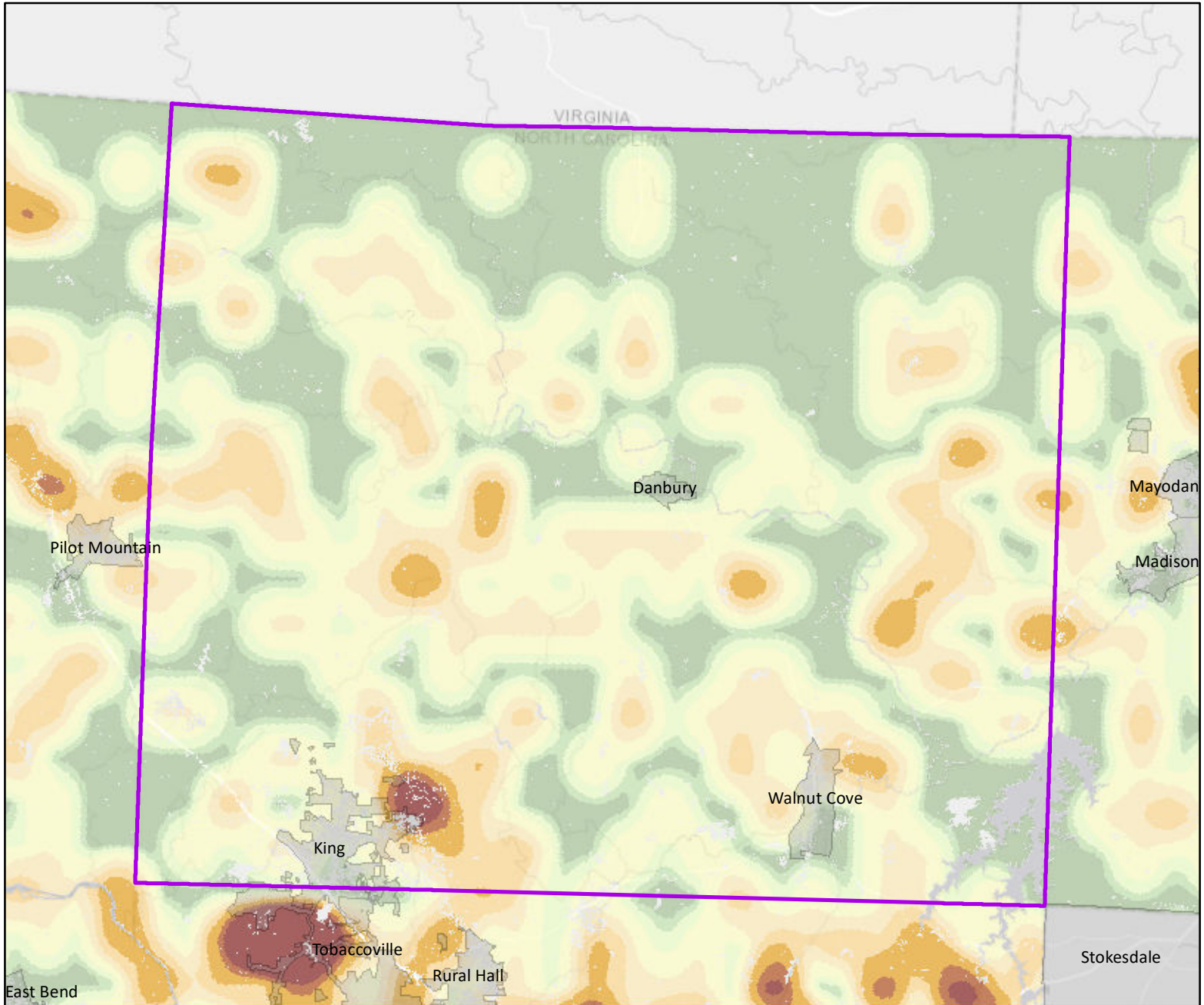
 1  3  5  7  9

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



  
0 0.5 1 2 Miles



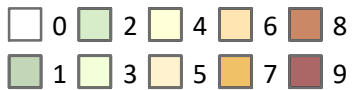
# Stokes County - Wildfire Ignition Density



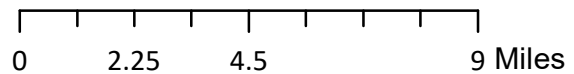
## Legend

-  Municipal Boundary
-  County Boundary

## Wildfire Ignition Density Index

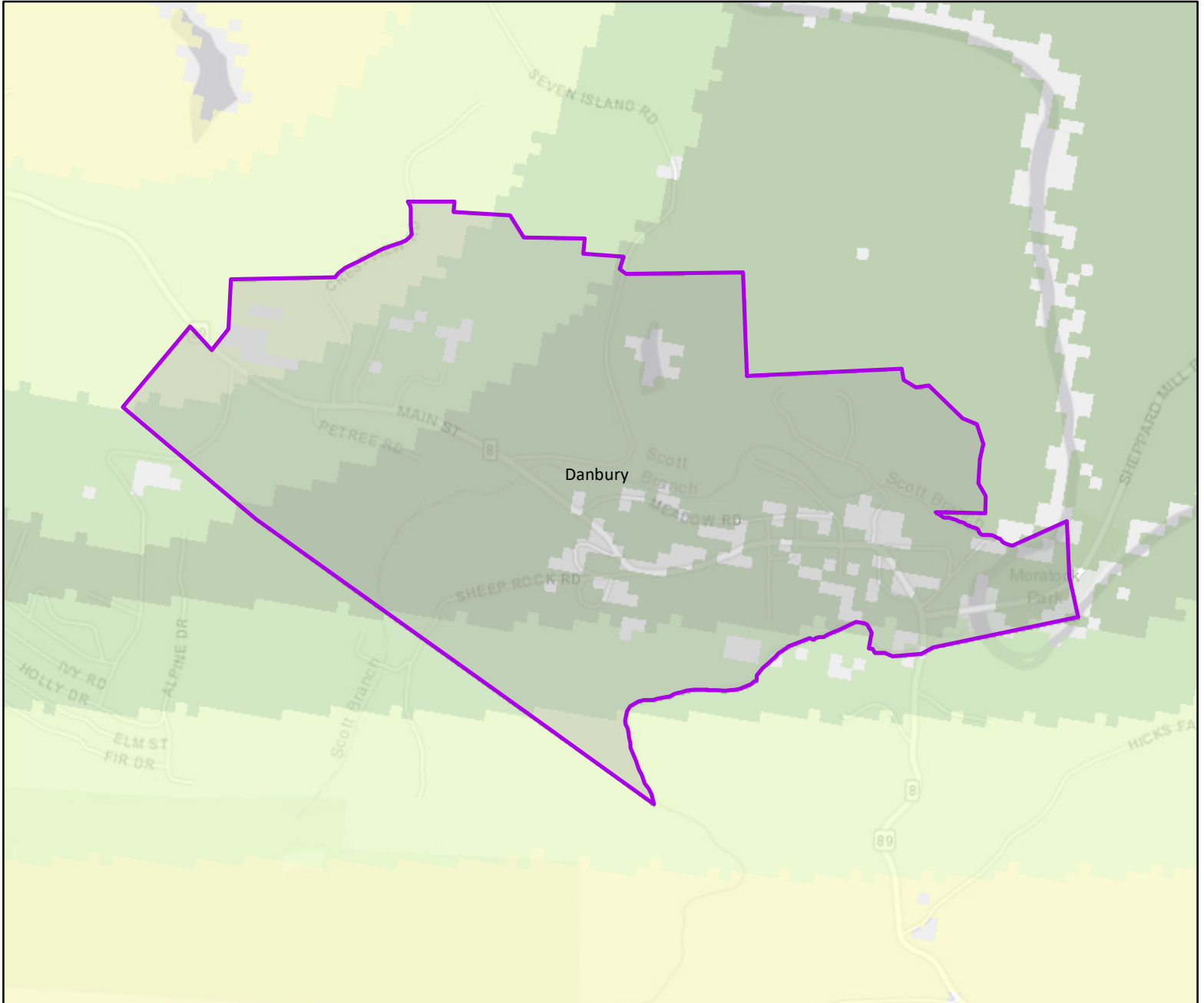


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







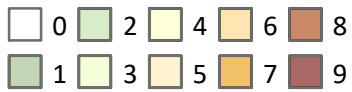
# Danbury - Wildfire Ignition Density



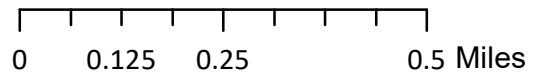
## Legend

-  Municipal Boundary
-  County Boundary

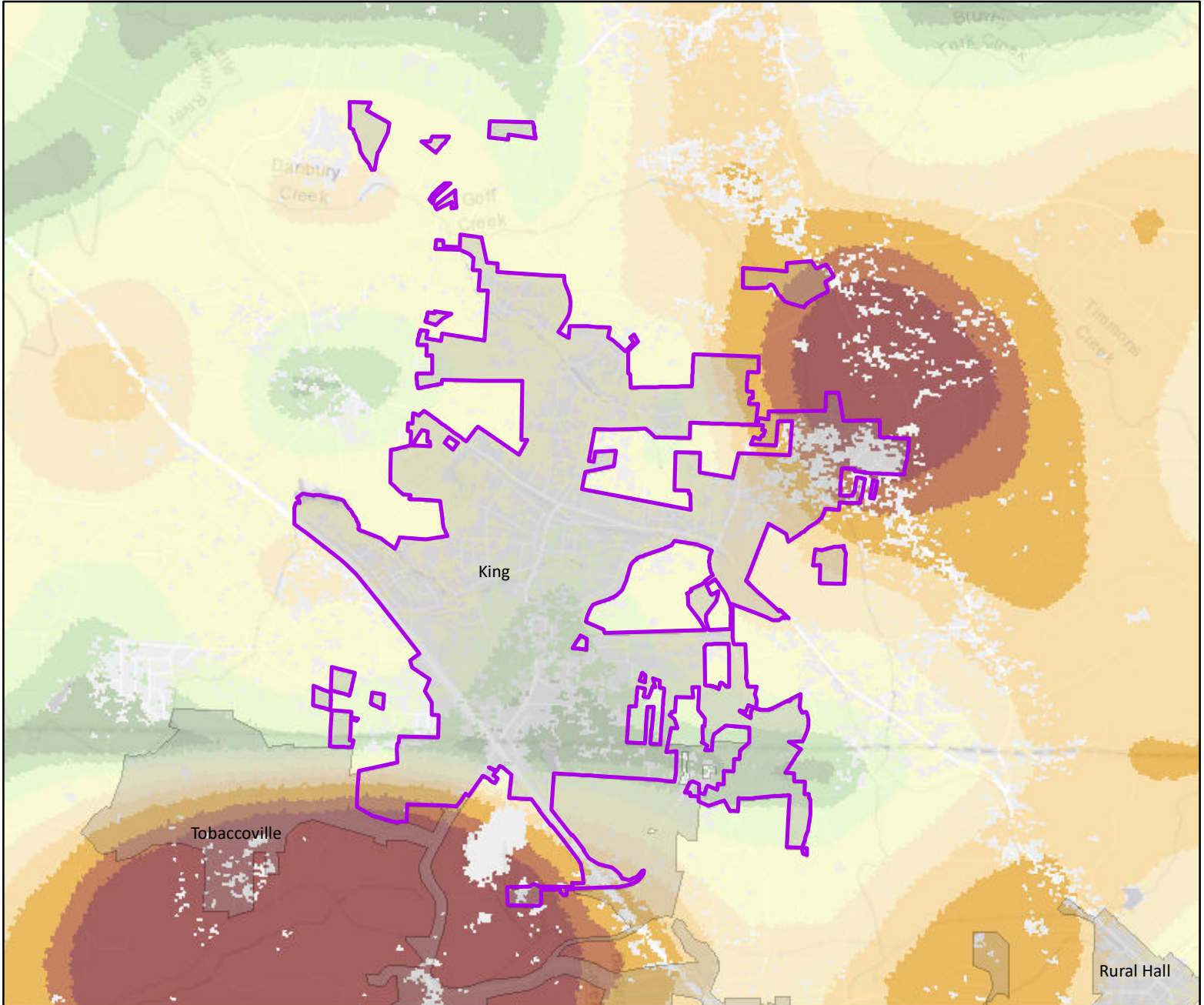
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



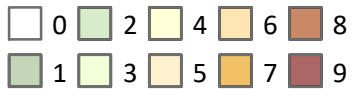
# King - Wildfire Ignition Density



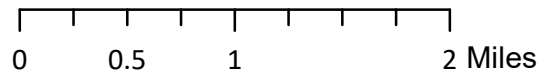
## Legend

-  Municipal Boundary
-  County Boundary

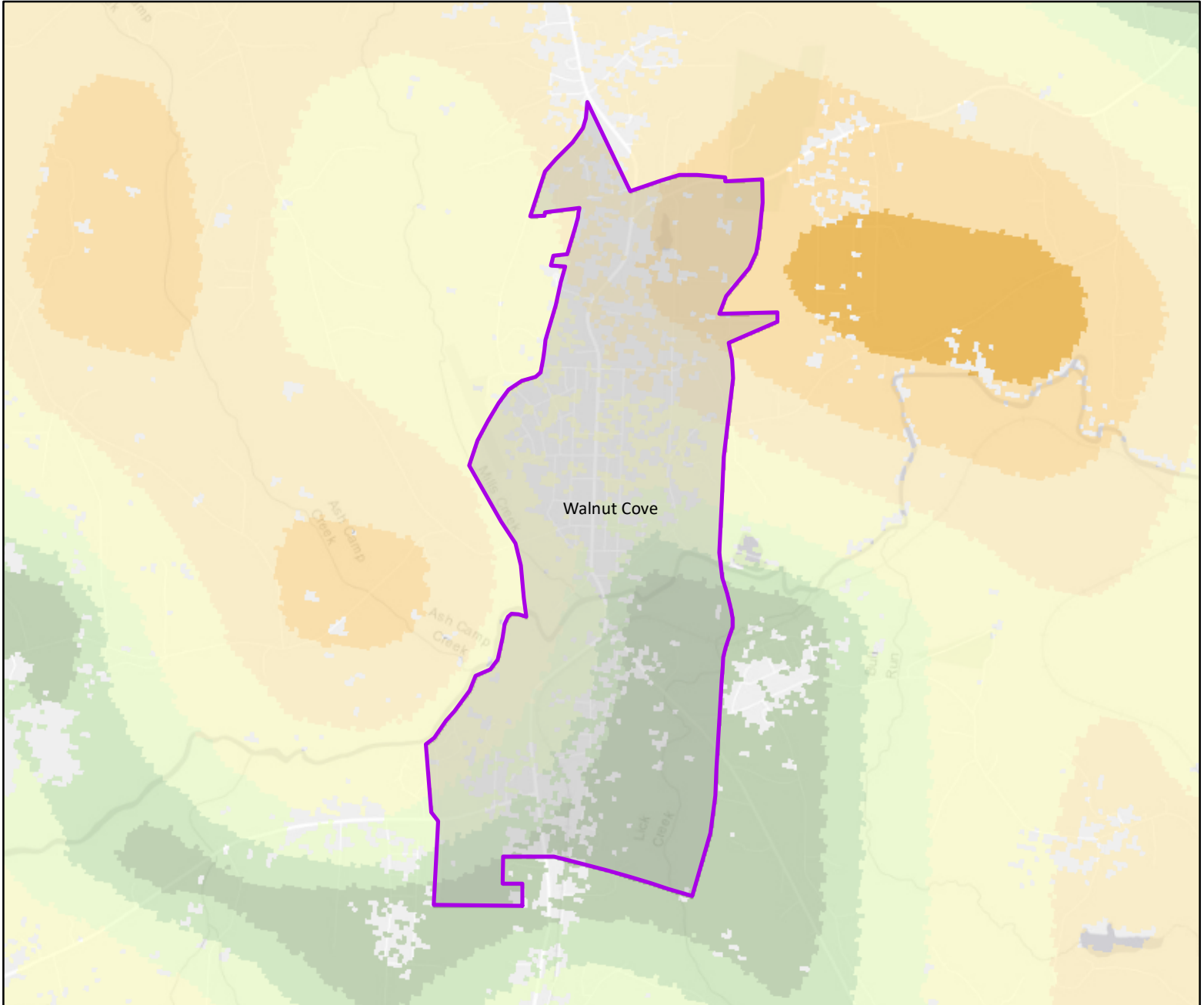
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL













# Walnut Cove - Wildfire Ignition Density



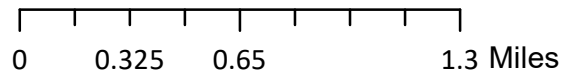
## Legend

-  Municipal Boundary
-  County Boundary

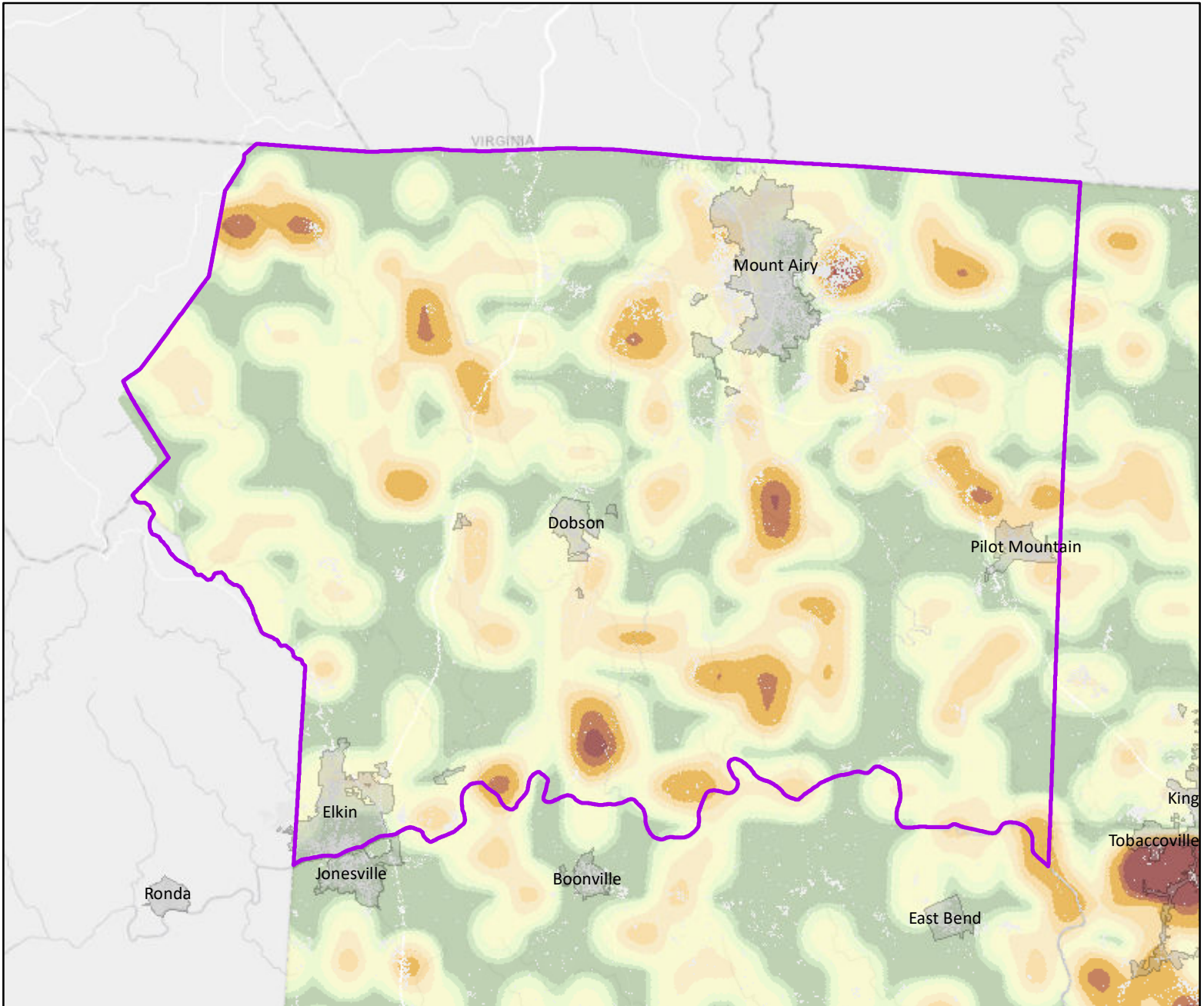
## Wildfire Ignition Density Index

- |   |   |   |   |   |
|---|---|---|---|---|
|  0 |  2 |  4 |  6 |  8 |
|  1 |  3 |  5 |  7 |  9 |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL













# Surry County - Wildfire Ignition Density



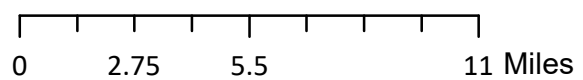
## Legend

-  Municipal Boundary
-  County Boundary

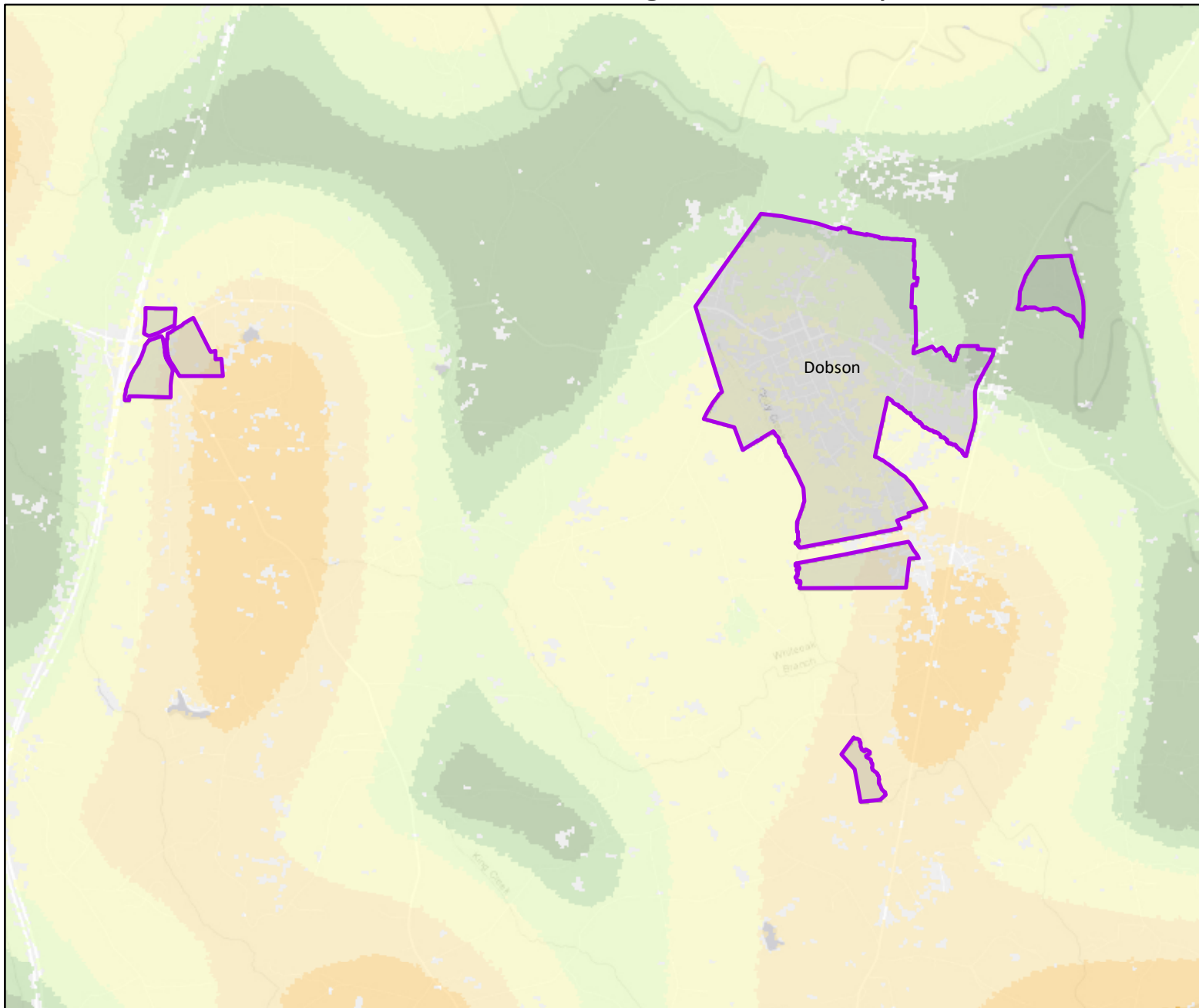
## Wildfire Ignition Density Index

- |   |   |   |   |   |
|---|---|---|---|---|
|  0 |  2 |  4 |  6 |  8 |
|  1 |  3 |  5 |  7 |  9 |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Dobson - Wildfire Ignition Density



## Legend

 Municipal Boundary

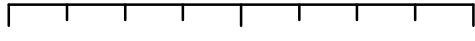
 County Boundary

## Wildfire Ignition Density Index

 0  2  4  6  8

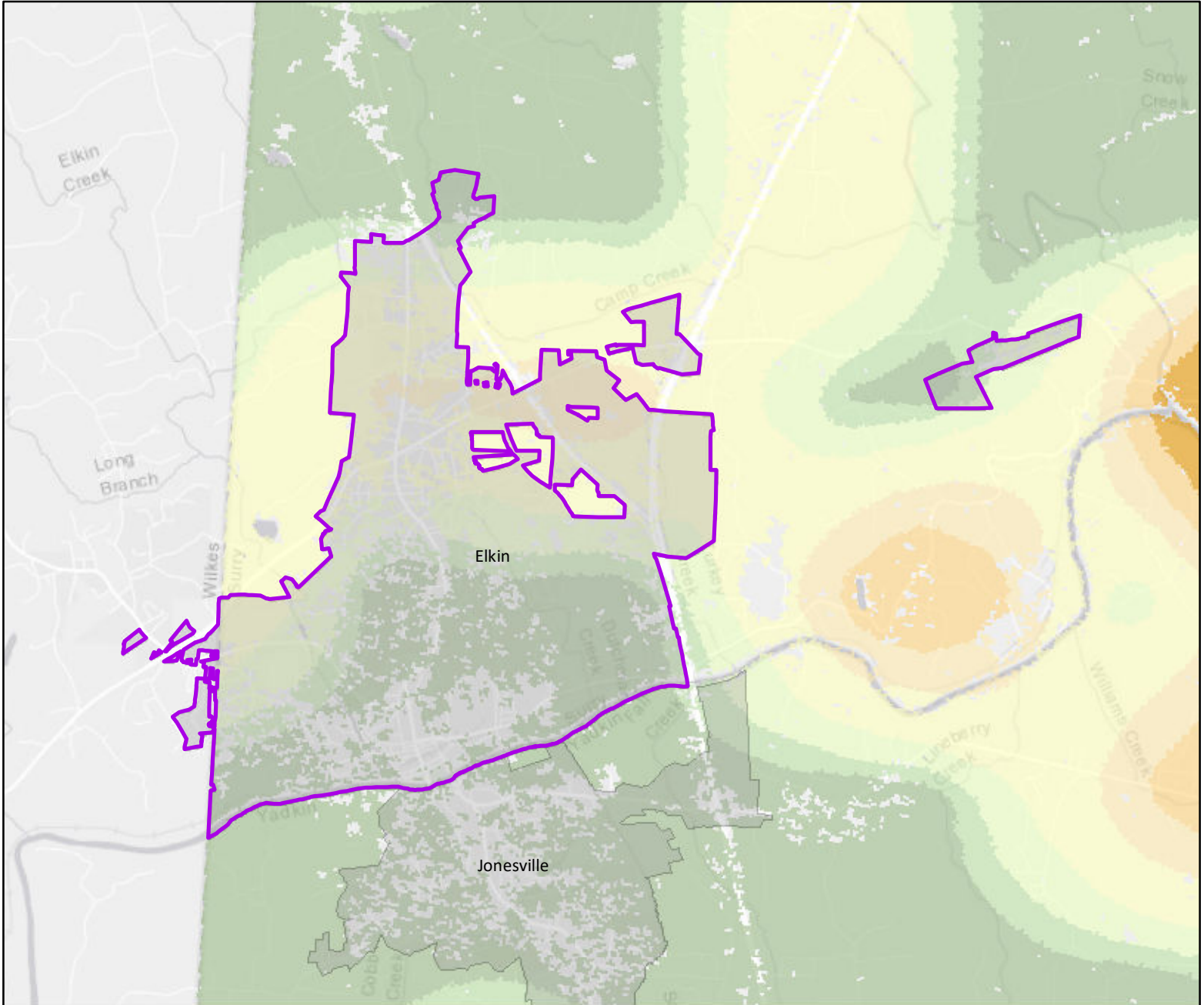
 1  3  5  7  9

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

  
0 0.475 0.95 1.9 Miles



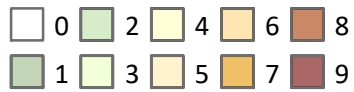
# Elkin - Wildfire Ignition Density



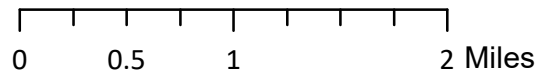
## Legend

- Municipal Boundary
- County Boundary

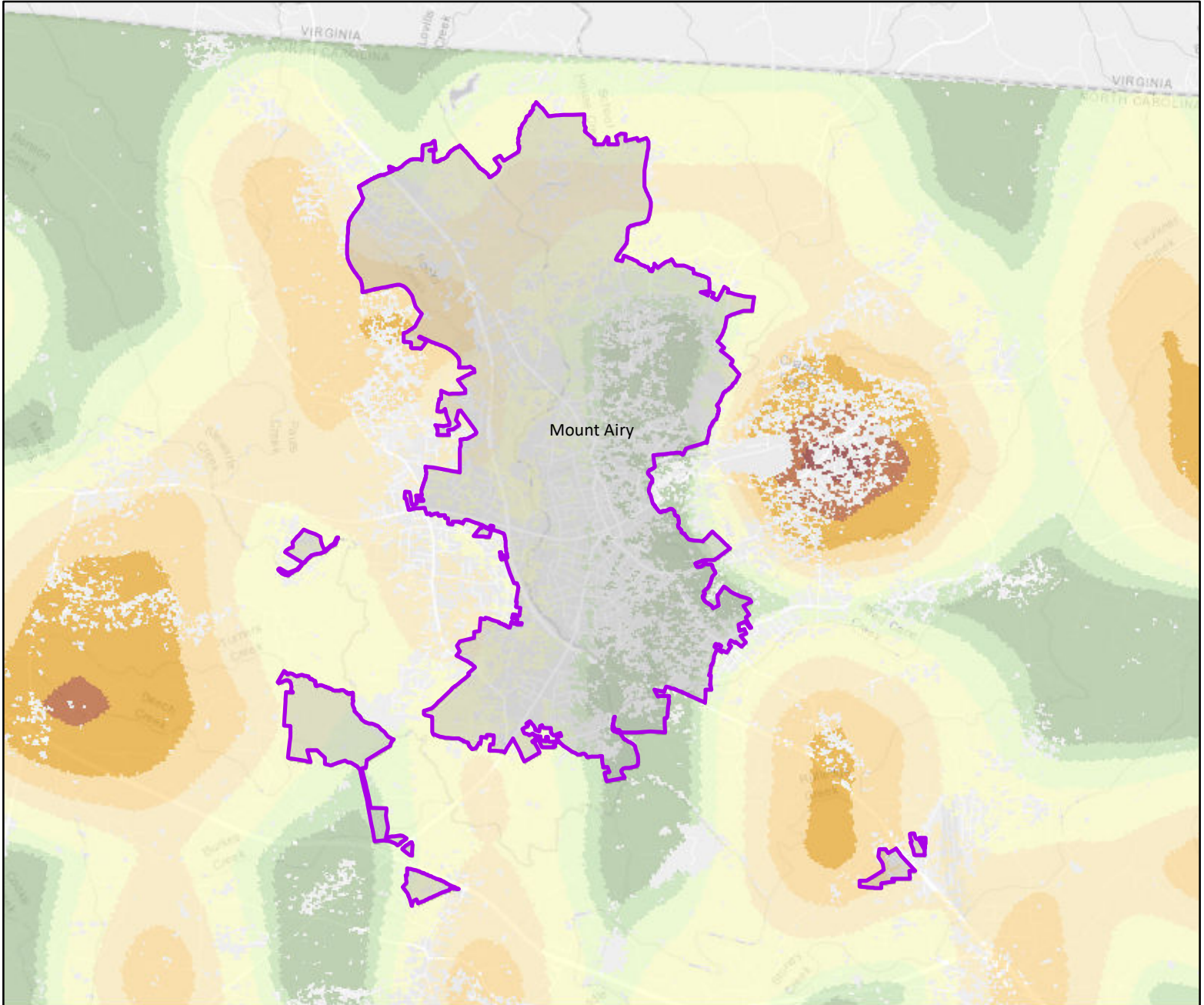
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



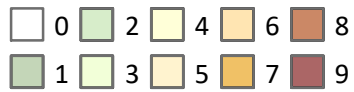
# Mount Airy - Wildfire Ignition Density



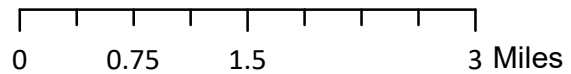
## Legend

-  Municipal Boundary
-  County Boundary

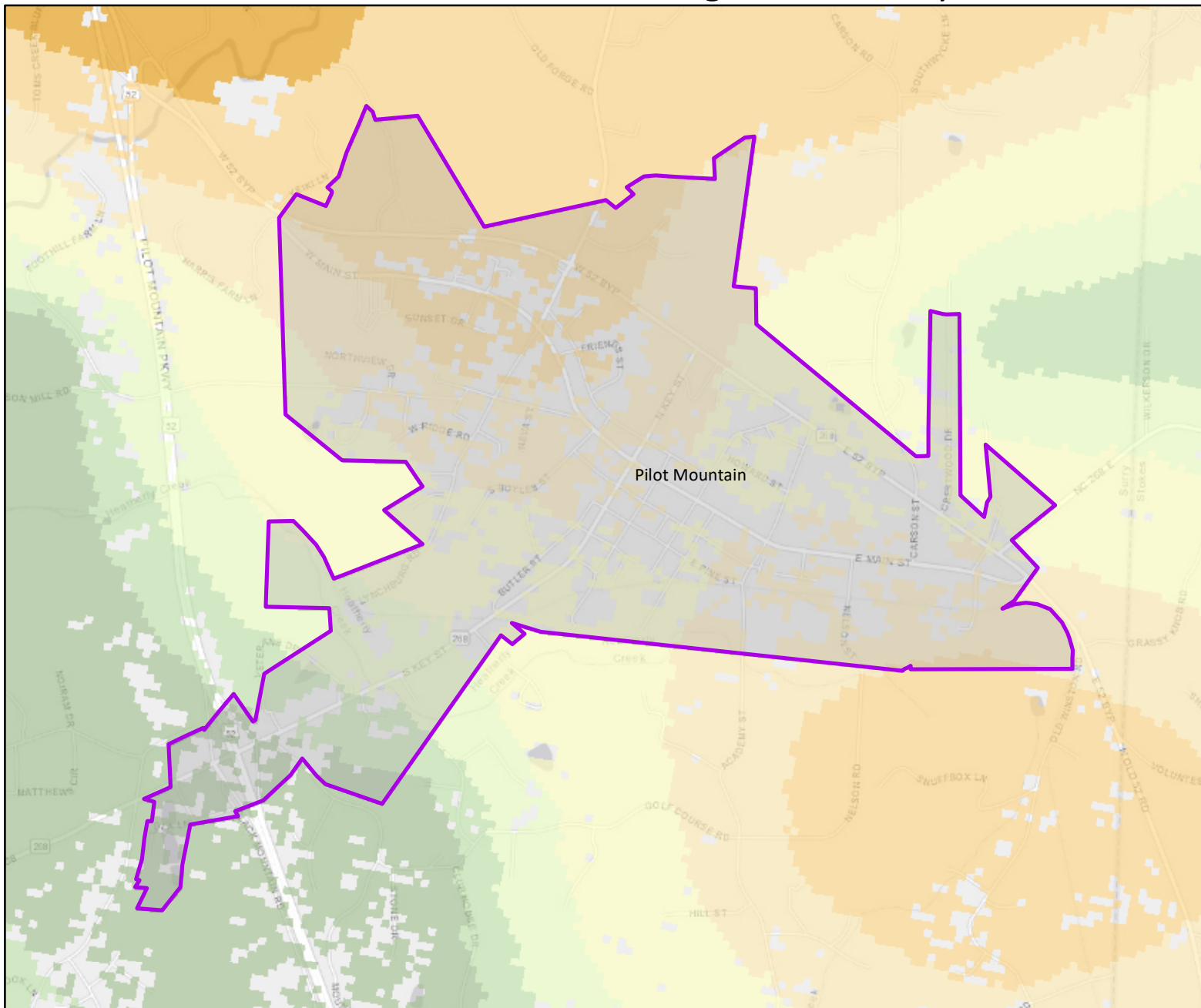
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



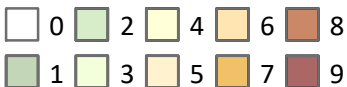
# Pilot Mountain - Wildfire Ignition Density



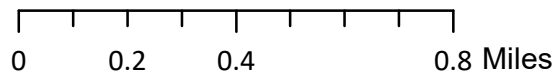
## Legend

-  Municipal Boundary
-  County Boundary

## Wildfire Ignition Density Index

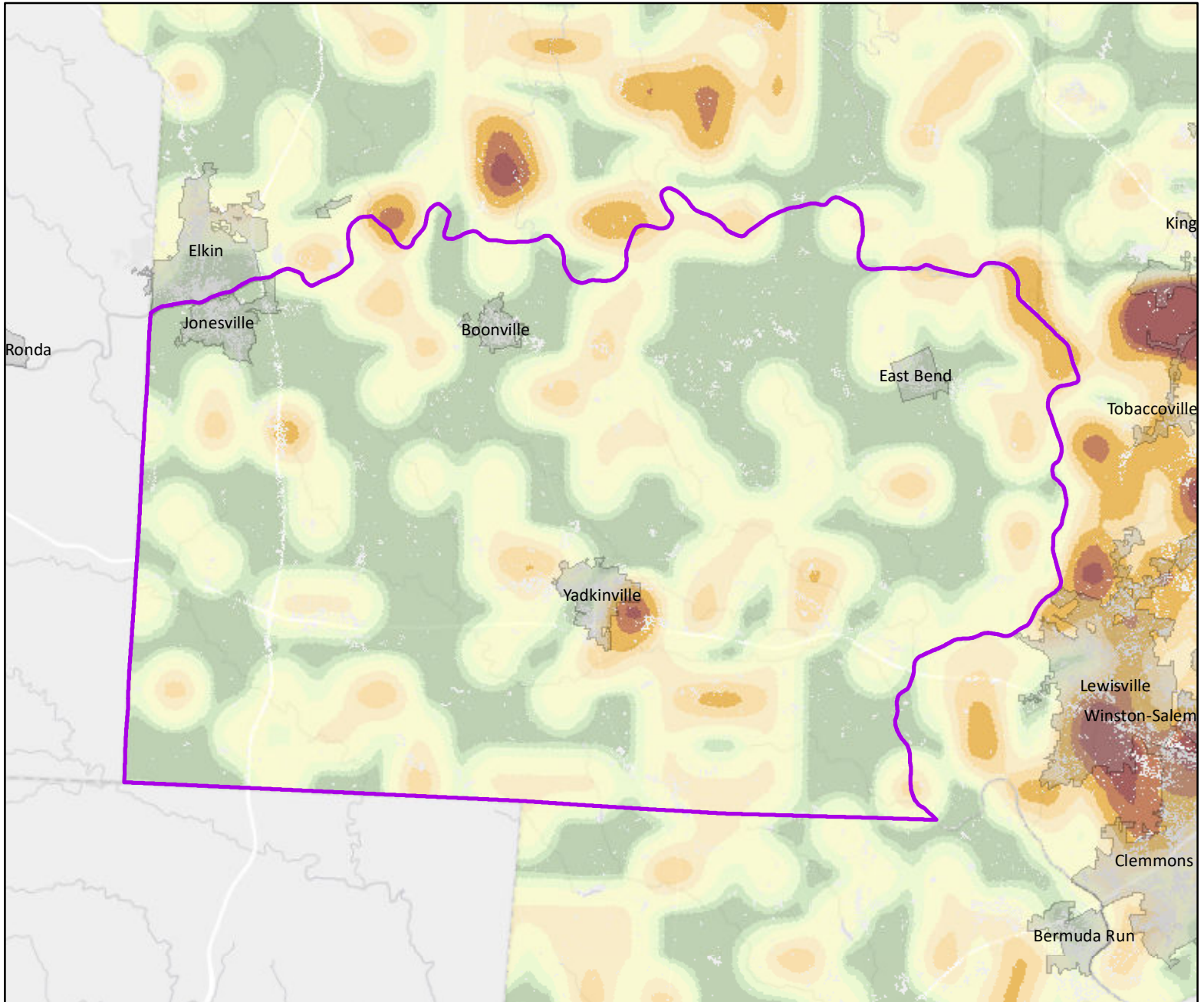


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







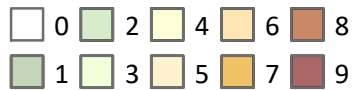
# Yadkin County - Wildfire Ignition Density



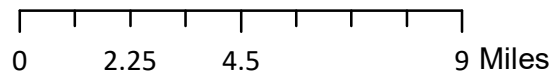
## Legend

-  Municipal Boundary
-  County Boundary

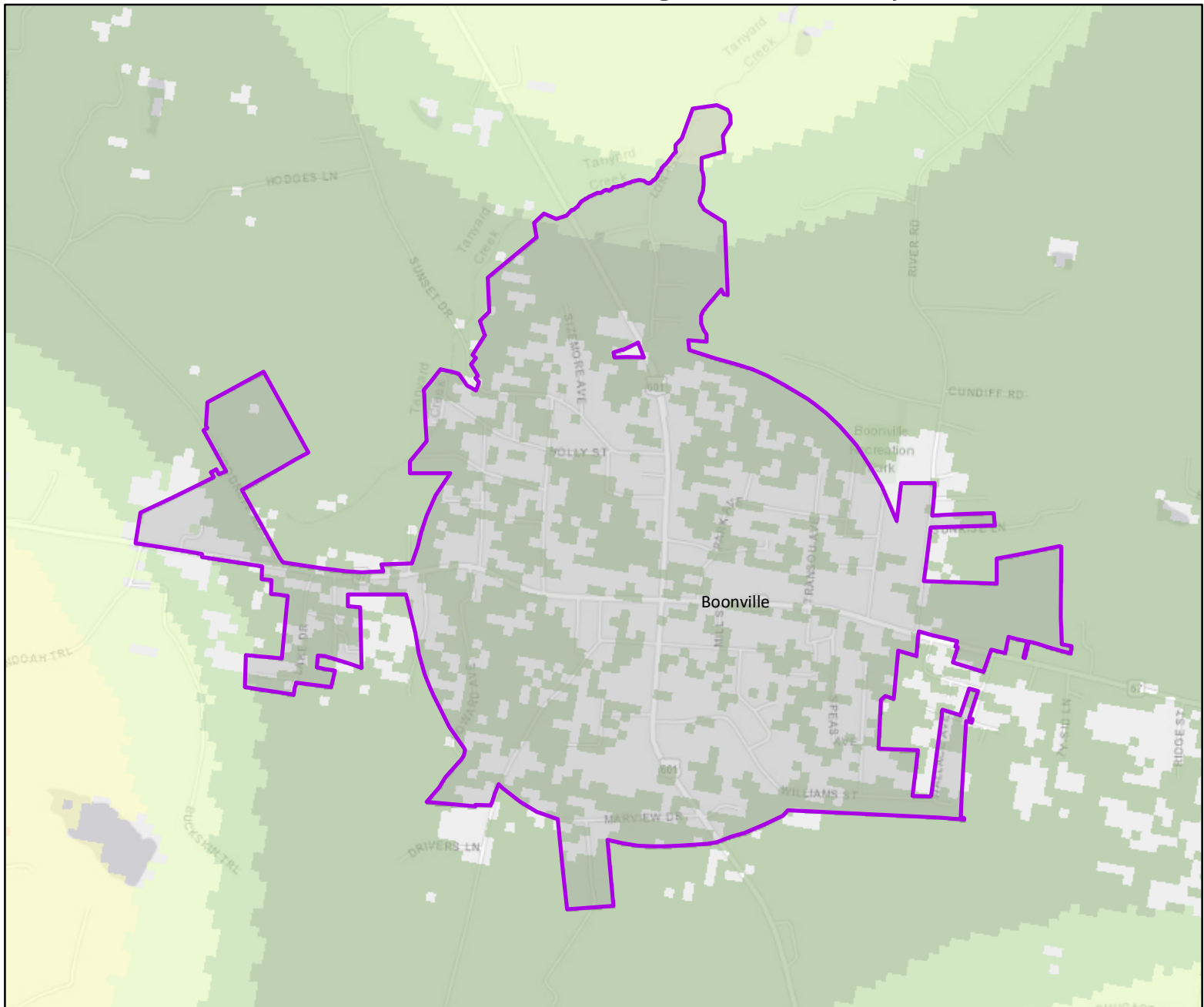
## Wildfire Ignition Density Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



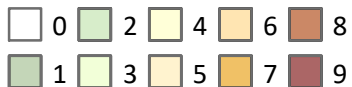
# Boonville - Wildfire Ignition Density



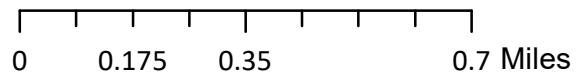
## Legend

-  Municipal Boundary
-  County Boundary

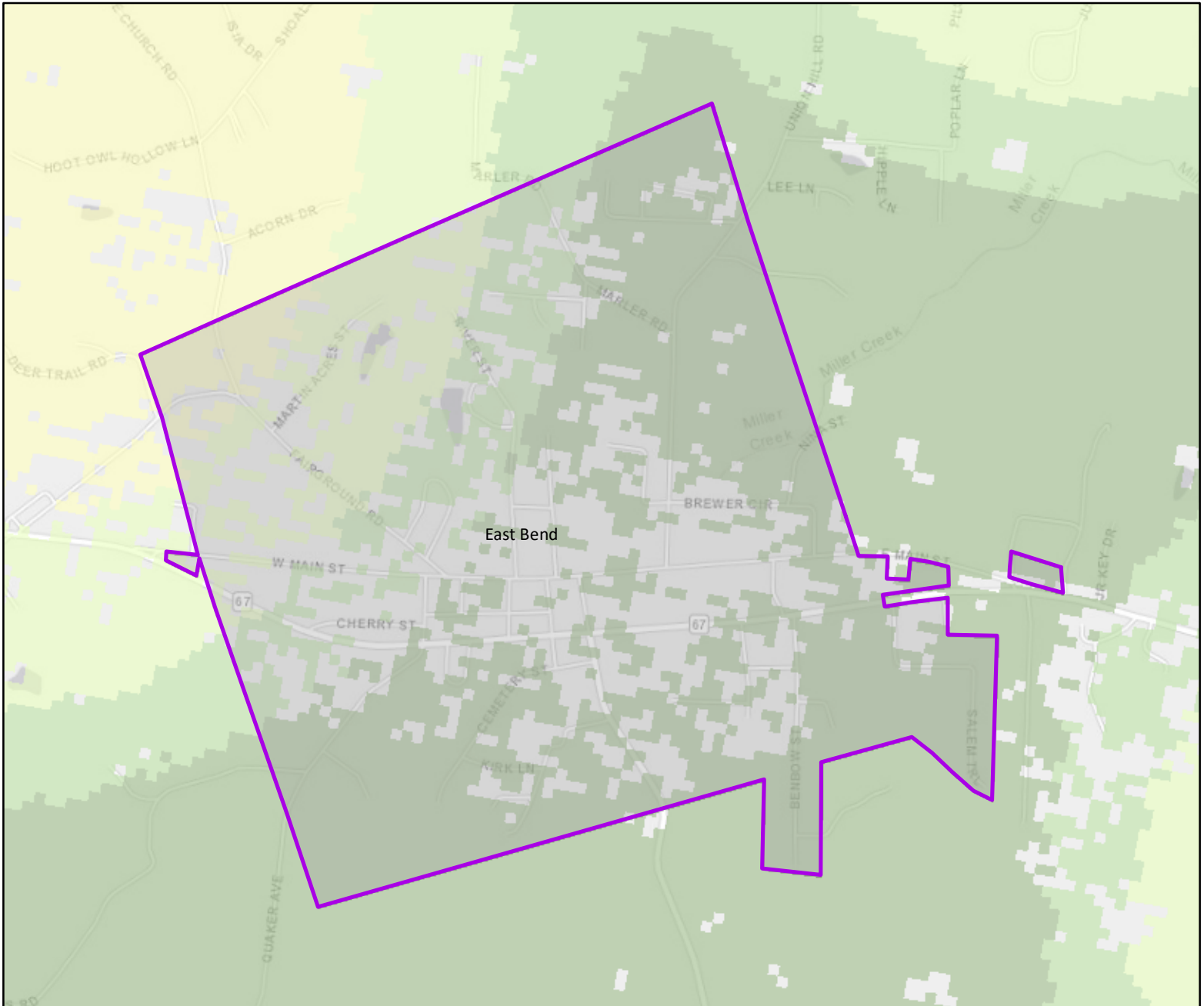
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



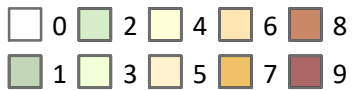
# East Bend - Wildfire Ignition Density



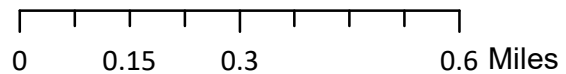
## Legend

- Municipal Boundary
- County Boundary

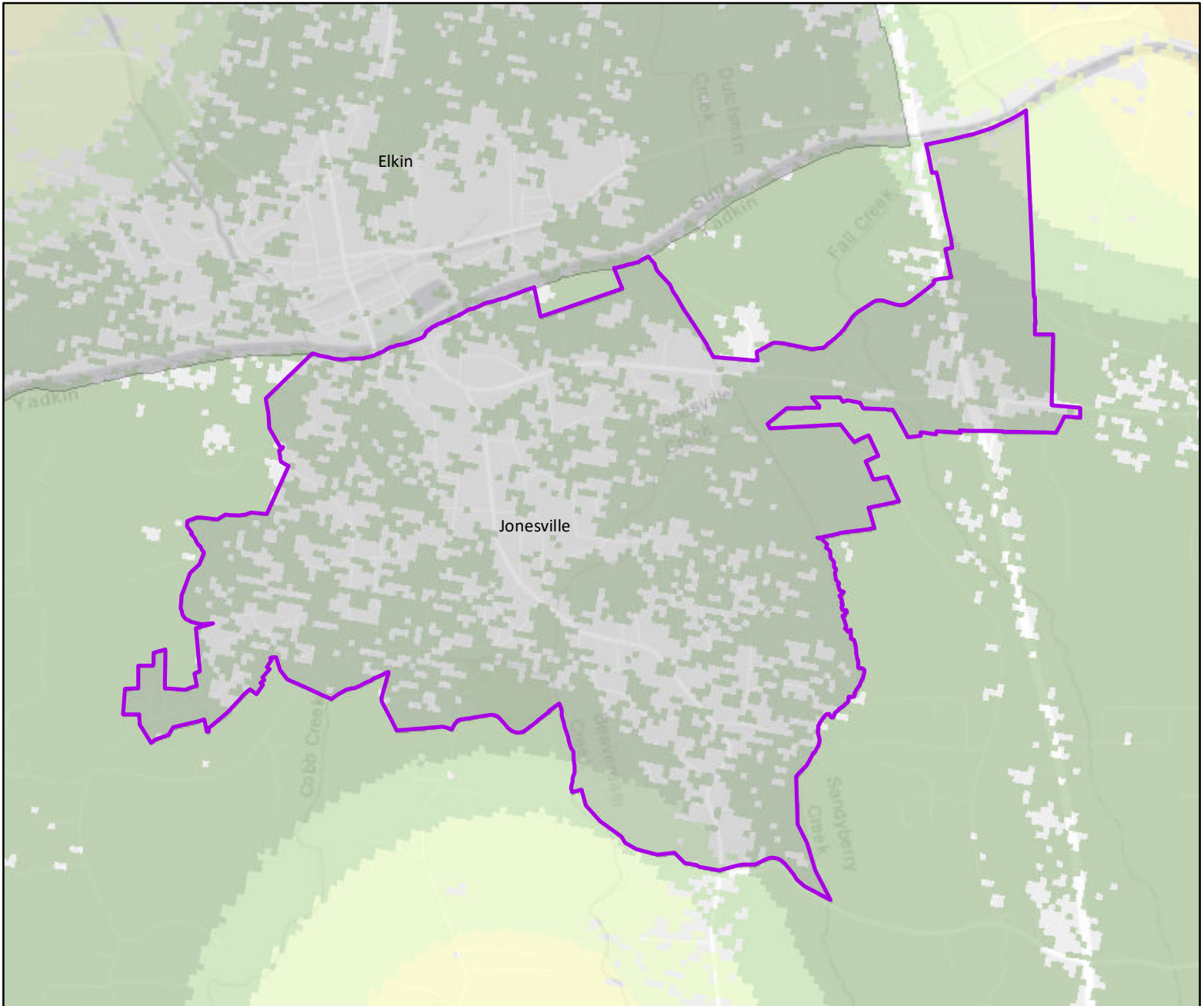
## Wildfire Ignition Density Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Jonesville - Wildfire Ignition Density



## Legend

 Municipal Boundary

 County Boundary

## Wildfire Ignition Density Index

 0

 1

 2

 3

 4

 5

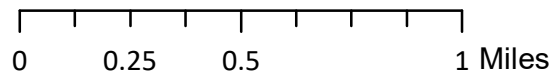
 6

 7

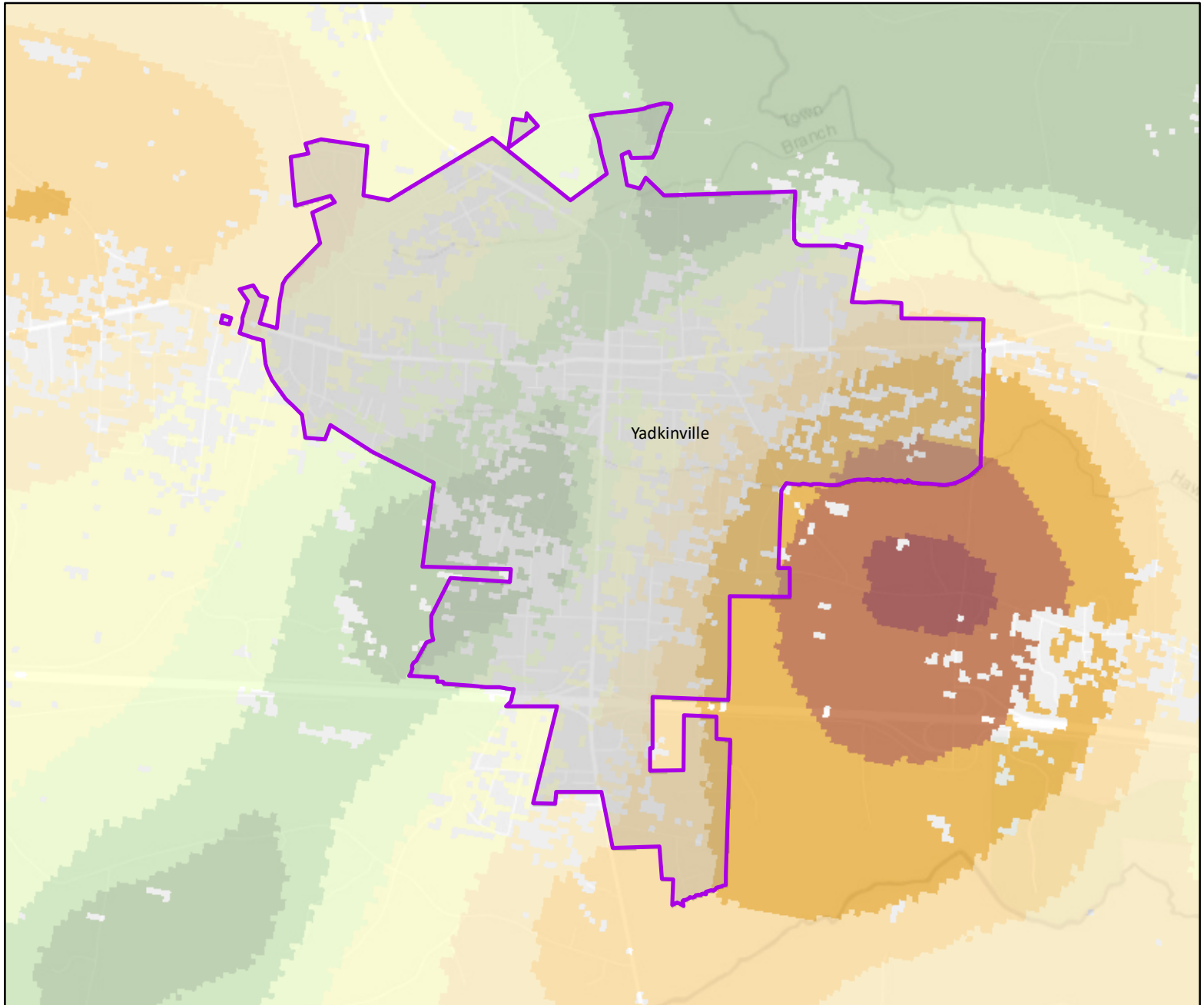
 8

 9



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL













# Yadkinville - Wildfire Ignition Density



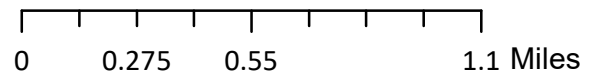
## Legend

-  Municipal Boundary
-  County Boundary

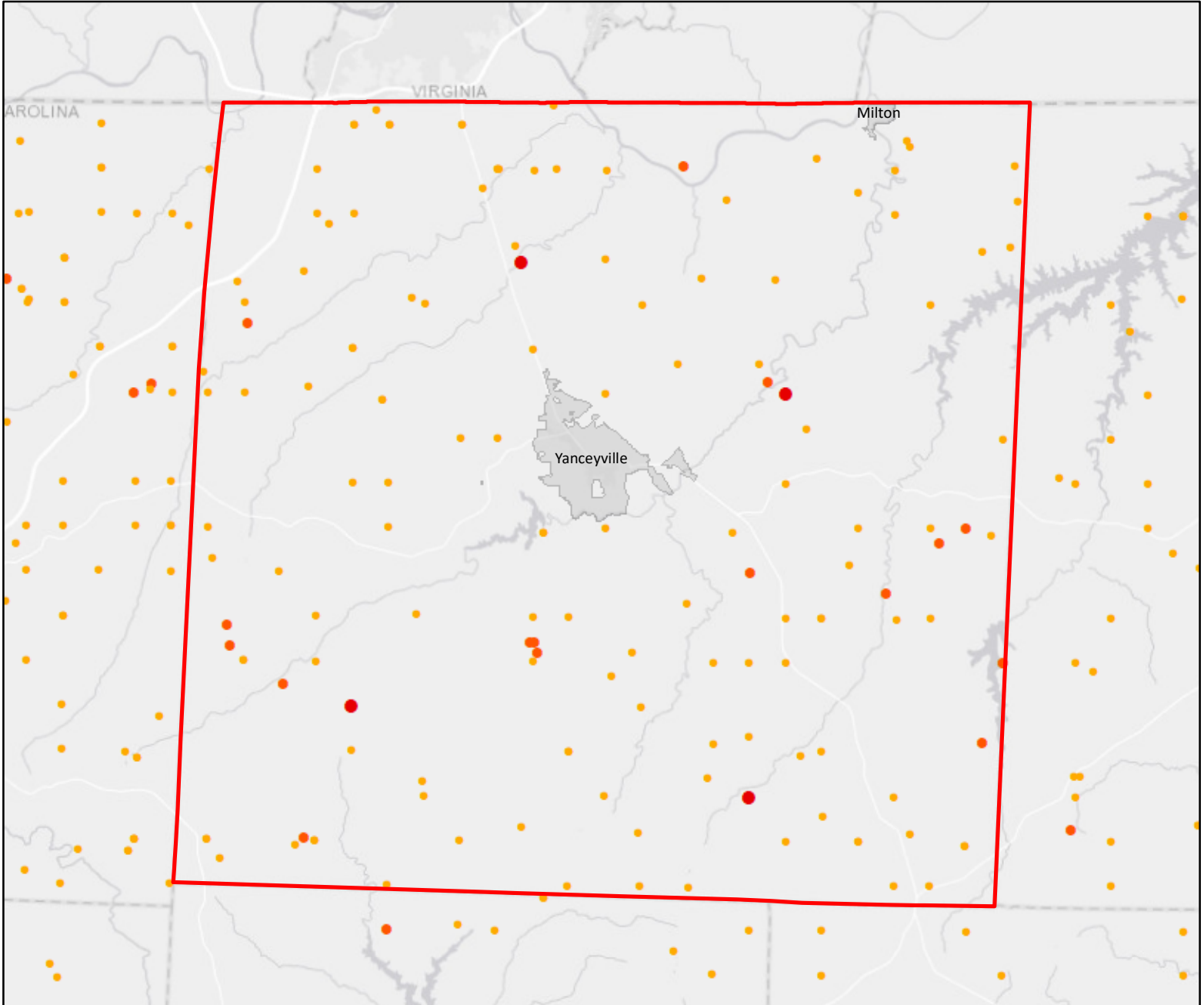
## Wildfire Ignition Density Index

- |   |   |   |   |   |
|---|---|---|---|---|
|  0 |  2 |  4 |  6 |  8 |
|  1 |  3 |  5 |  7 |  9 |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Caswell County - Wildfire Events



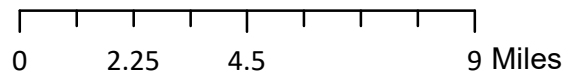
## Legend

-  Municipal Boundary
-  County Boundary

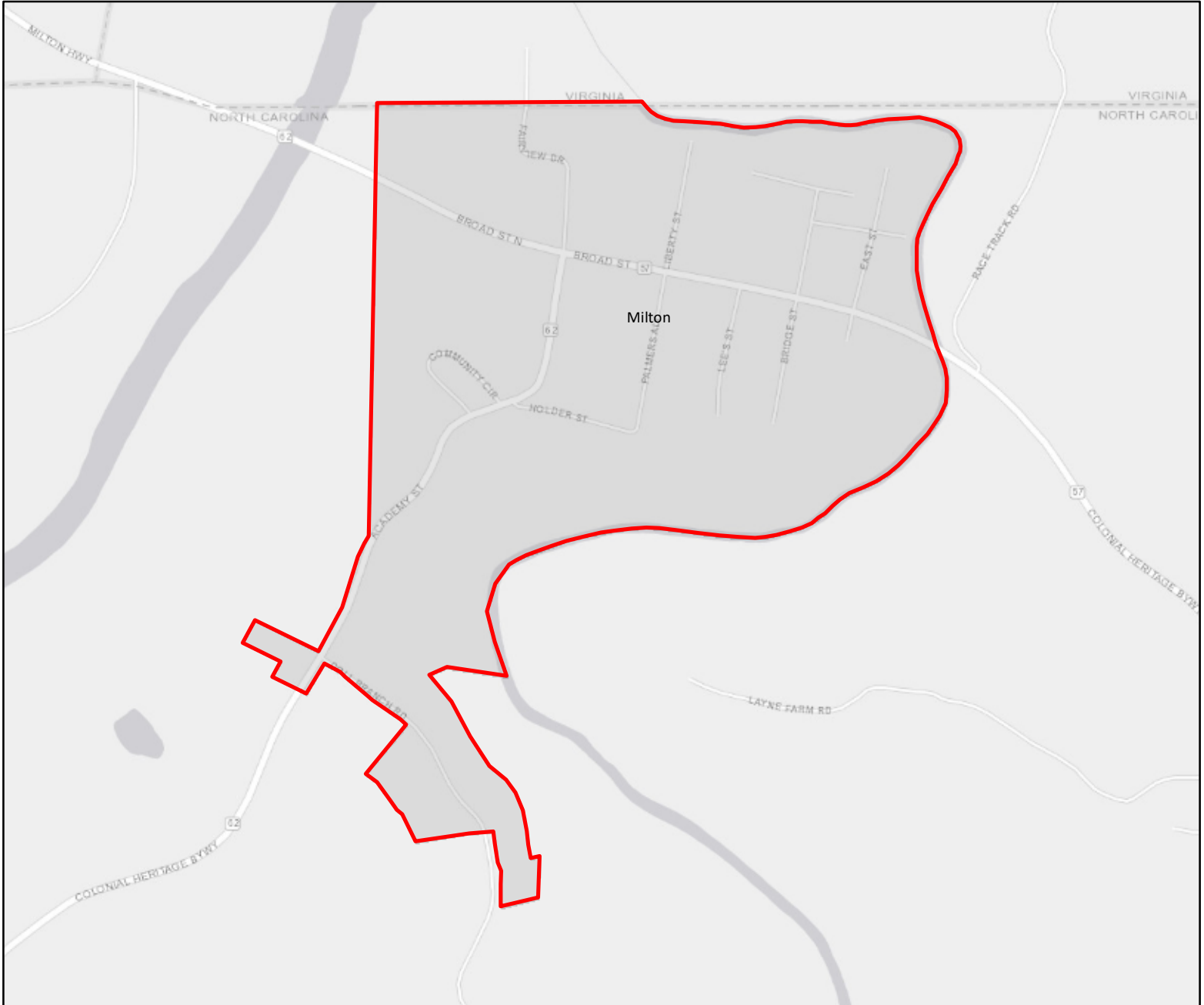
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Milton - Wildfire Events



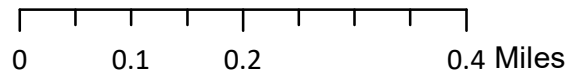
## Legend

-  Municipal Boundary
-  County Boundary

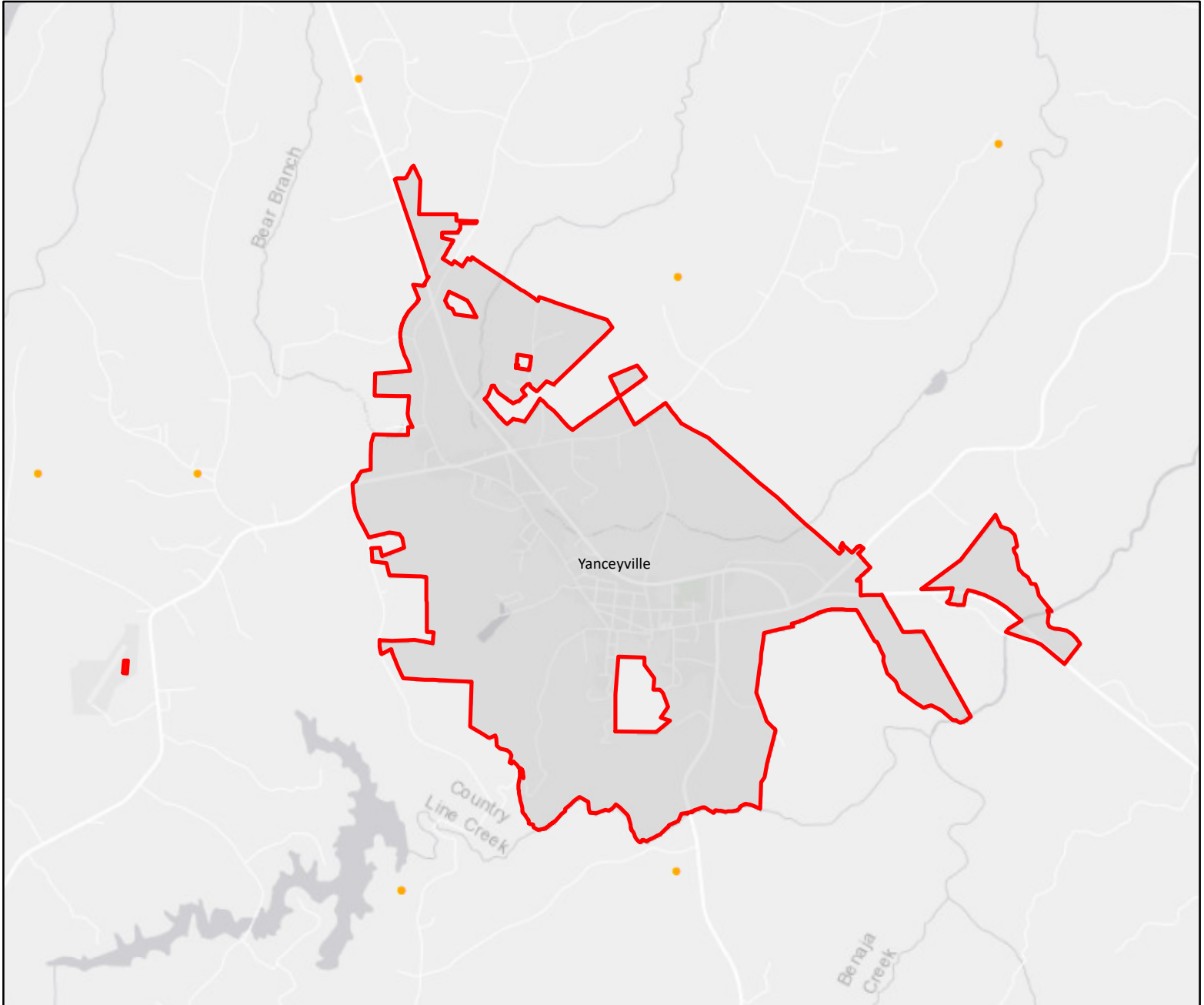
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Yanceyville - Wildfire Events



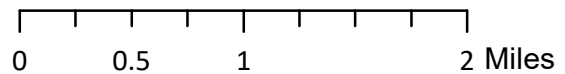
## Legend

-  Municipal Boundary
-  County Boundary

## Acres Impacted

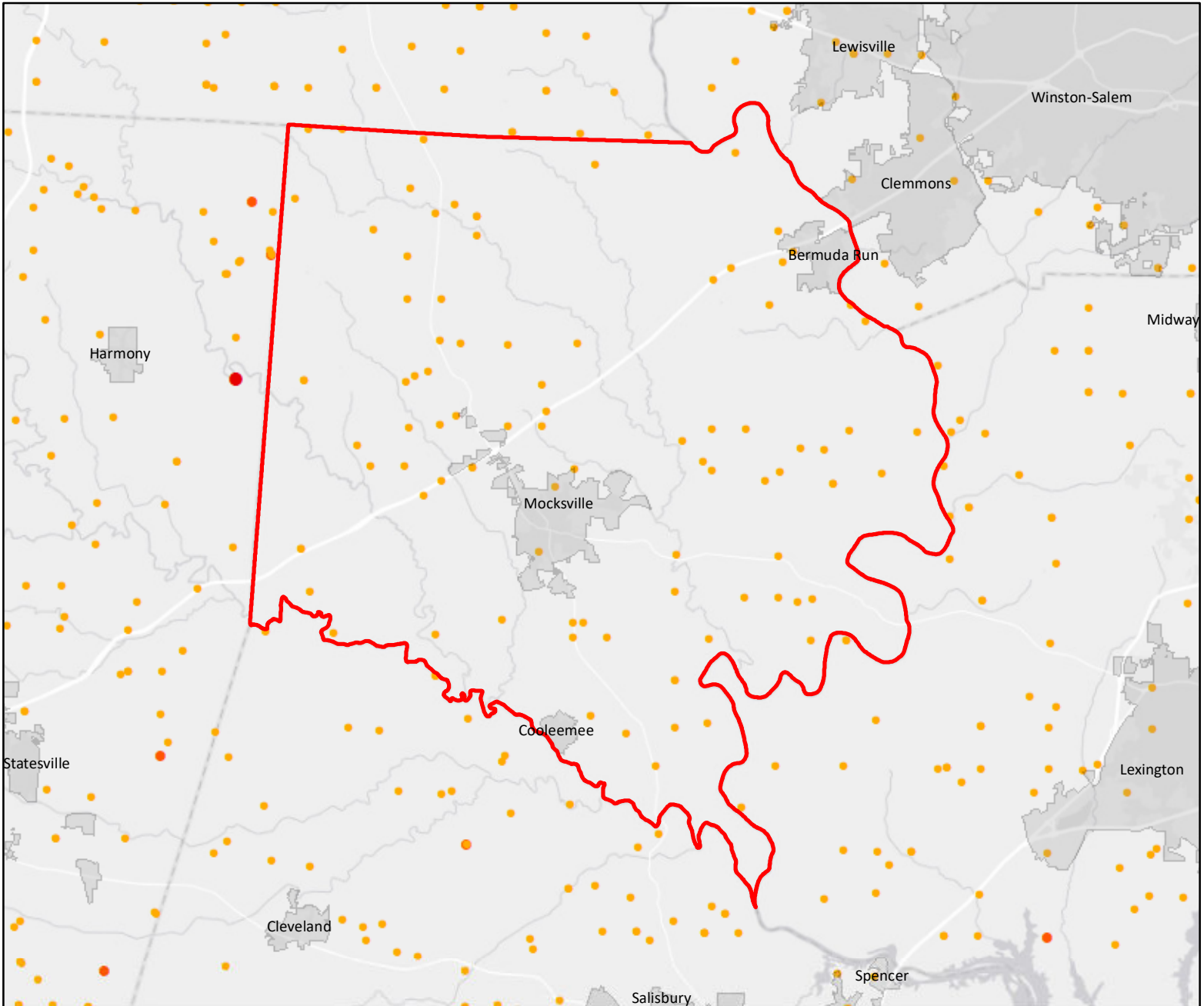
- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL












# Davie County - Wildfire Events



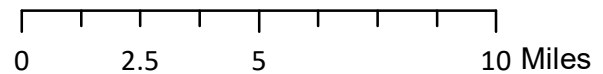
## Legend

-  Municipal Boundary
-  County Boundary

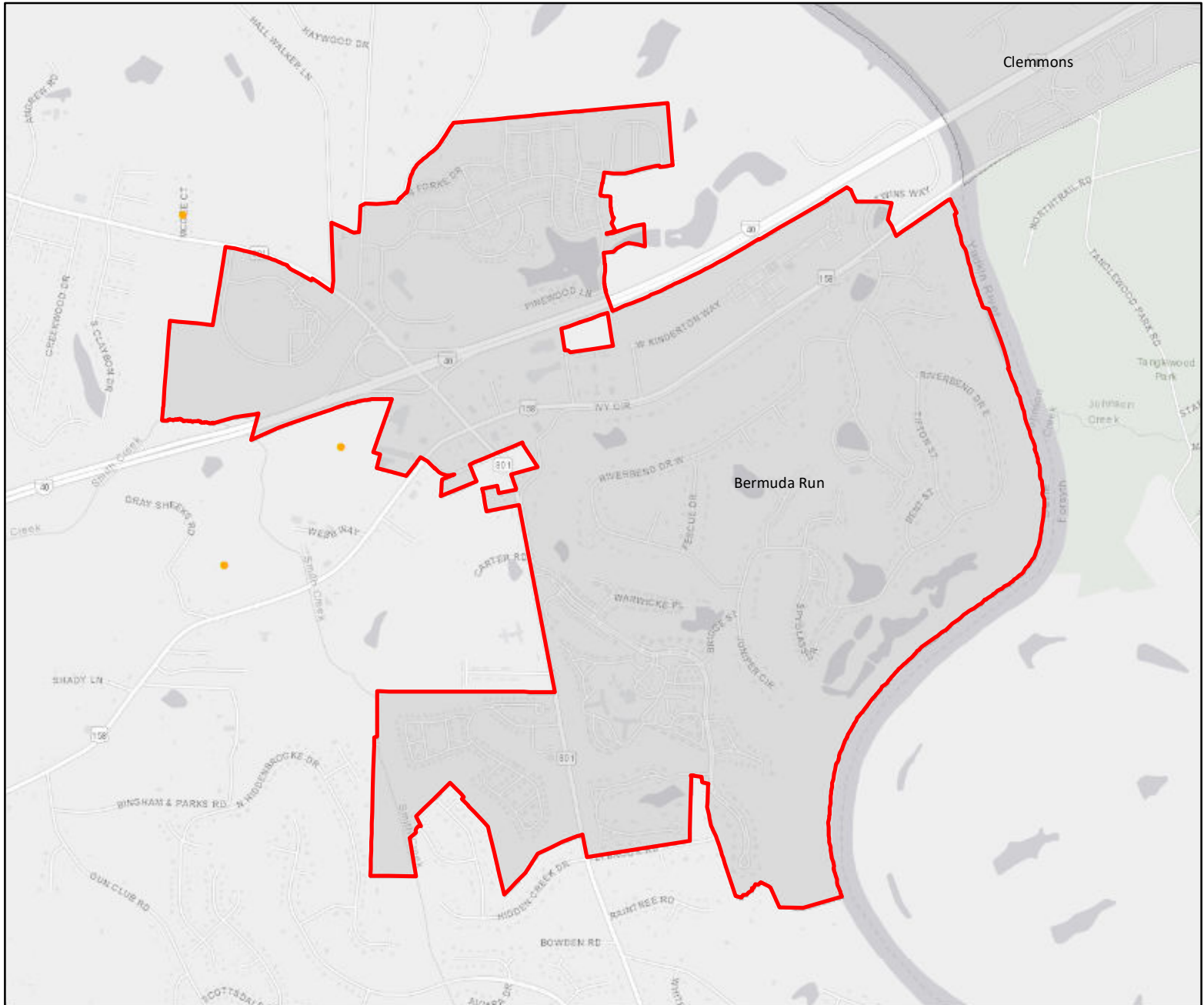
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Bermuda Run - Wildfire Events



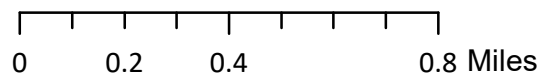
## Legend

-  Municipal Boundary
-  County Boundary

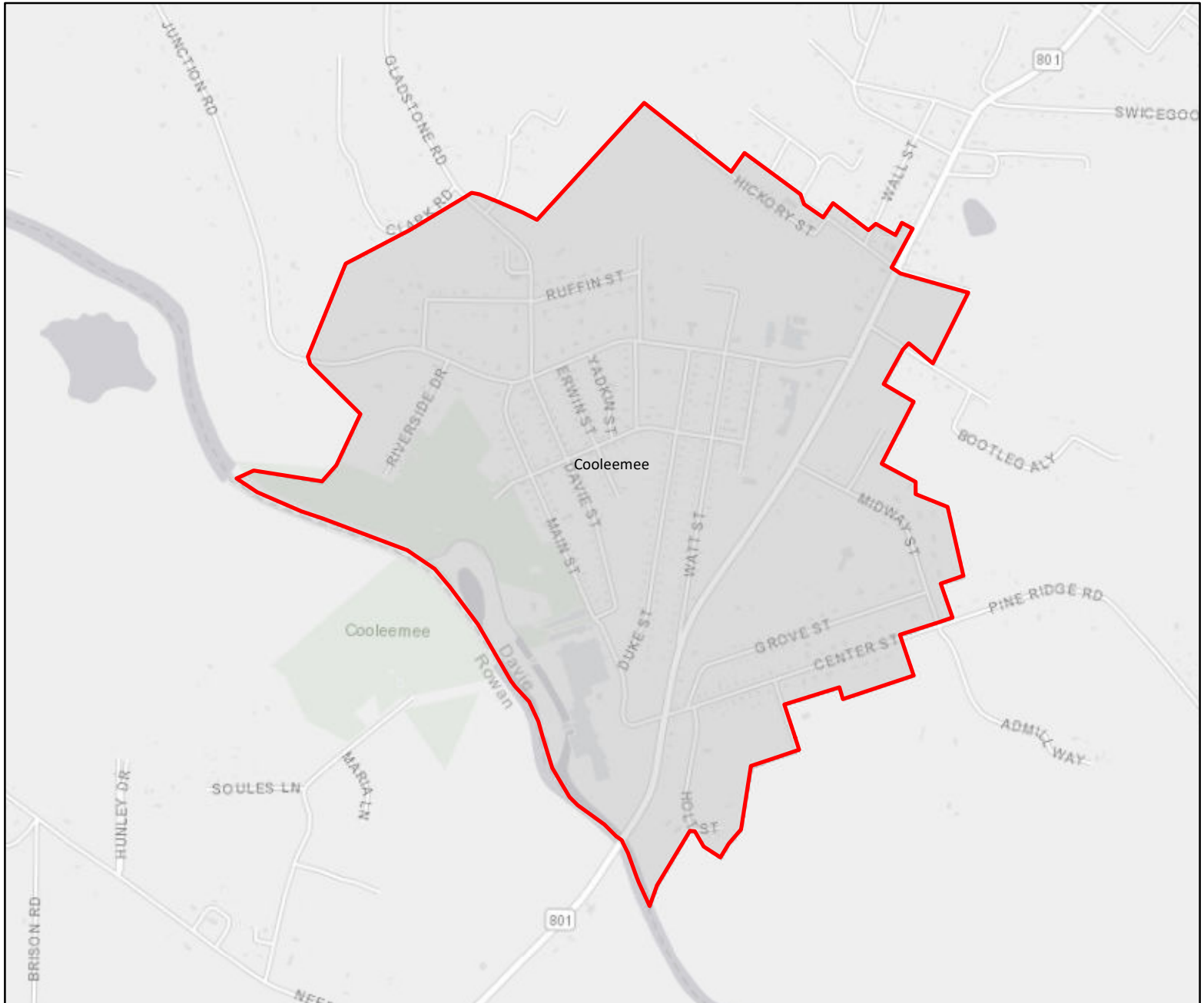
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL








# Cooleemee - Wildfire Events



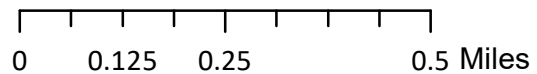
## Legend

-  Municipal Boundary
-  County Boundary

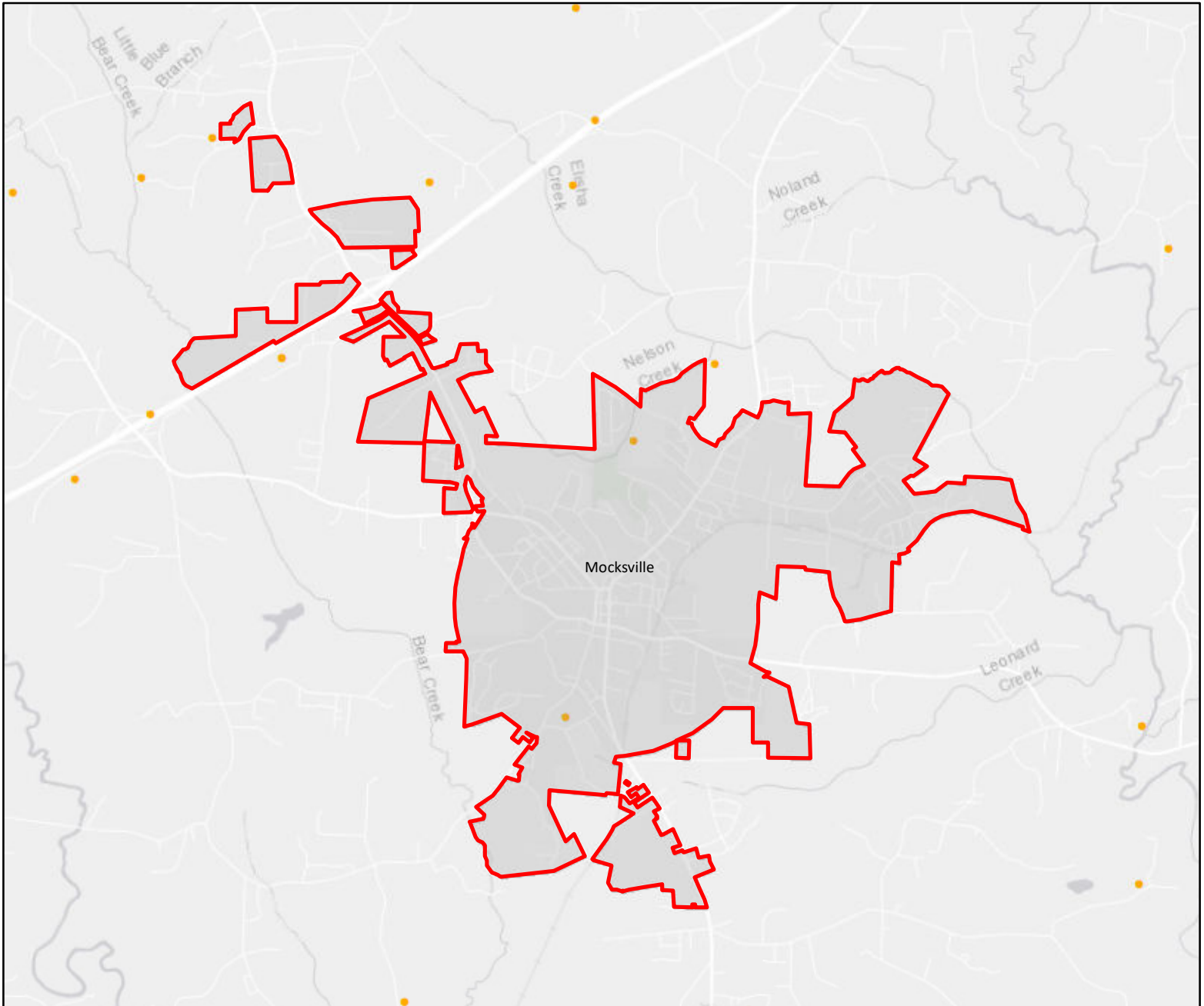
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Mocksville - Wildfire Events



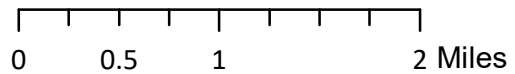
## Legend

-  Municipal Boundary
-  County Boundary

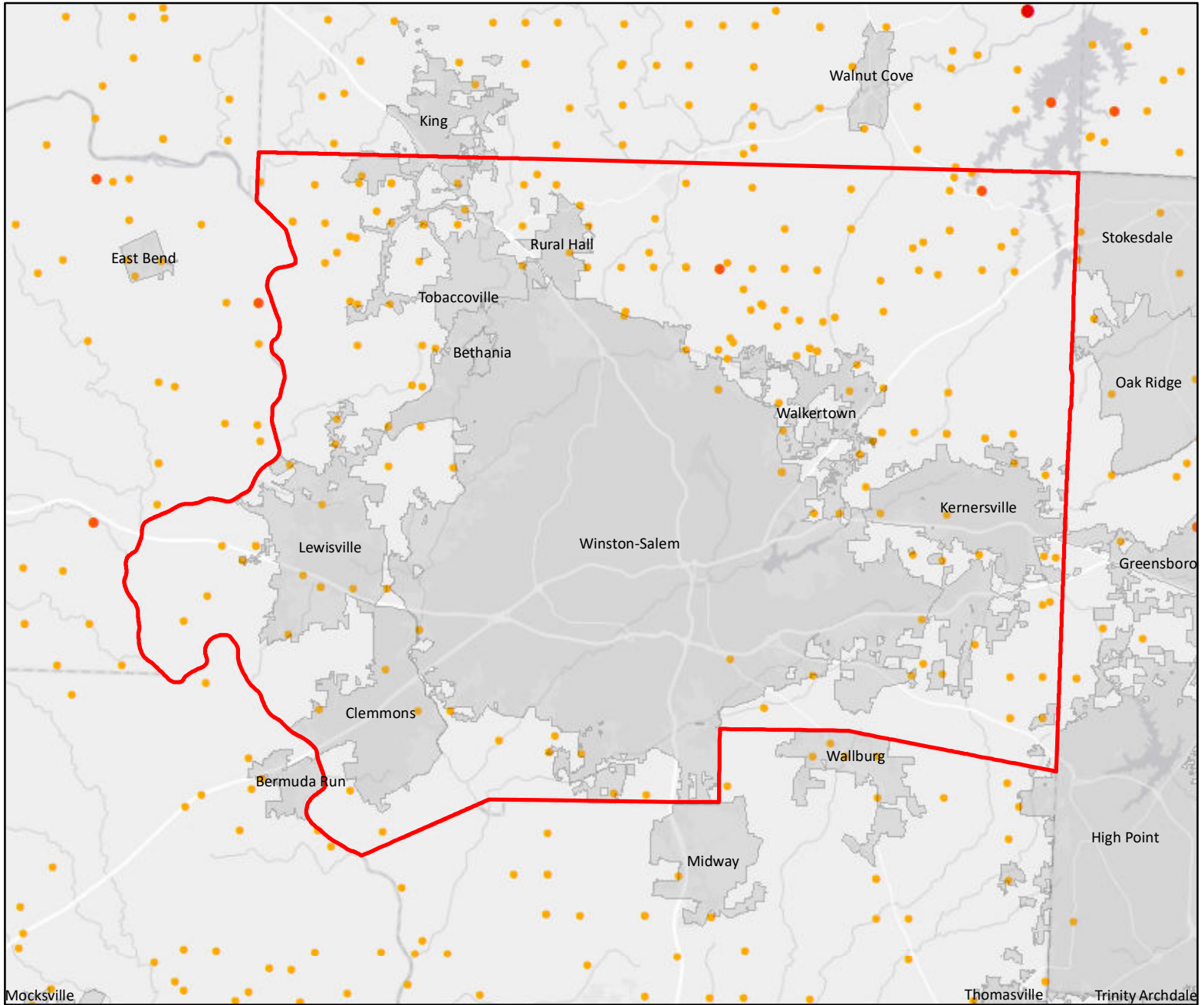
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Forsyth County - Wildfire Events



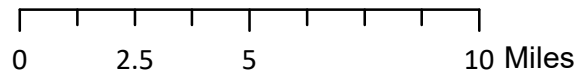
## Legend

-  Municipal Boundary
-  County Boundary

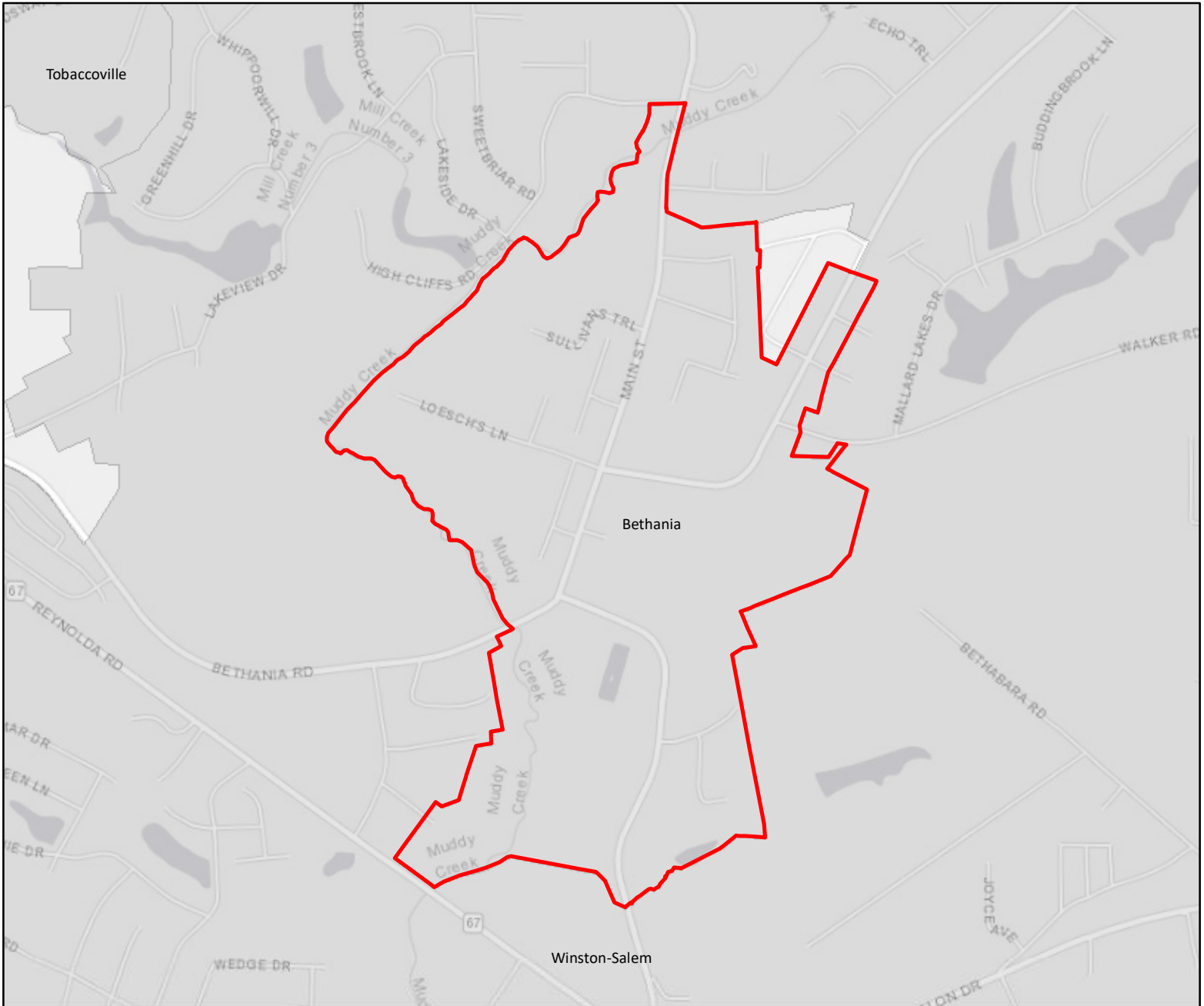
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Bethania - Wildfire Events



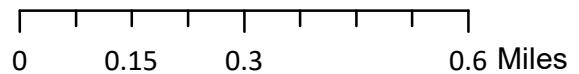
## Legend

- Municipal Boundary
- County Boundary

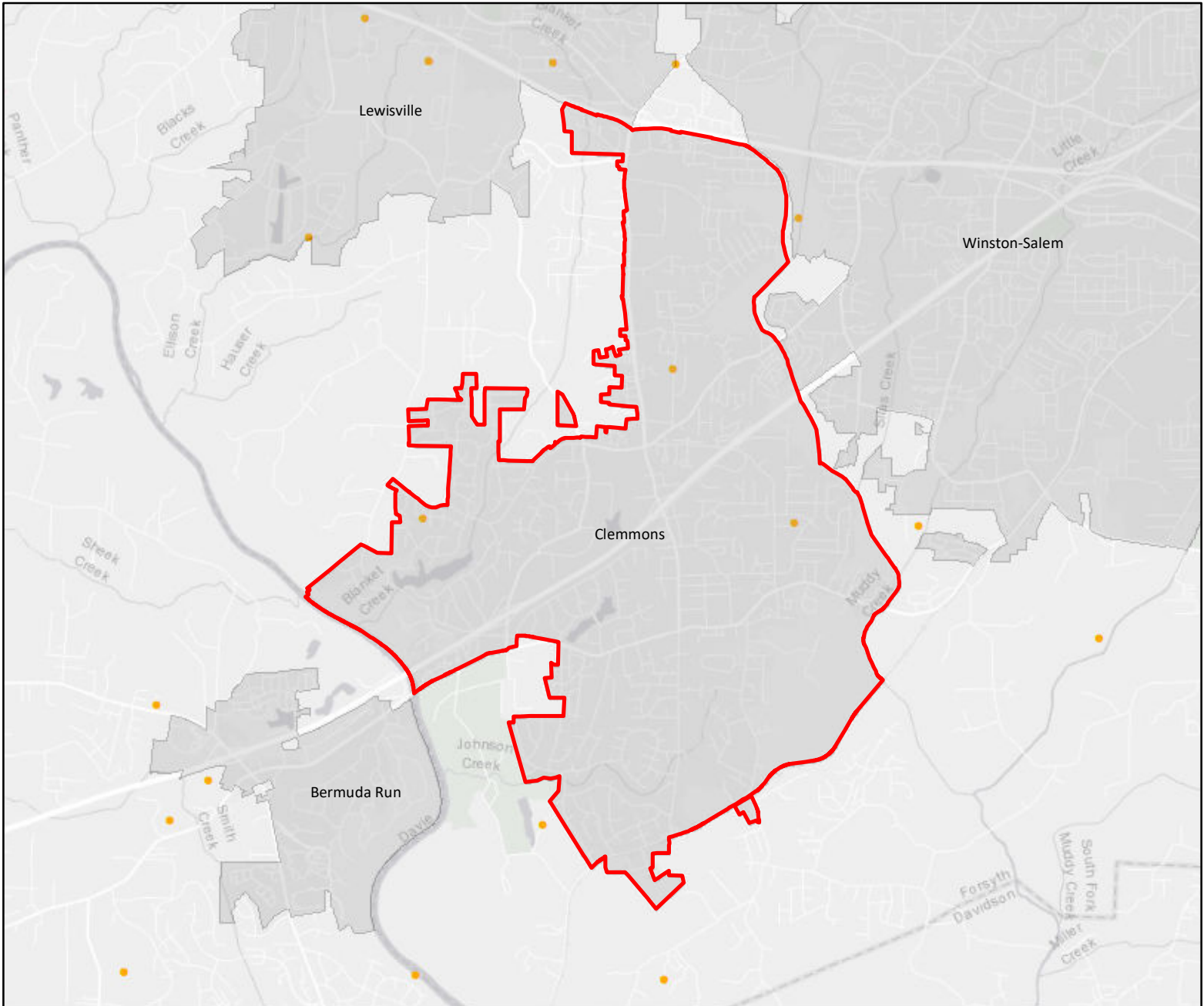
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Clemmons - Wildfire Events



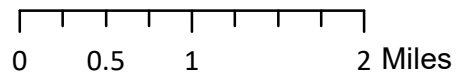
## Legend

- Municipal Boundary
- County Boundary

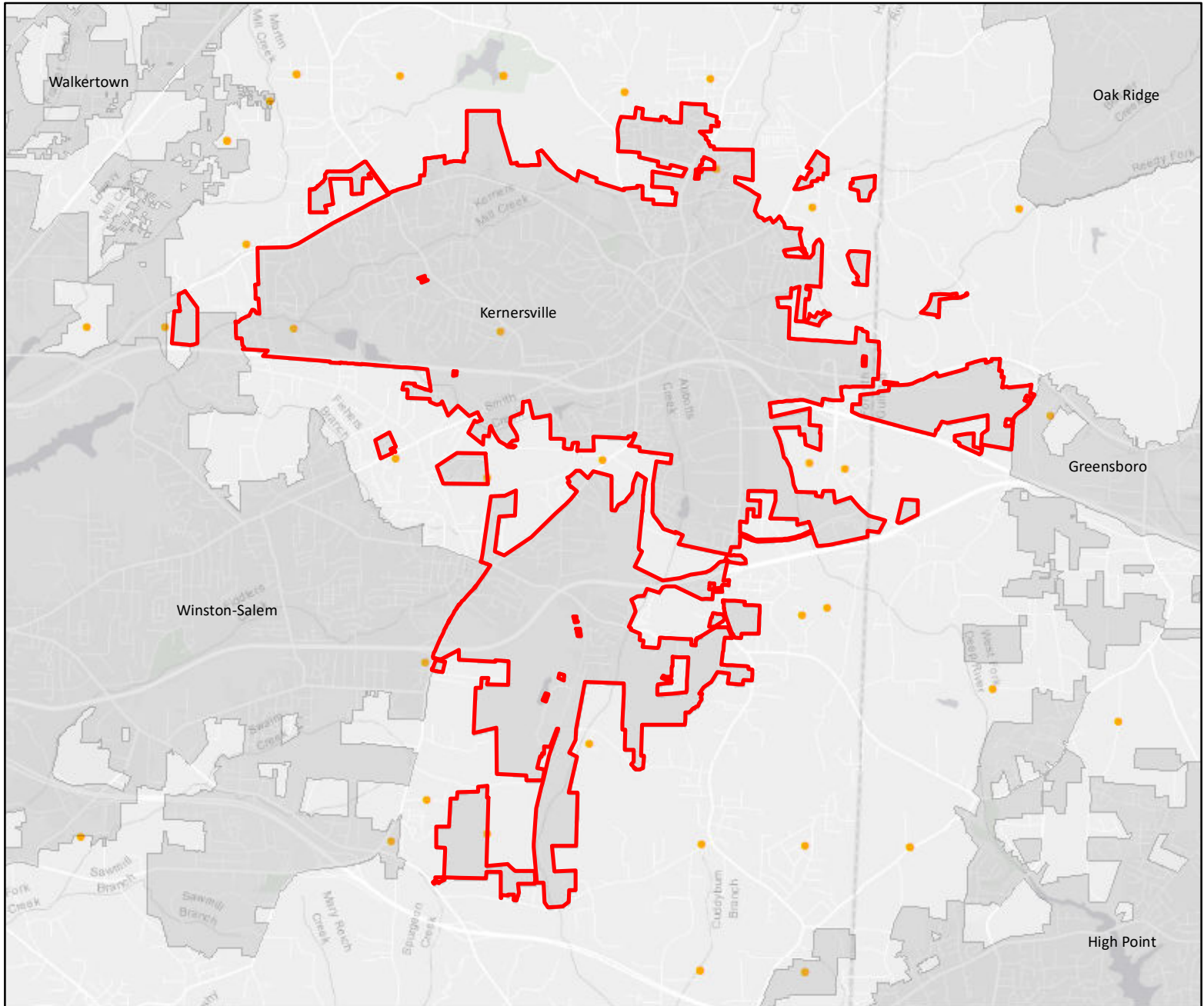
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Kernersville - Wildfire Events



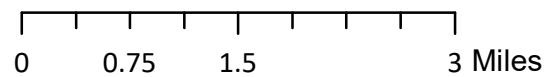
## Legend

-  Municipal Boundary
-  County Boundary

## Acres Impacted

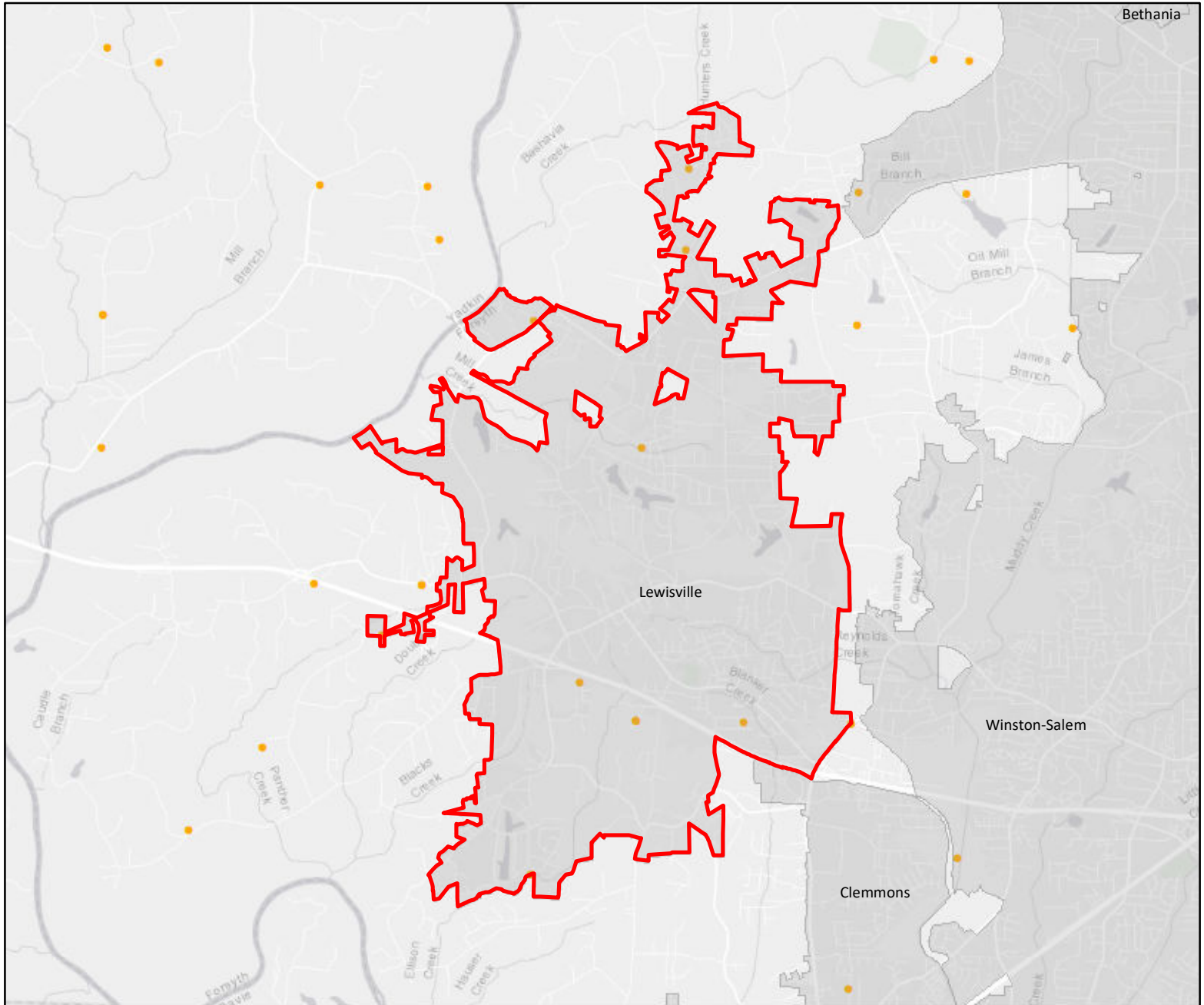
- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





# Lewisville - Wildfire Events



**Legend**

■ Municipal Boundary

□ County Boundary

**Acres Impacted**

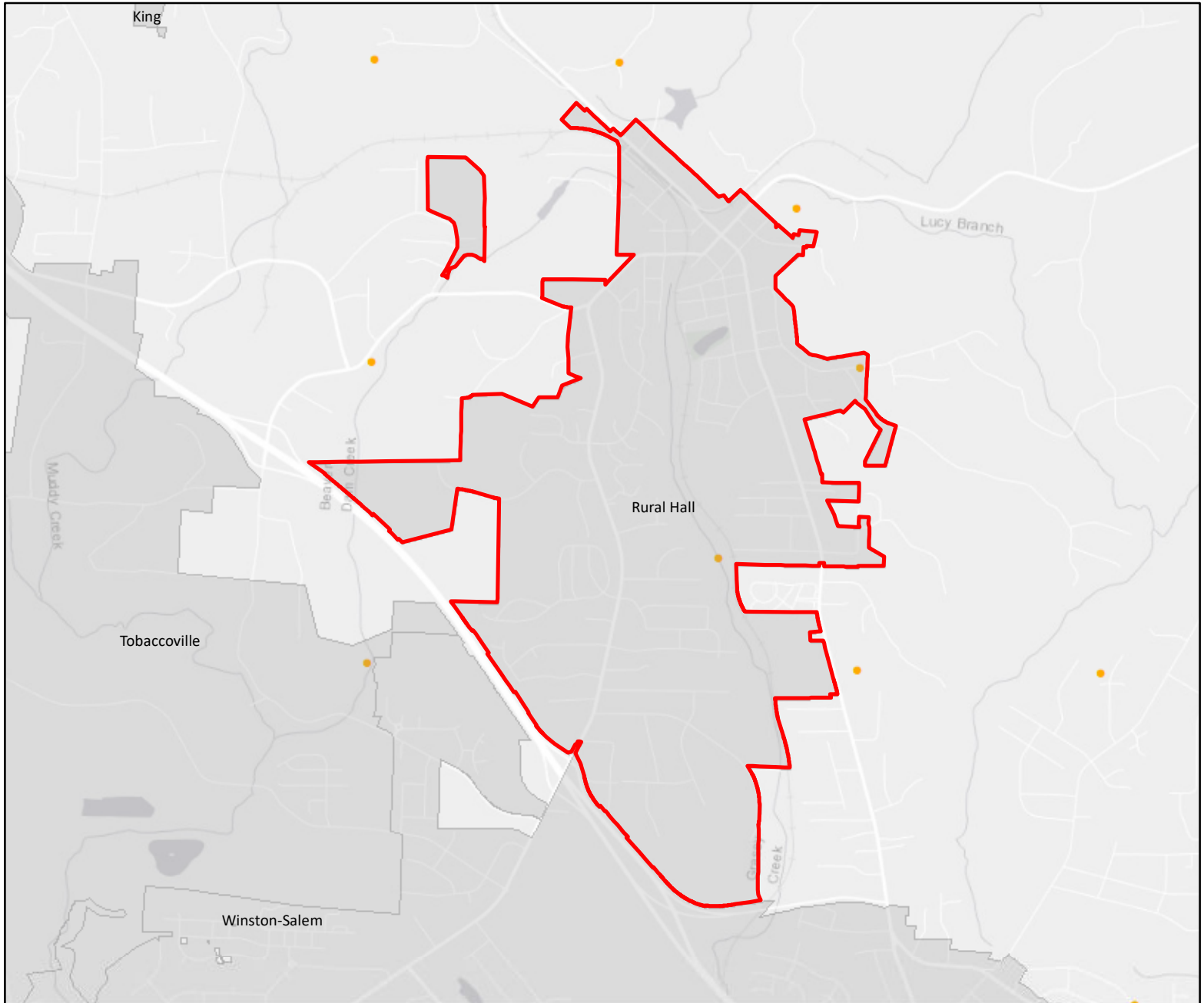
● 1 - 10	● 101 - 500
● 11 - 50	● 501 - 1000
● 51 - 100	● >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

0 0.75 1.5 3 Miles



# Rural Hall - Wildfire Events



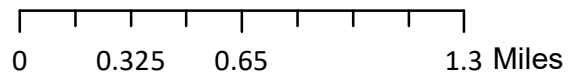
## Legend

- Municipal Boundary
- County Boundary

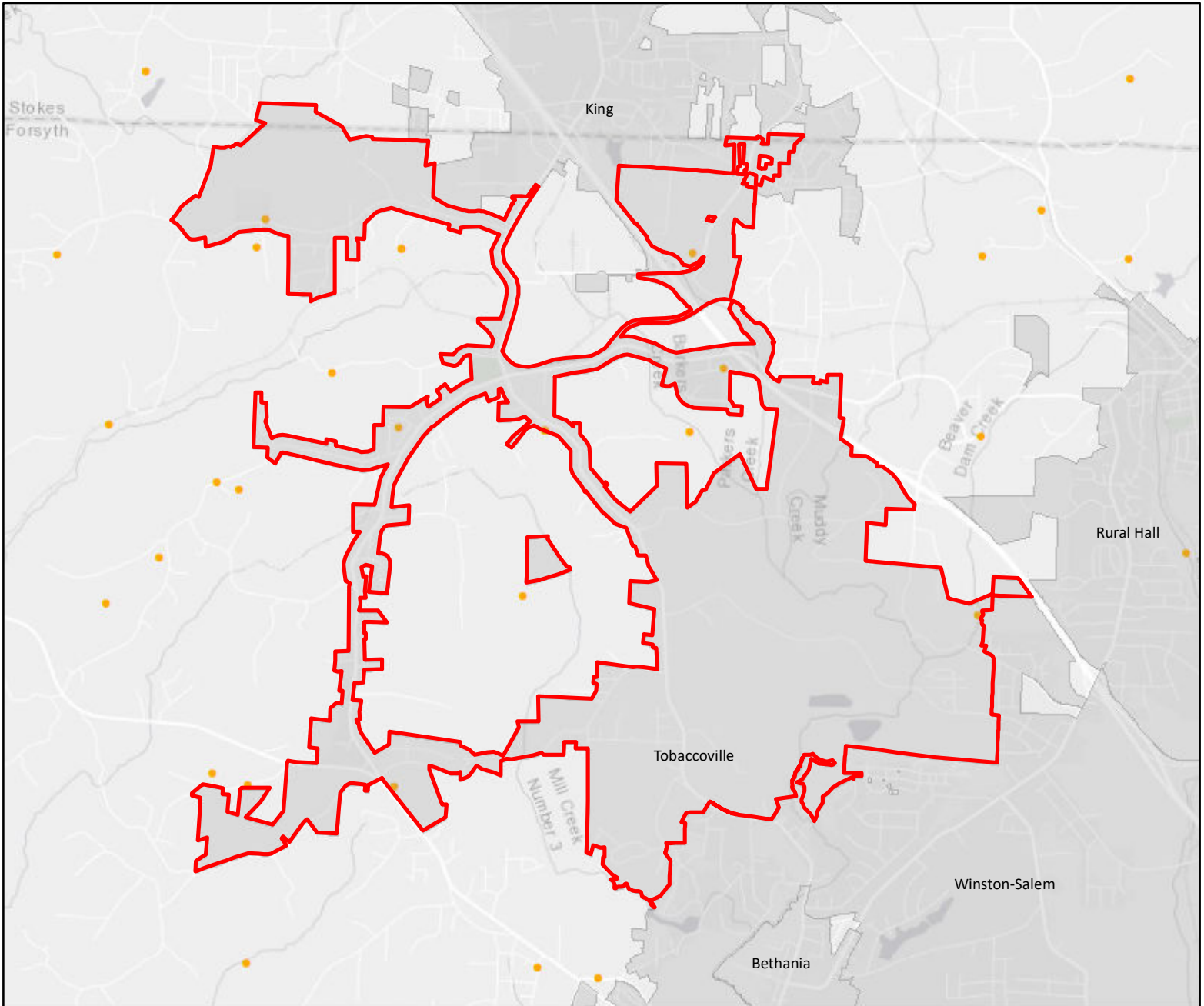
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Tobaccoville - Wildfire Events



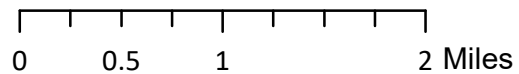
## Legend

-  Municipal Boundary
-  County Boundary

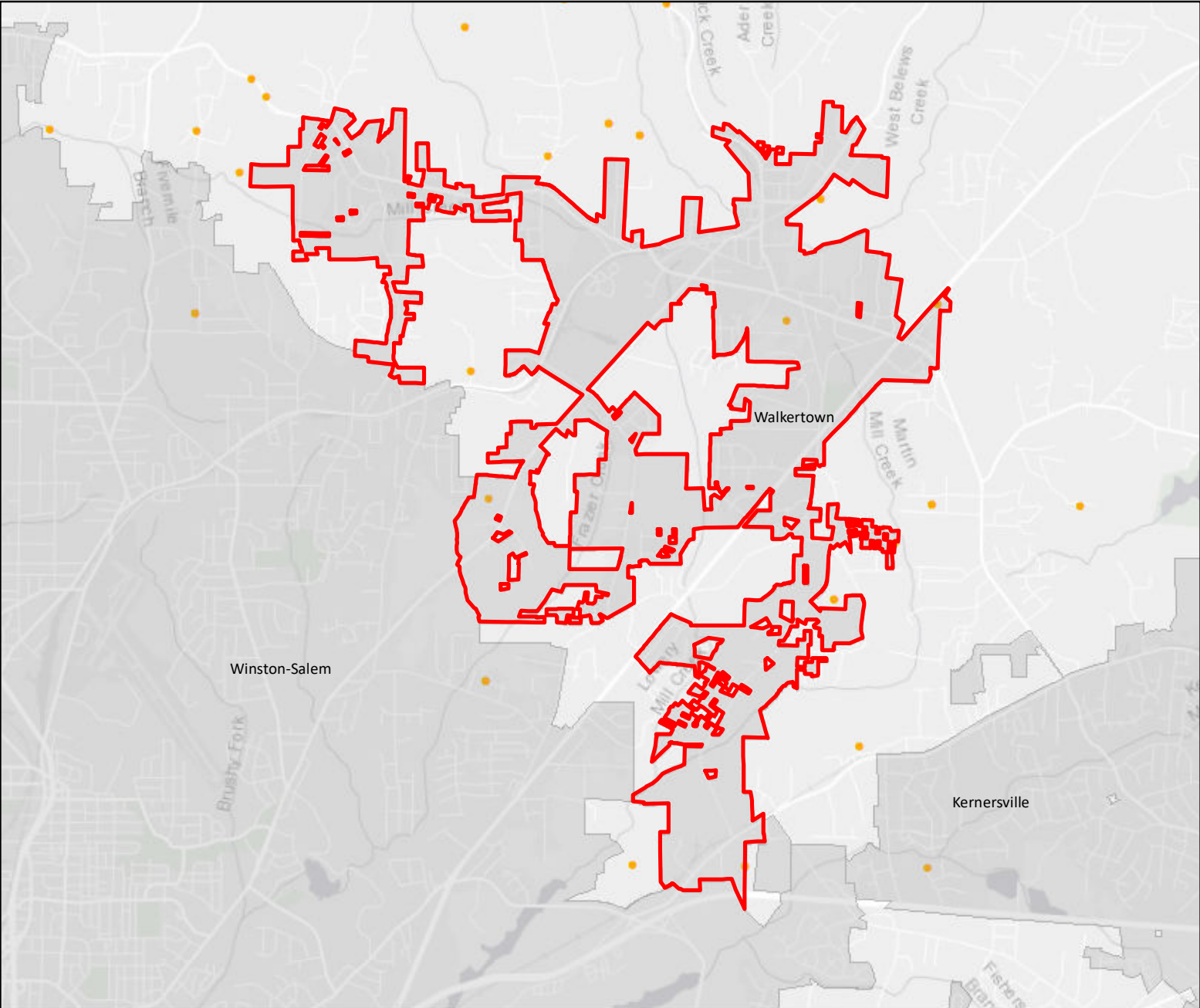
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Walkertown - Wildfire Events



**Legend**

■ Municipal Boundary

□ County Boundary

**Acres Impacted**

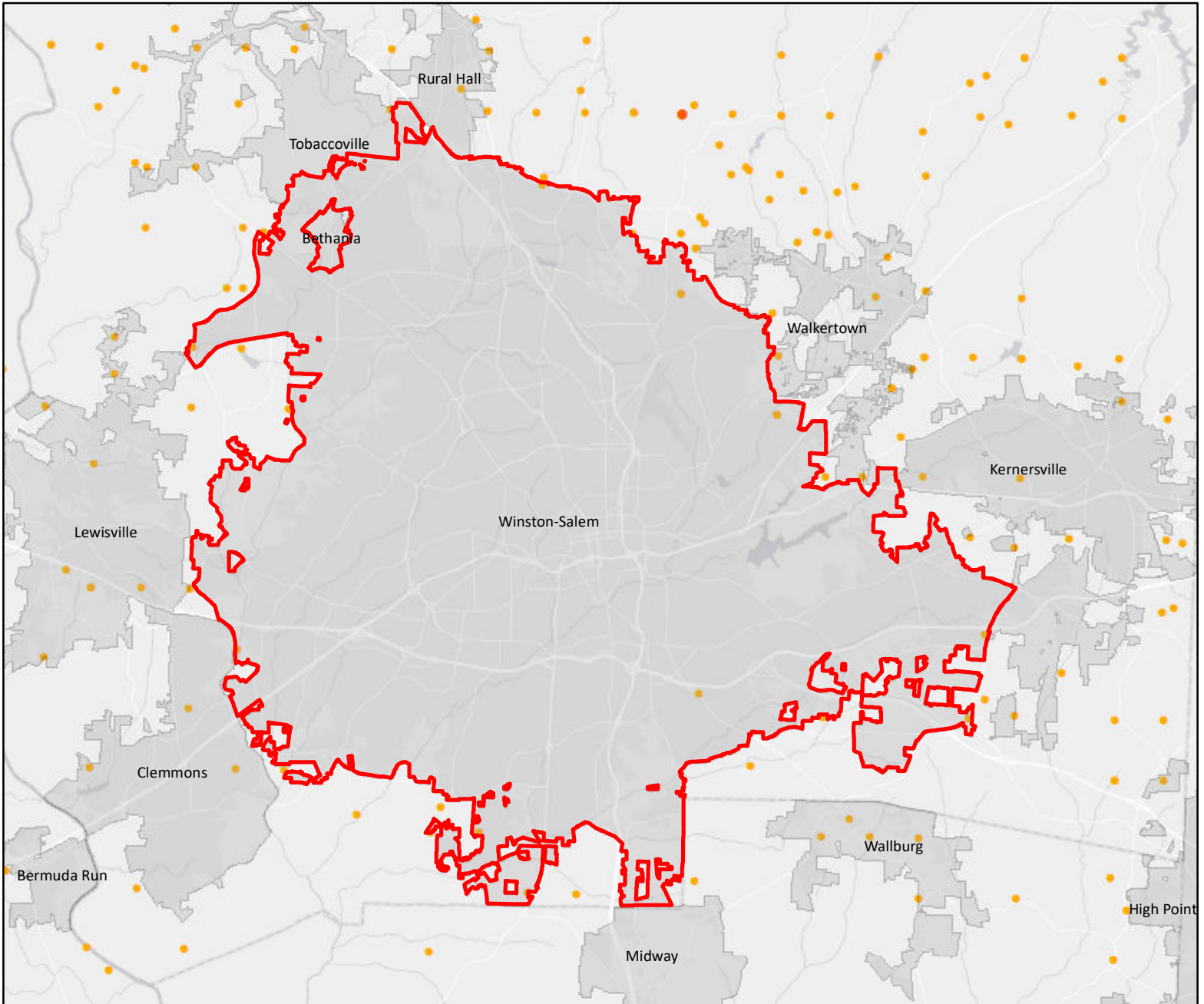
● 1 - 10	● 101 - 500
● 11 - 50	● 501 - 1000
● 51 - 100	● >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



0 0.5 1 2 Miles









# Winston-Salem - Wildfire Events



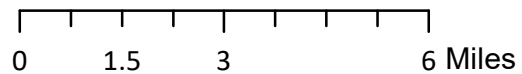
## Legend

-  Municipal Boundary
-  County Boundary

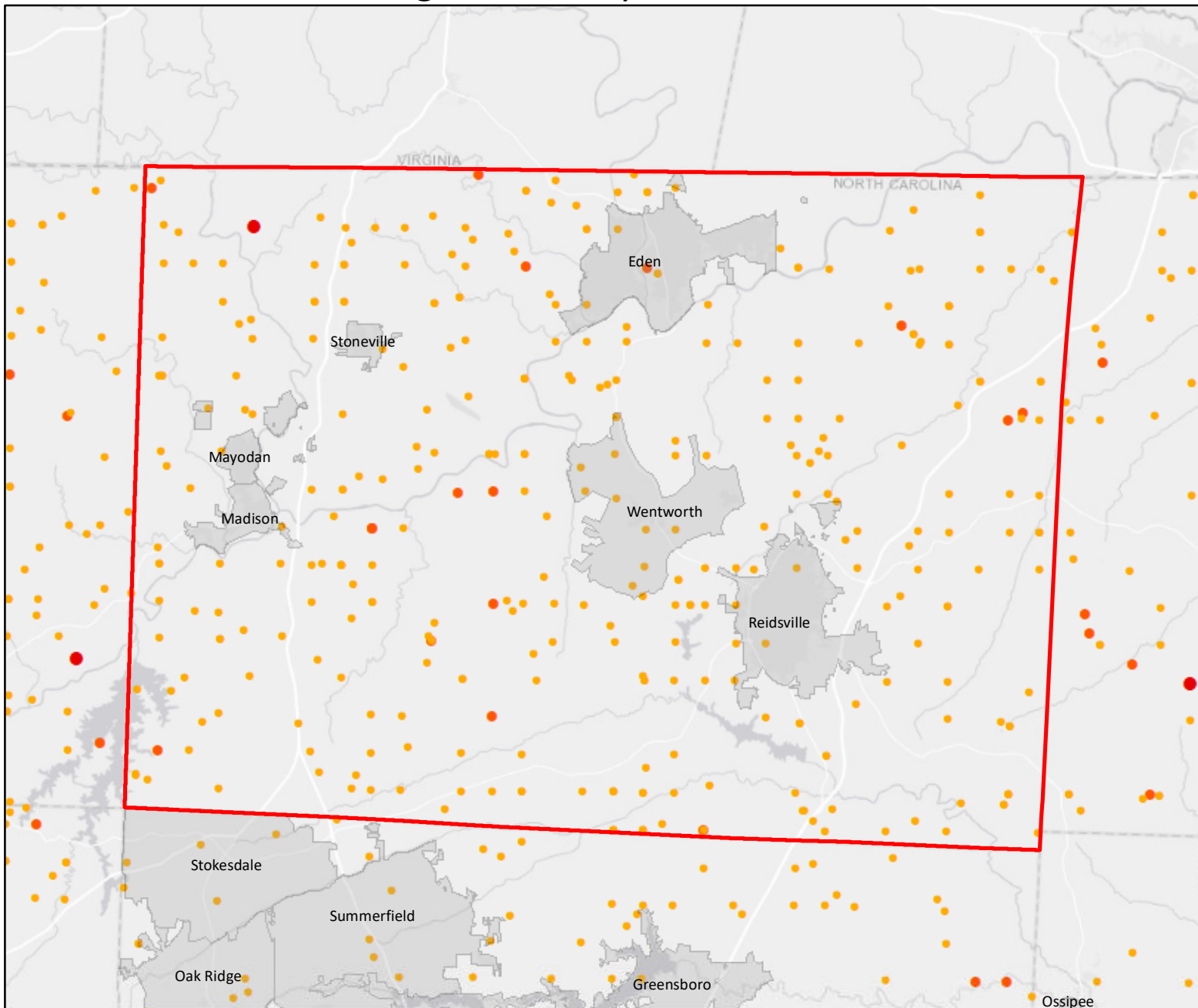
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Rockingham County - Wildfire Events



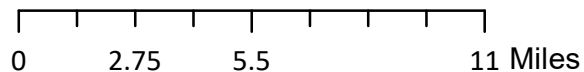
## Legend

- Municipal Boundary
- County Boundary

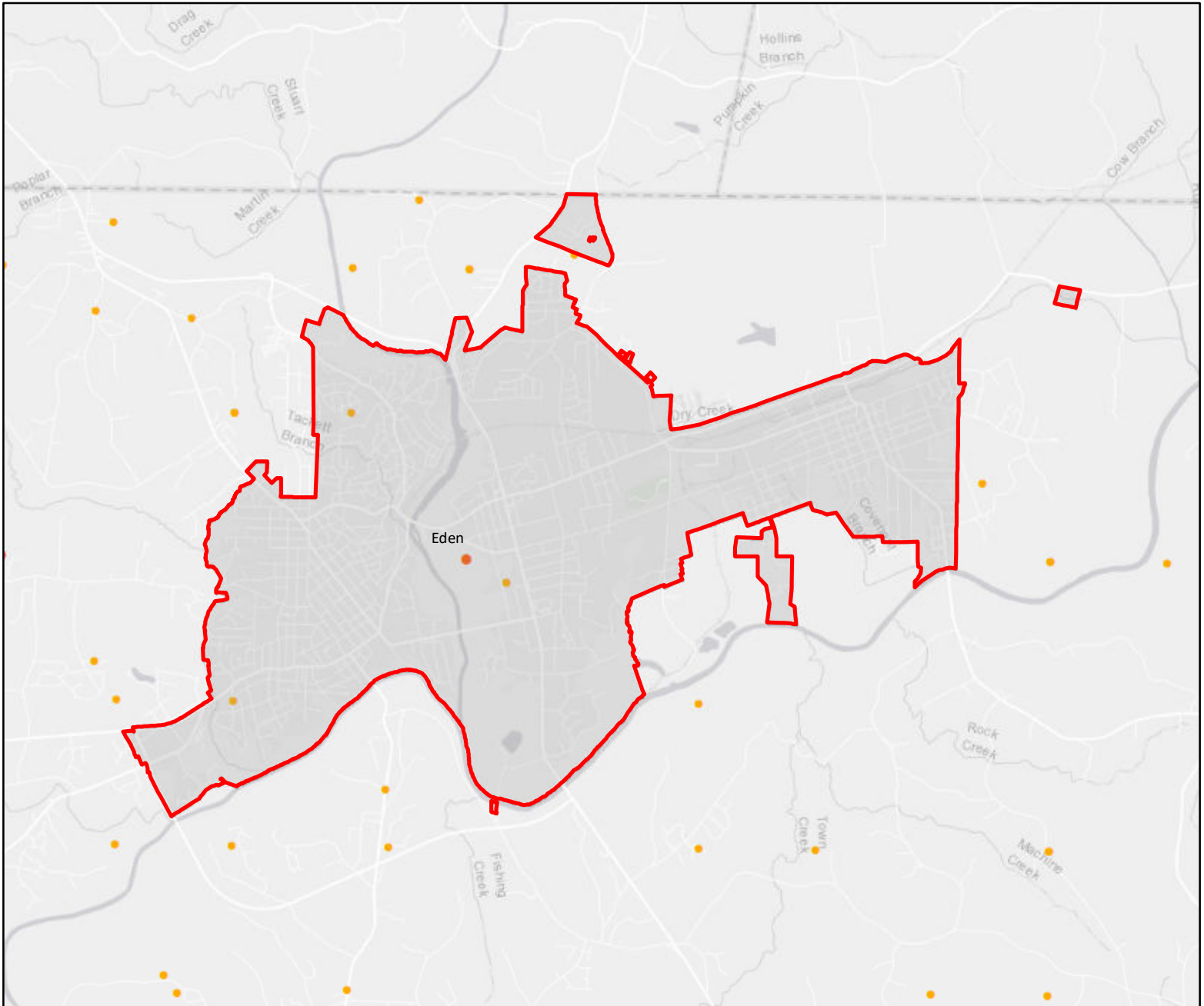
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Eden - Wildfire Events



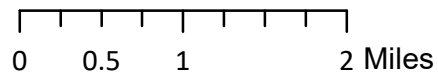
## Legend

-  Municipal Boundary
-  County Boundary

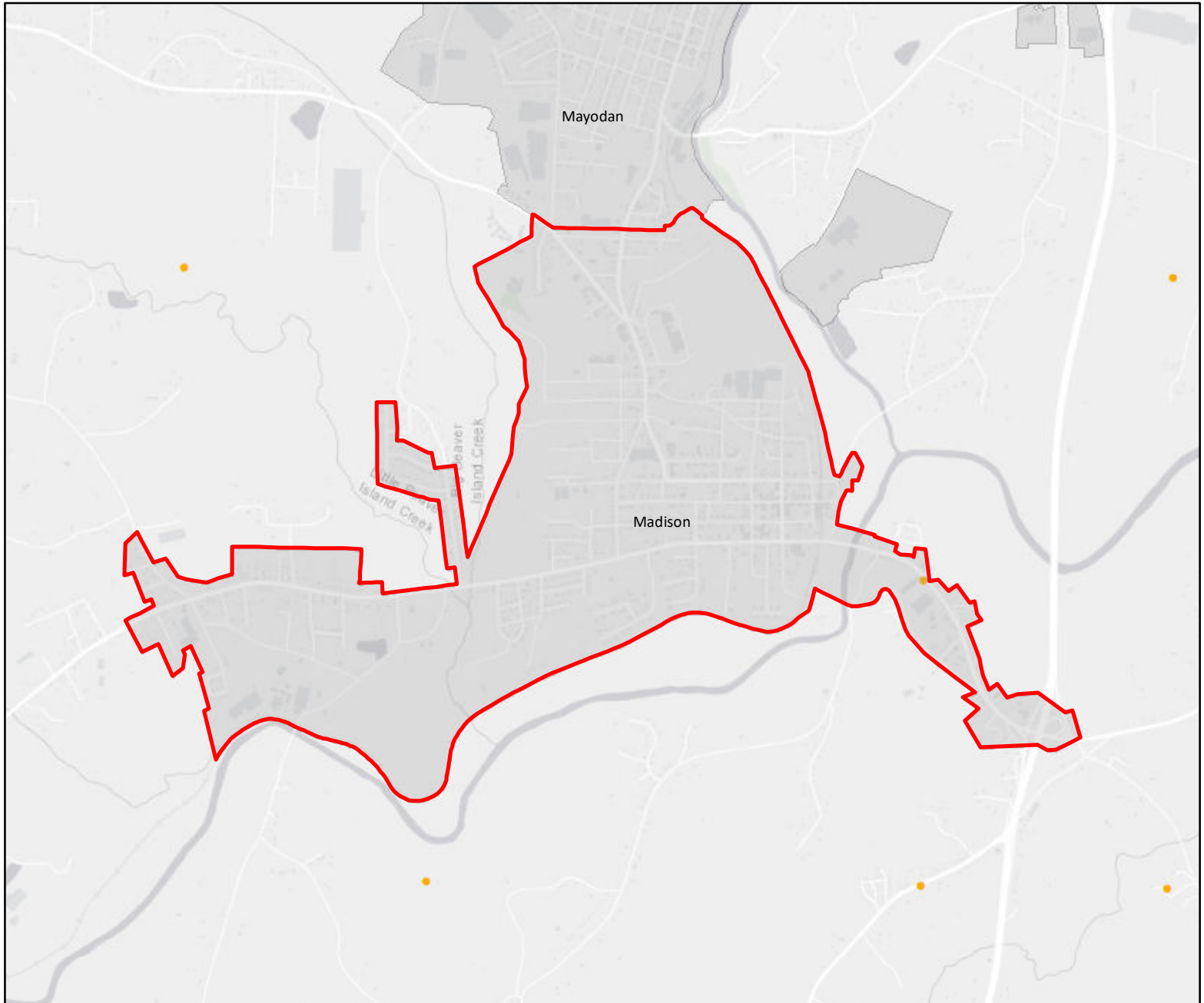
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Madison - Wildfire Events



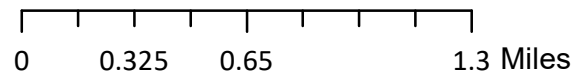
## Legend

-  Municipal Boundary
-  County Boundary

## Acres Impacted

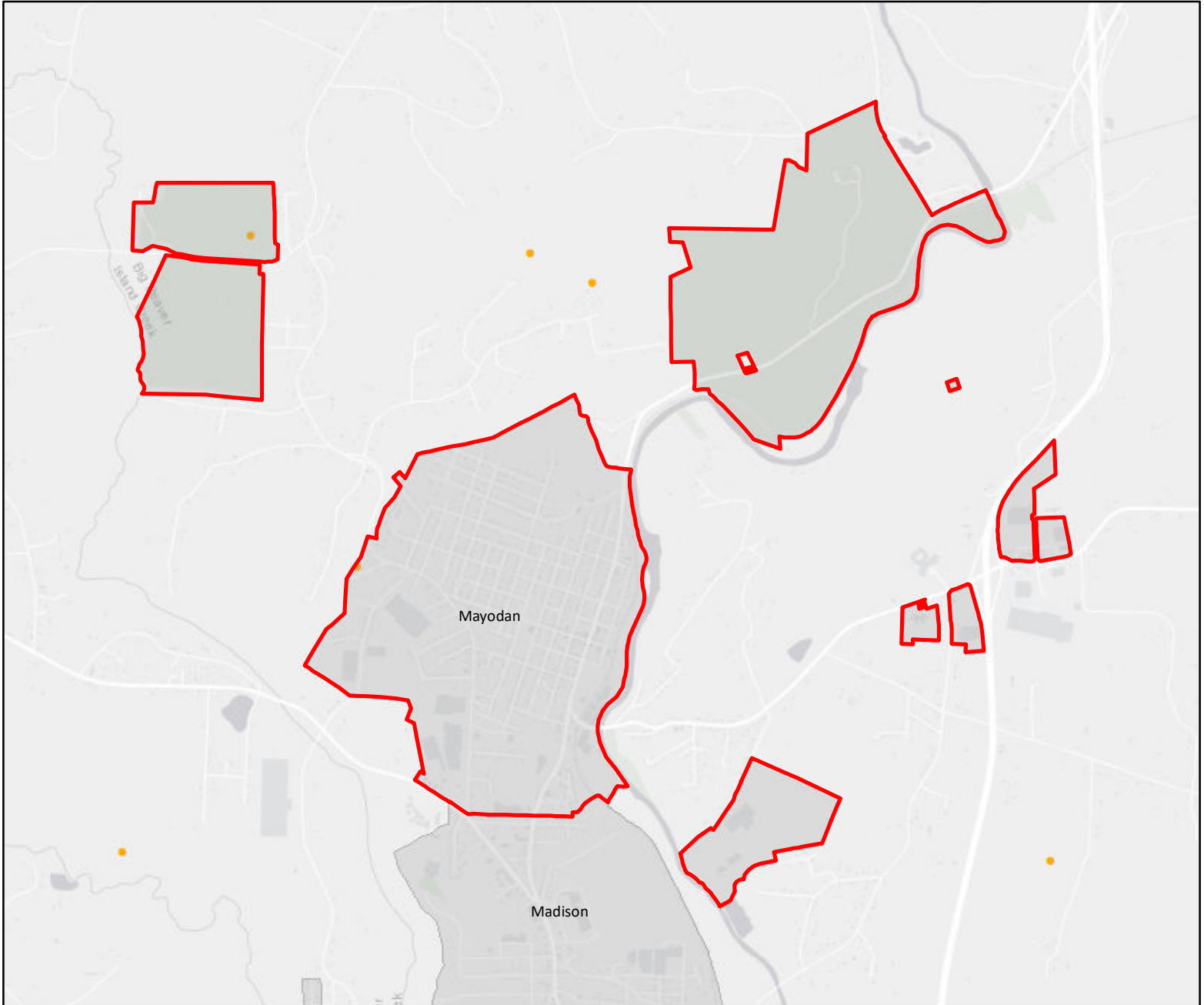
- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL












# Mayodan - Wildfire Events



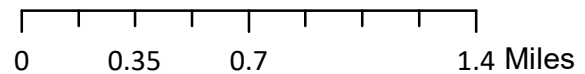
## Legend

-  Municipal Boundary
-  County Boundary

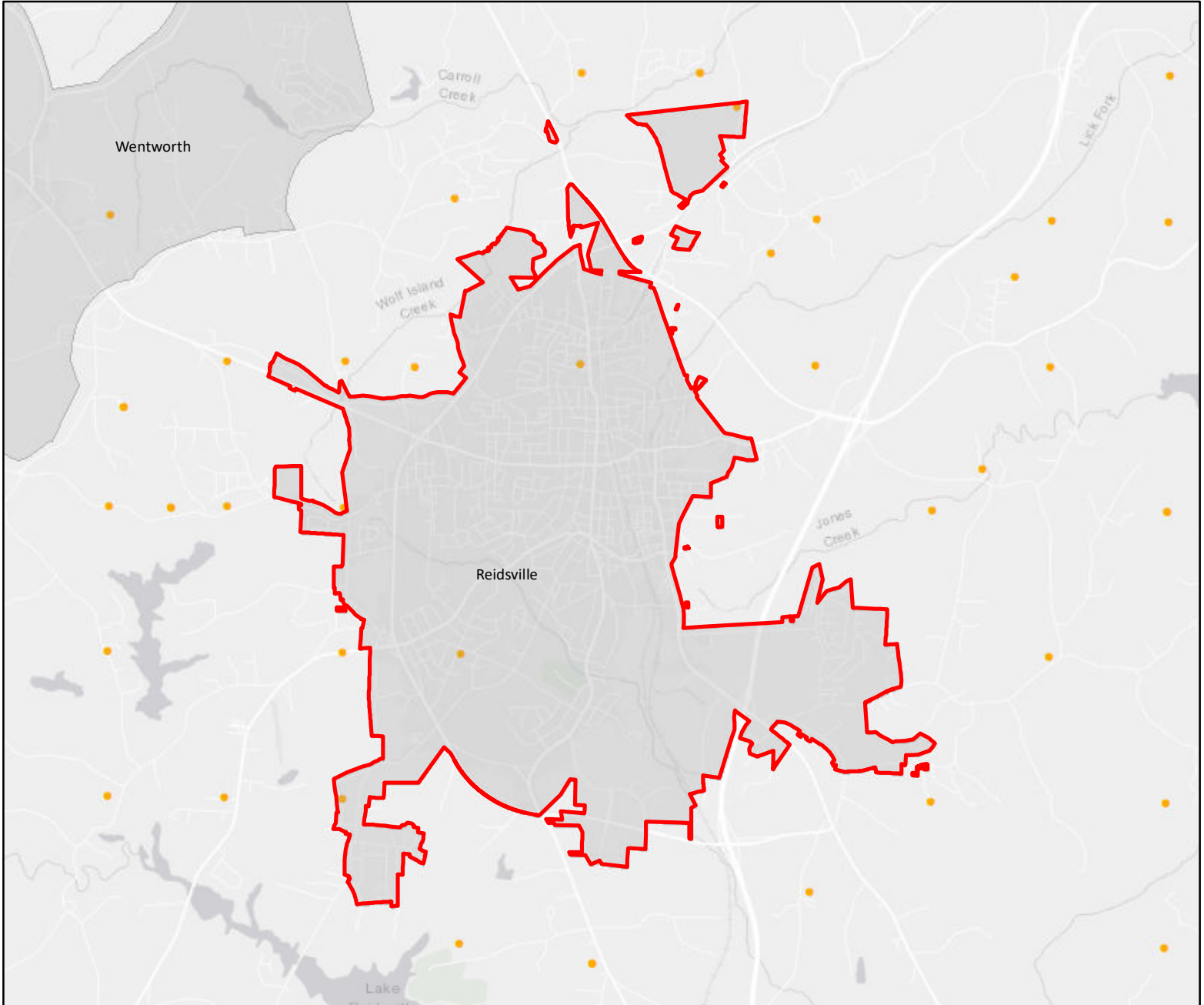
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Reidsville - Wildfire Events



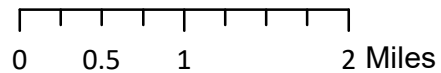
## Legend

-  Municipal Boundary
-  County Boundary

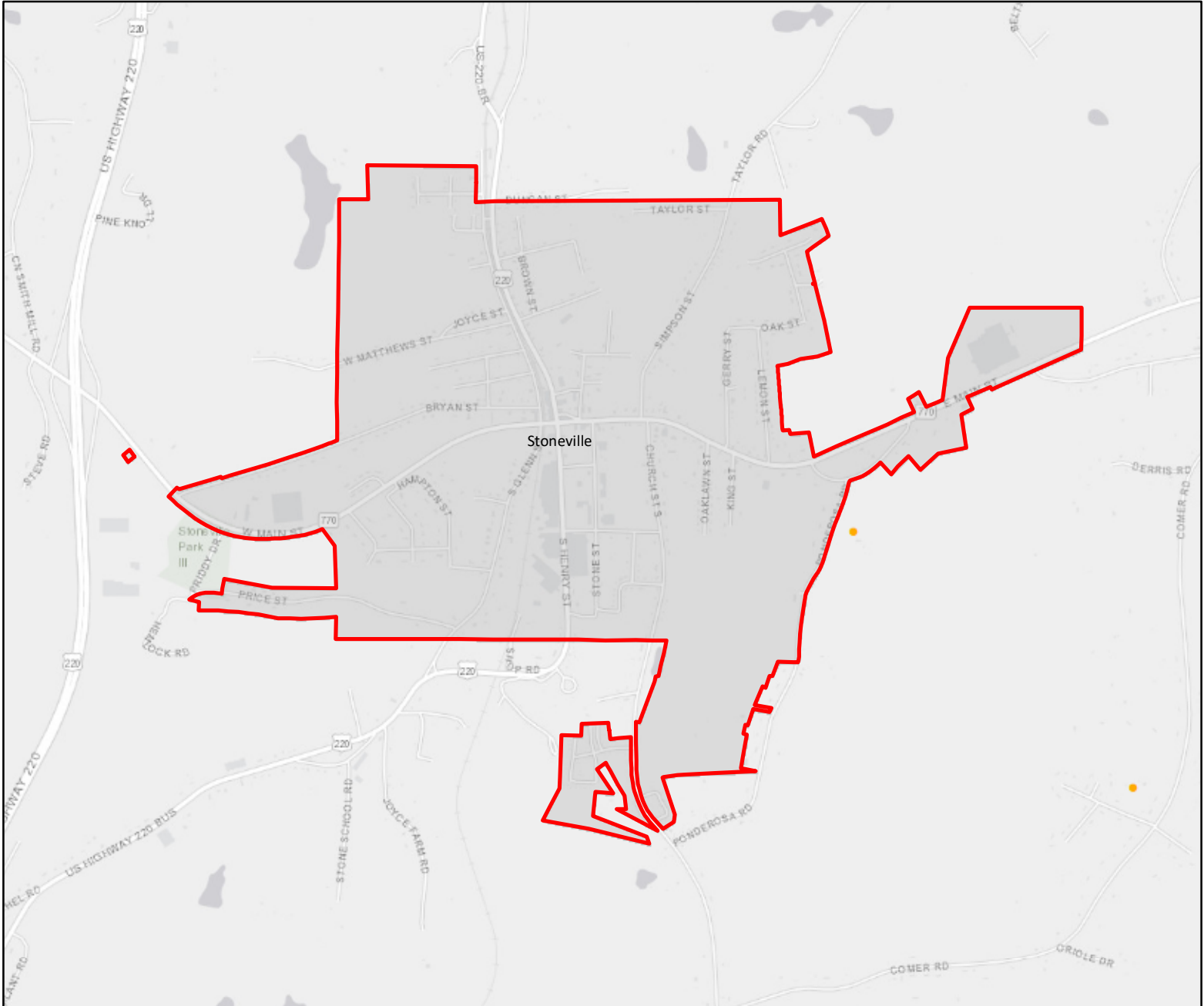
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Stoneville - Wildfire Events



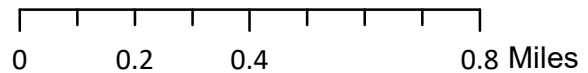
## Legend

-  Municipal Boundary
-  County Boundary

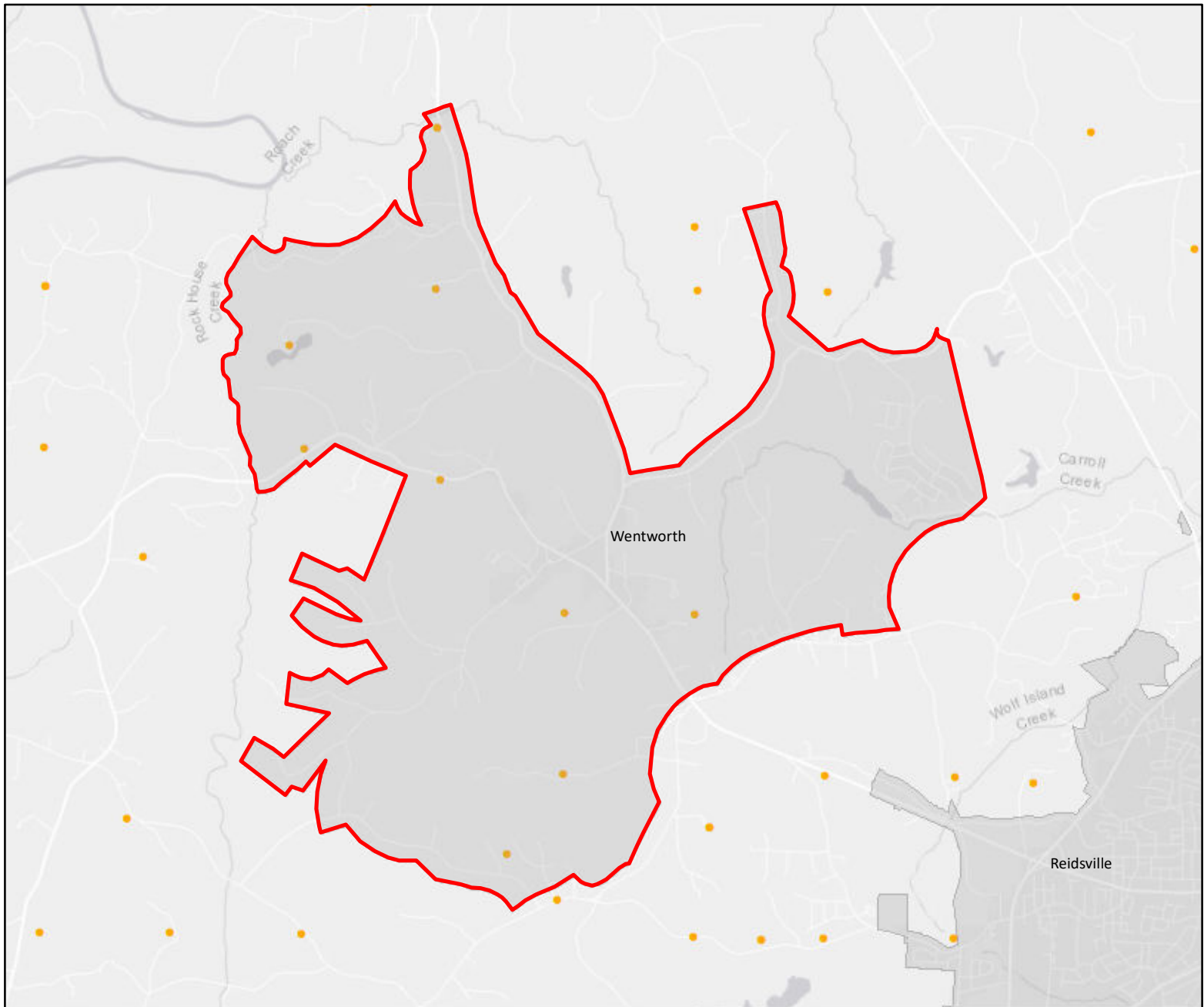
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL




# Wentworth - Wildfire Events



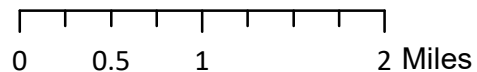
## Legend

-  Municipal Boundary
-  County Boundary

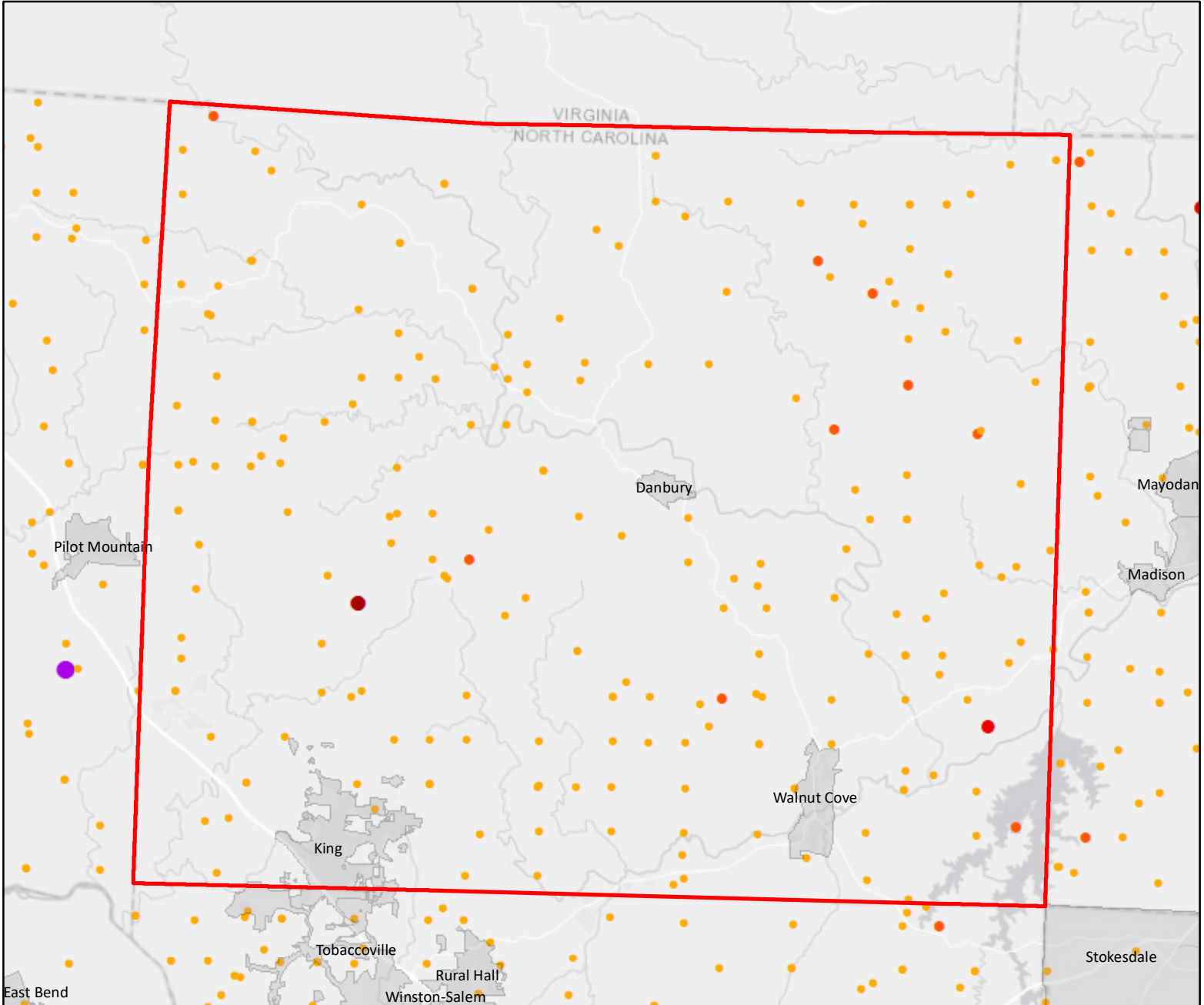
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Stokes County - Wildfire Events



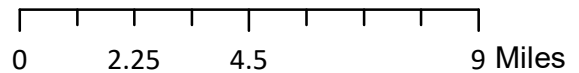
## Legend

- Municipal Boundary
- County Boundary

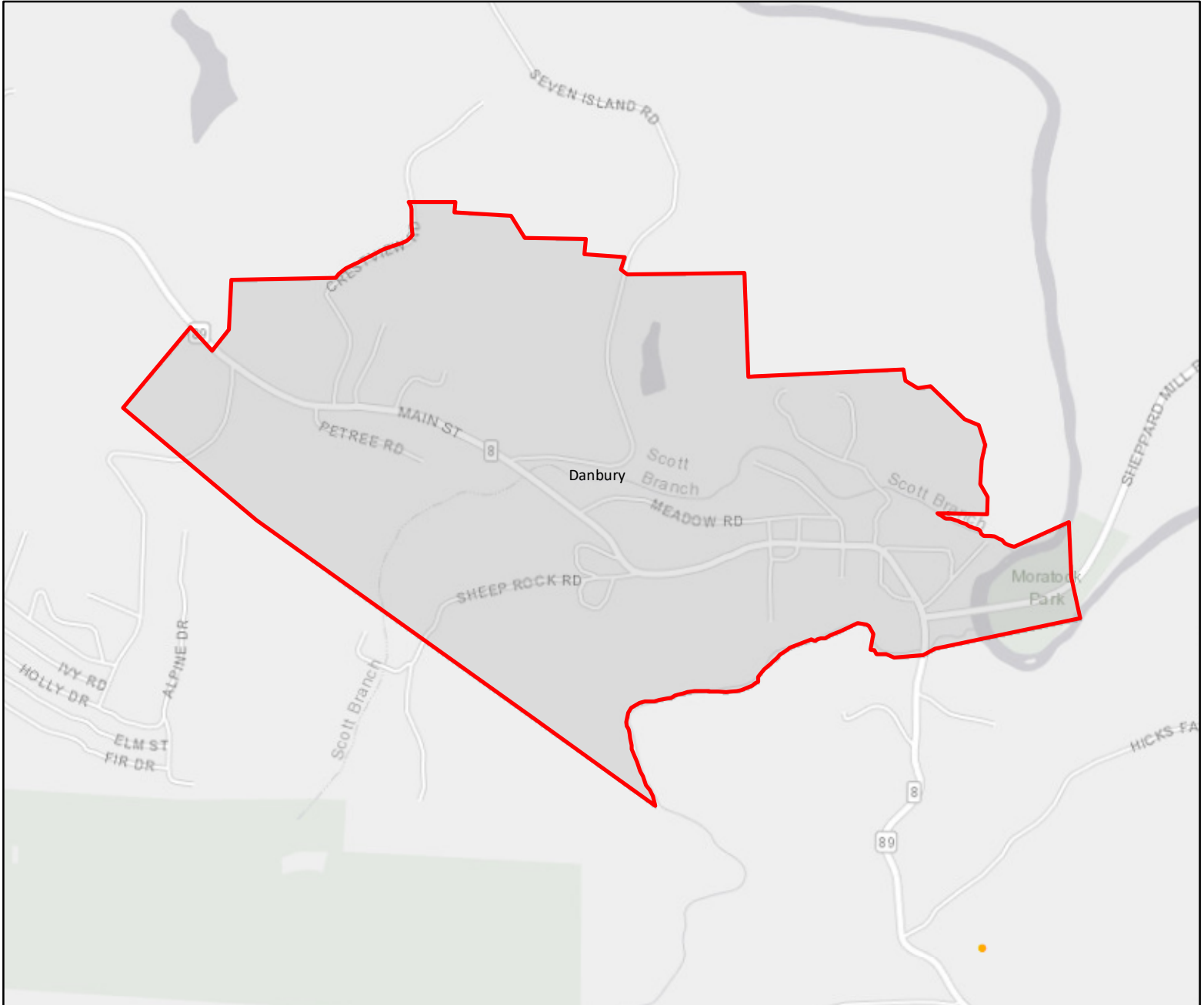
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL









# Danbury - Wildfire Events



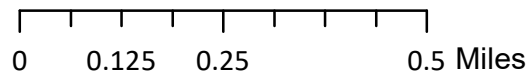
## Legend

-  Municipal Boundary
-  County Boundary

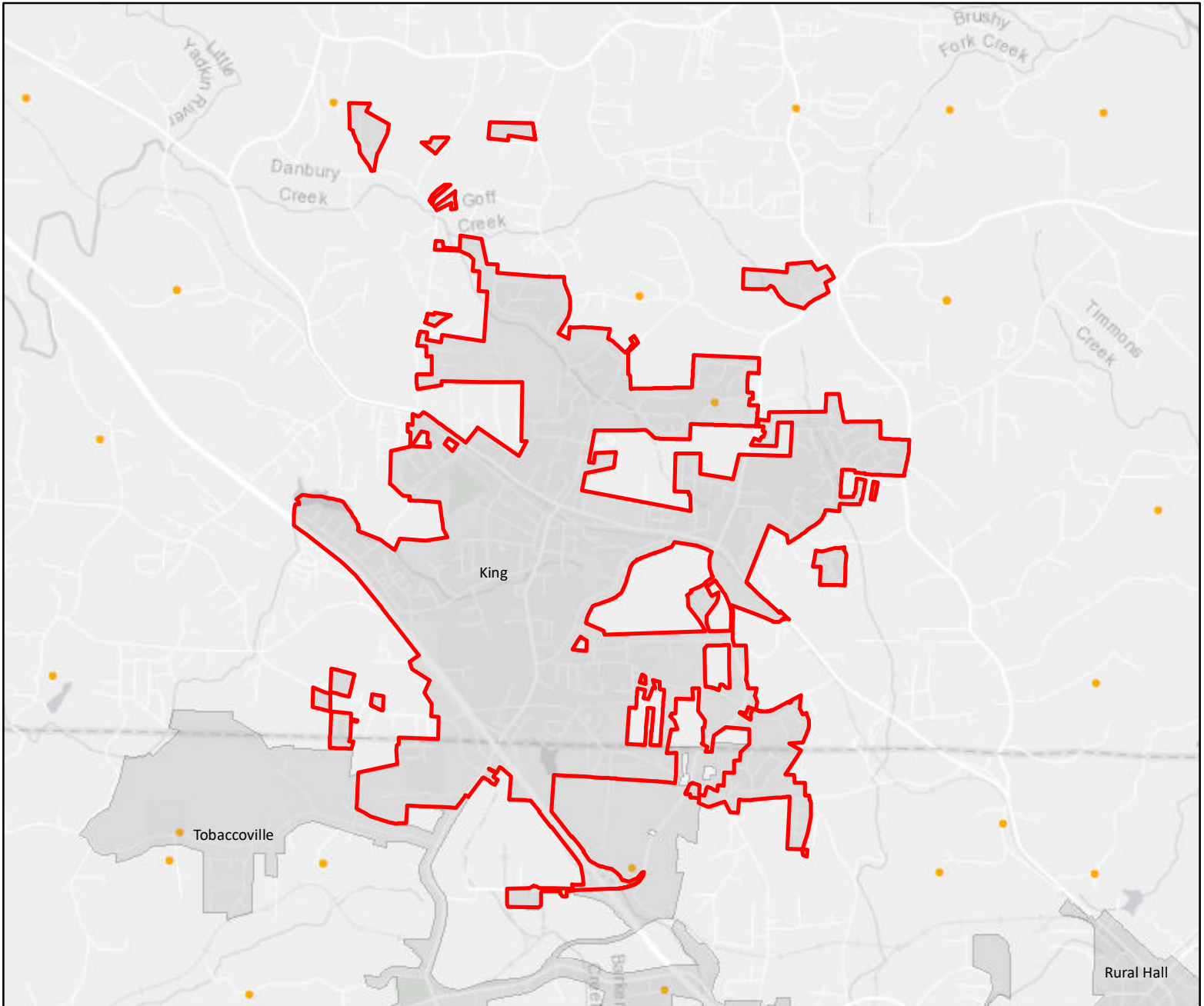
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# King - Wildfire Events



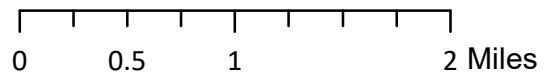
## Legend

- Municipal Boundary
- County Boundary

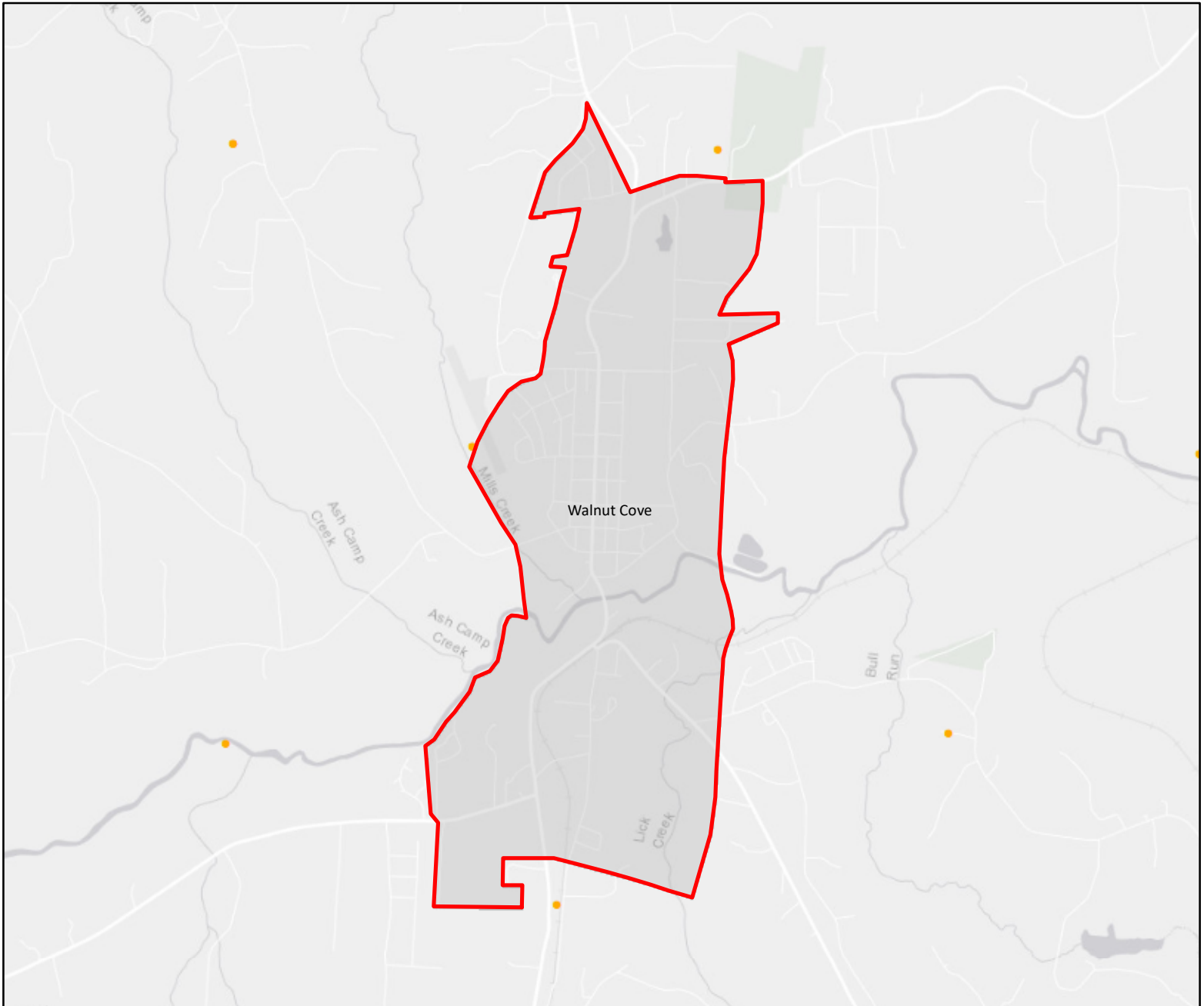
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL








# Walnut Cove - Wildfire Events



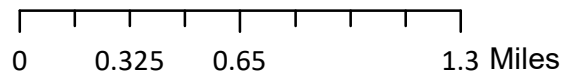
## Legend

-  Municipal Boundary
-  County Boundary

## Acres Impacted

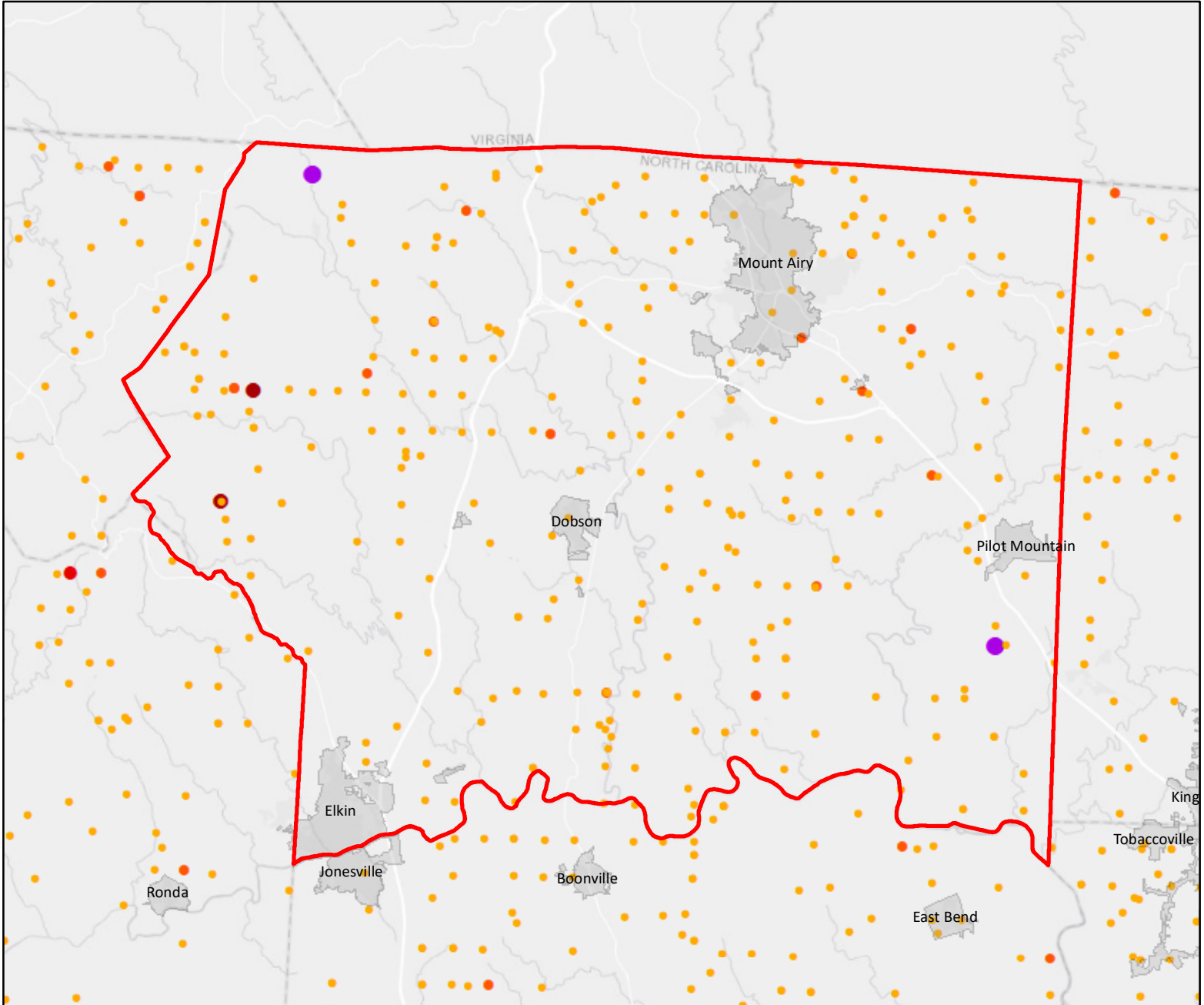
- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





# Surry County - Wildfire Events



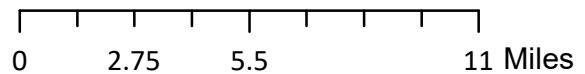
## Legend

- Municipal Boundary
- County Boundary

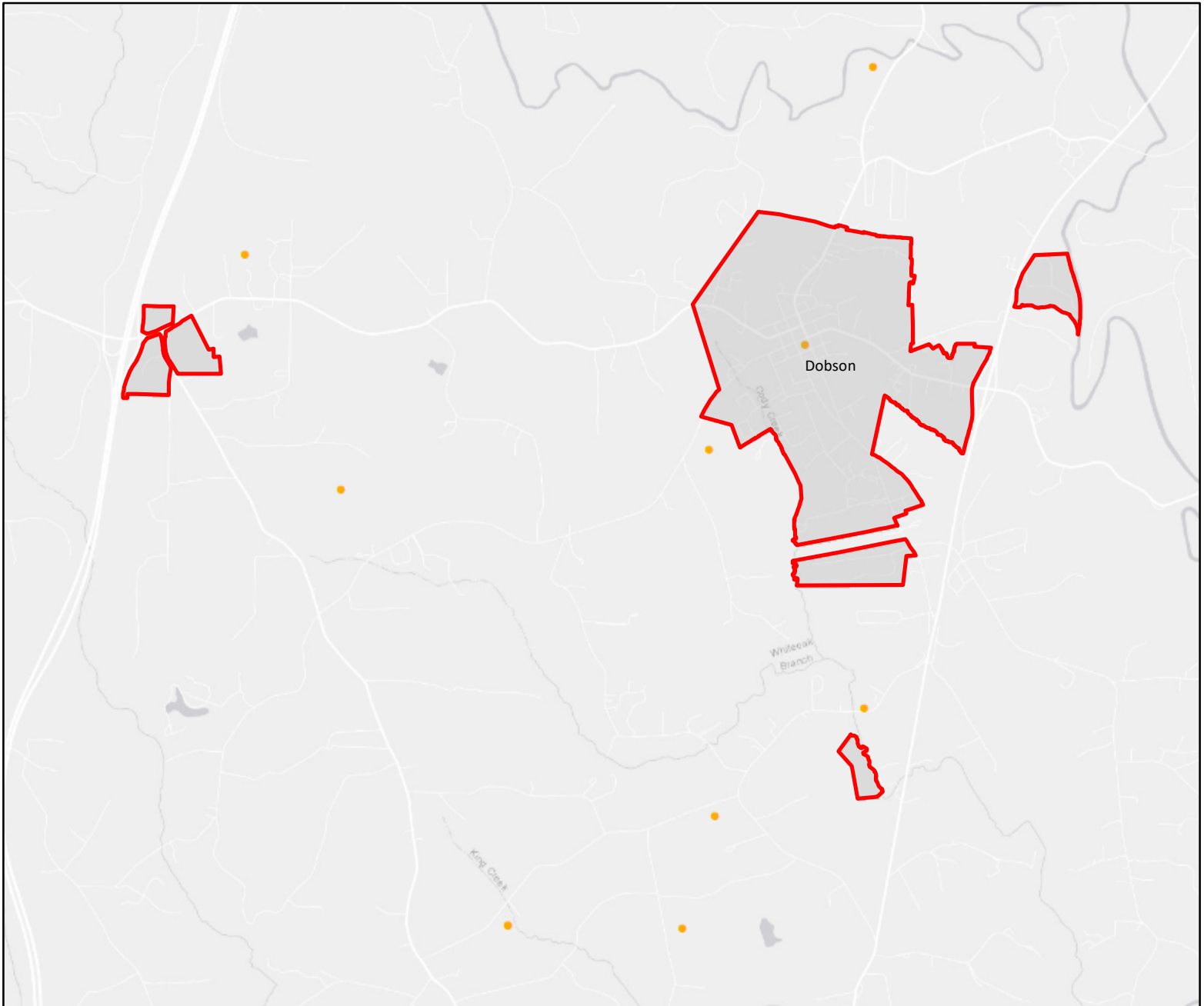
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL








# Dobson - Wildfire Events



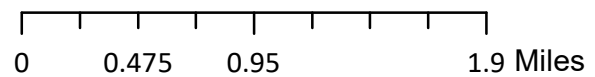
## Legend

-  Municipal Boundary
-  County Boundary

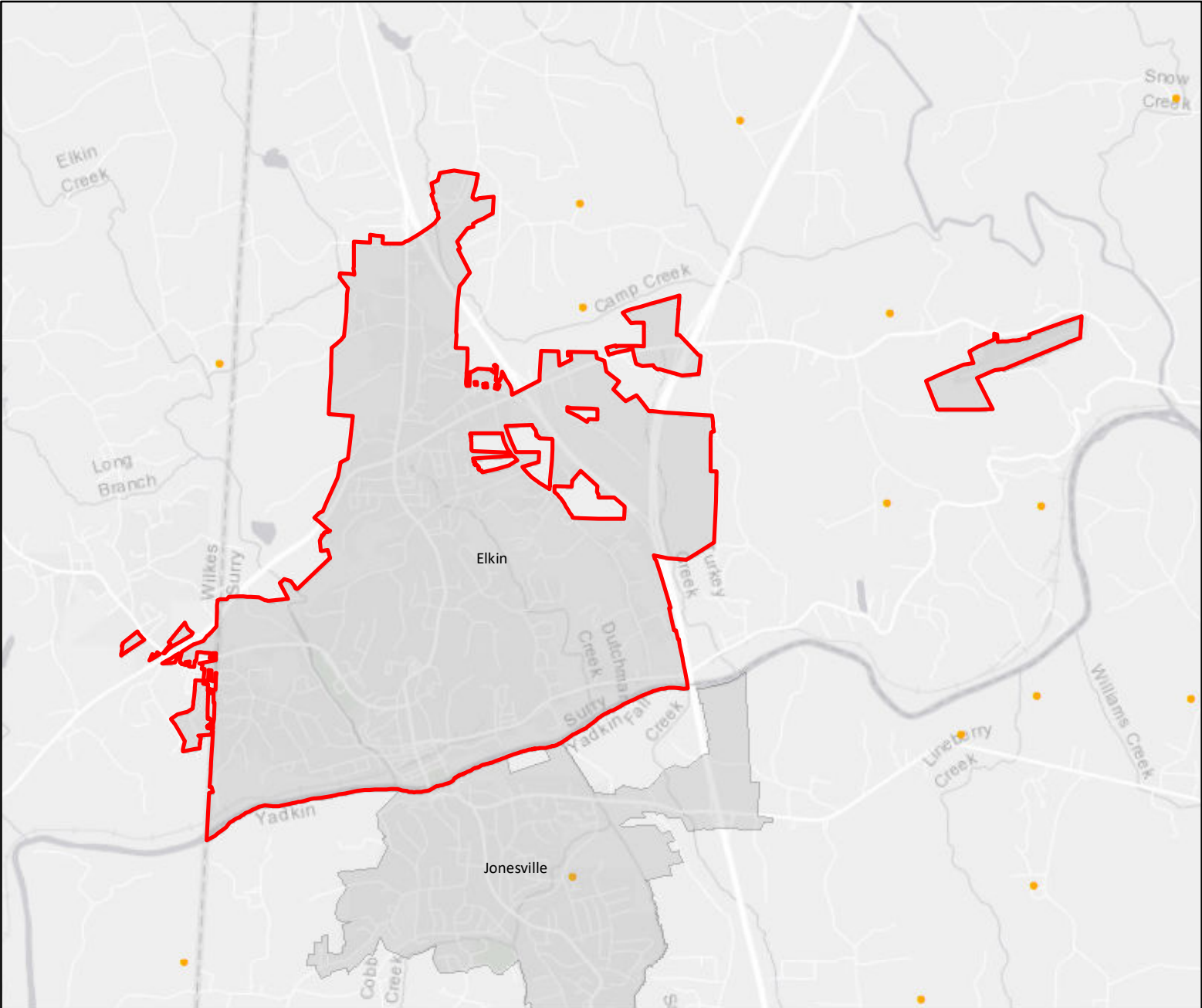
## Acres Impacted

- |  |  |
|--|--|
|  1 - 10   |  101 - 500  |
|  11 - 50  |  501 - 1000 |
|  51 - 100 |  >1000      |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Elkin - Wildfire Events



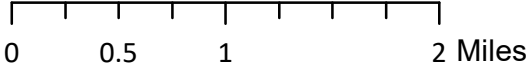
### Legend

- Municipal Boundary
- County Boundary

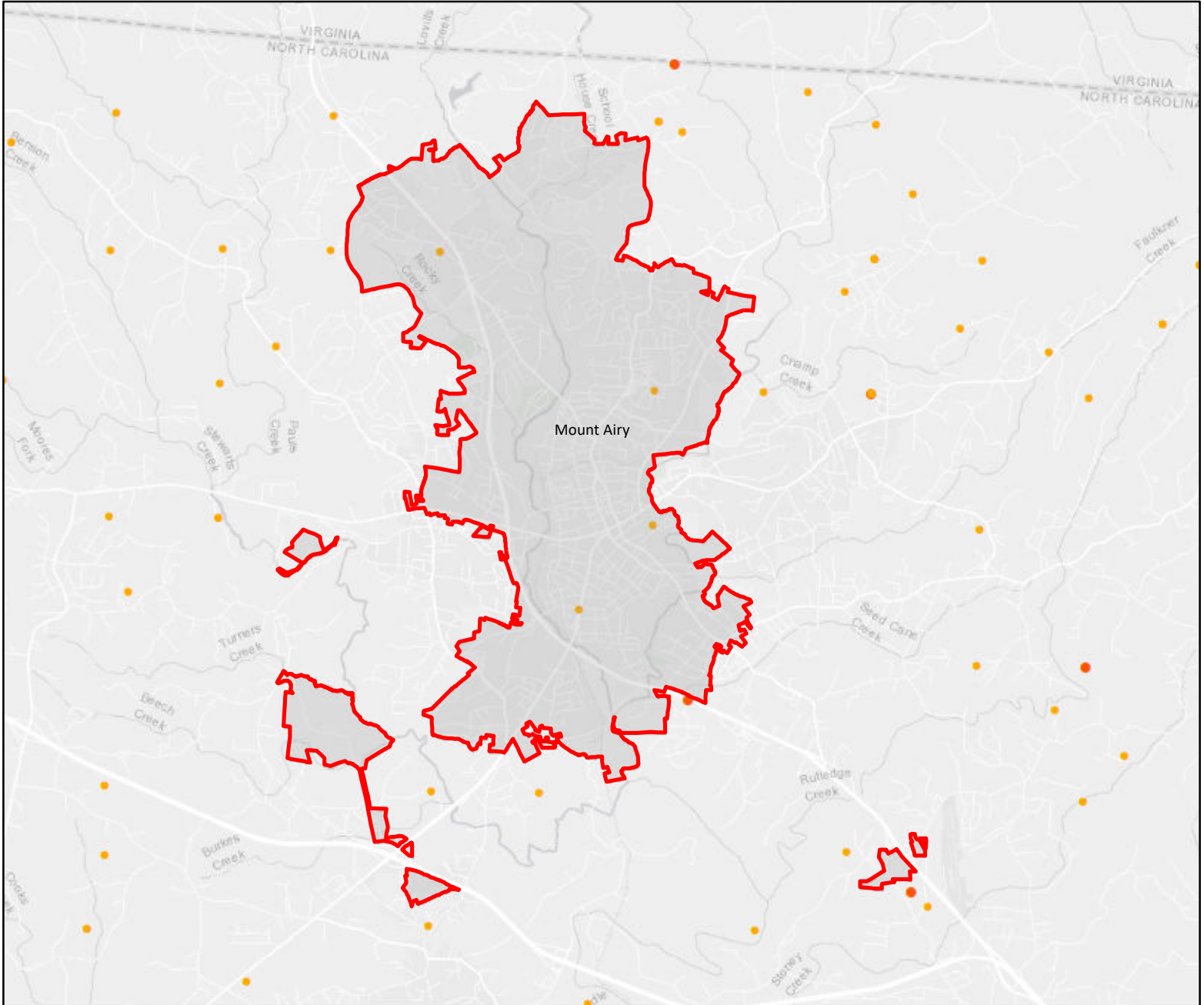
### Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







# Mount Airy - Wildfire Events



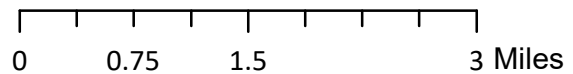
## Legend

-  Municipal Boundary
-  County Boundary

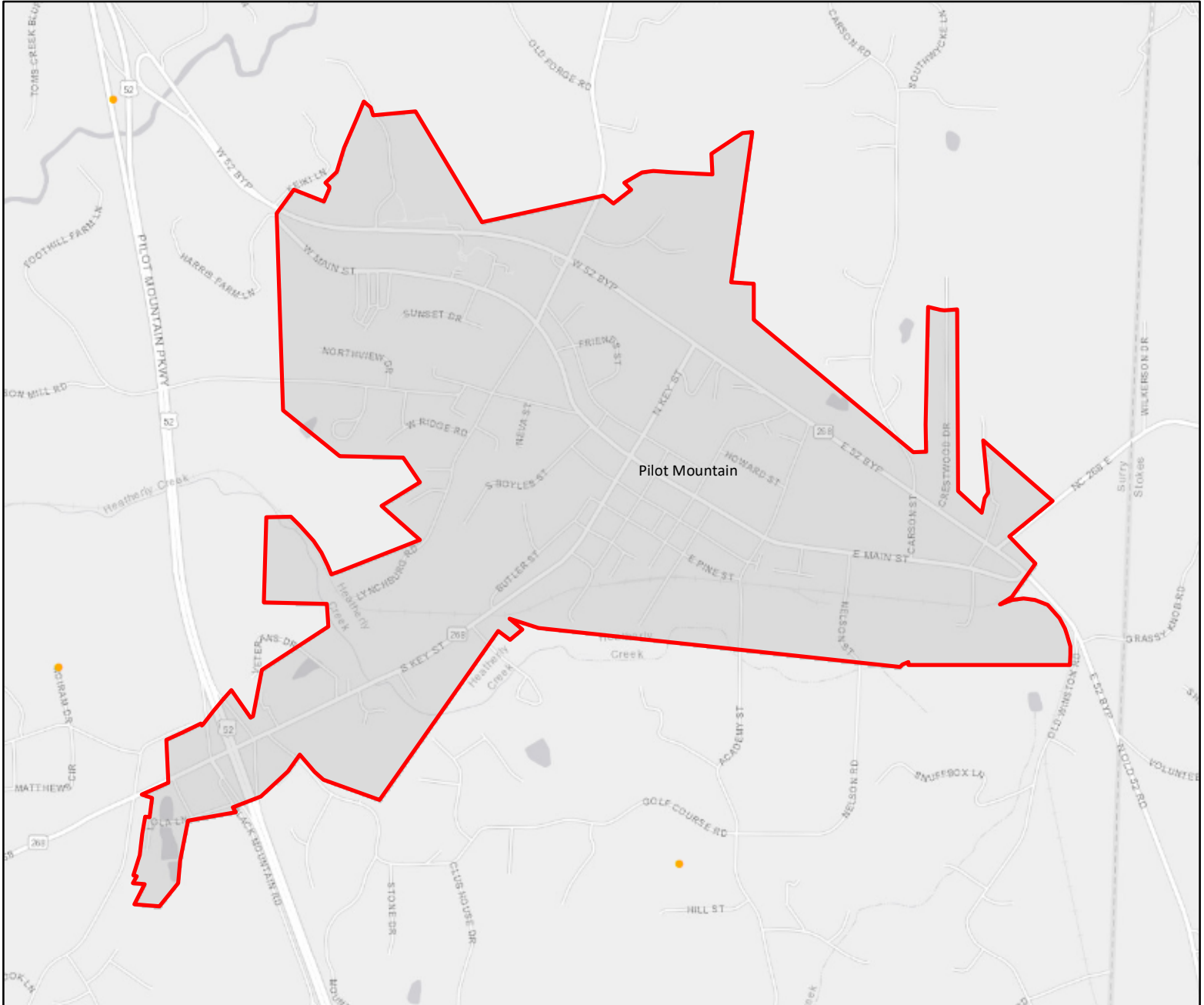
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Pilot Mountain - Wildfire Events

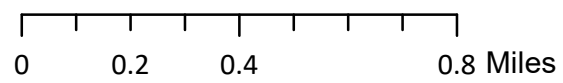


## Legend

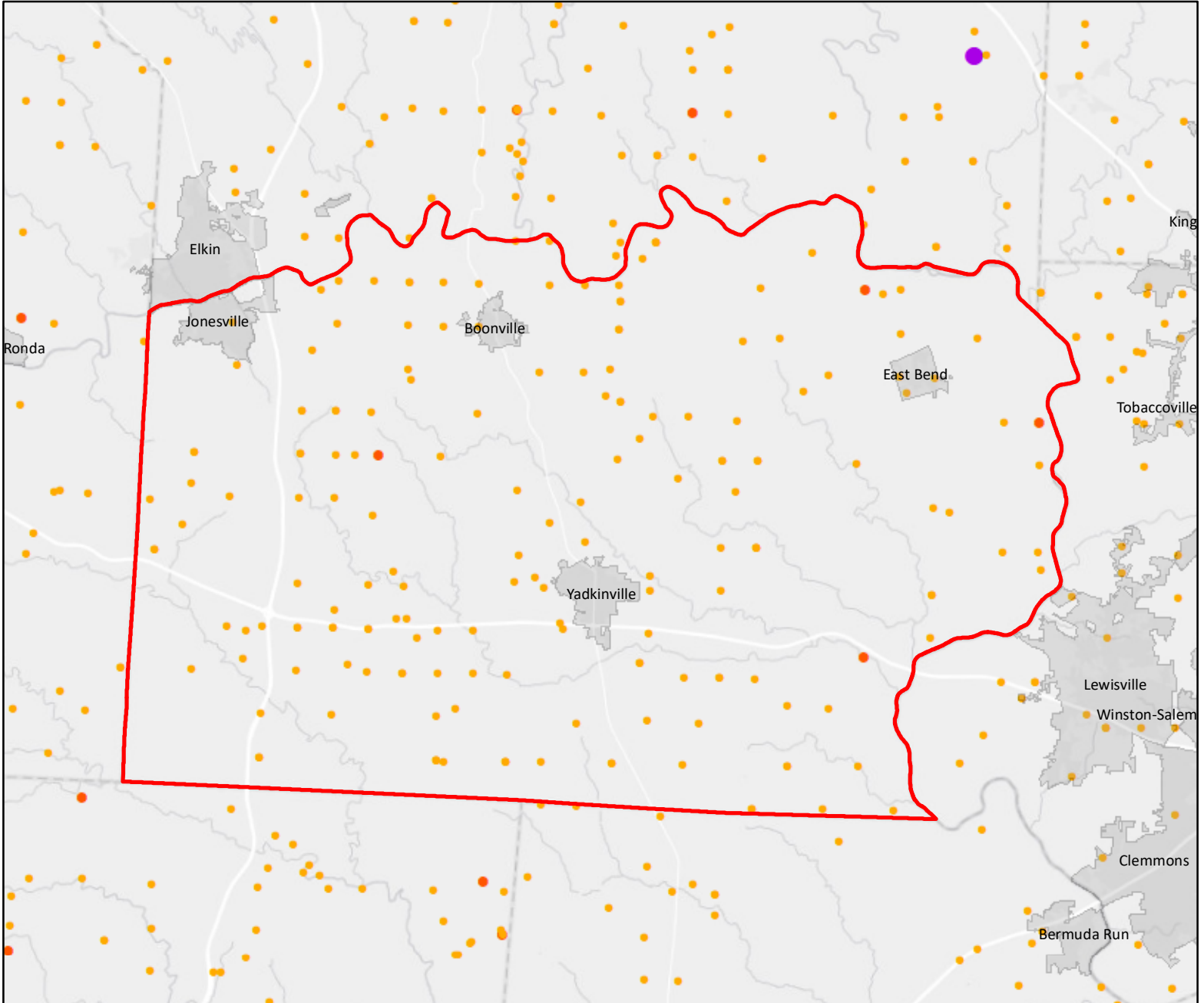
- Municipal Boundary
- County Boundary

- ### Acres Impacted
- |   |  |
|---|--|
| <span style="color: yellow;">●</span> 1 - 10  | <span style="color: red;">●</span> 101 - 500     |
| <span style="color: orange;">●</span> 11 - 50 | <span style="color: purple;">●</span> 501 - 1000 |
| <span style="color: red;">●</span> 51 - 100   | <span style="color: darkblue;">●</span> >1000    |

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Yadkin County - Wildfire Events



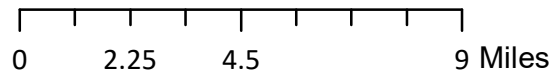
## Legend

- Municipal Boundary
- County Boundary

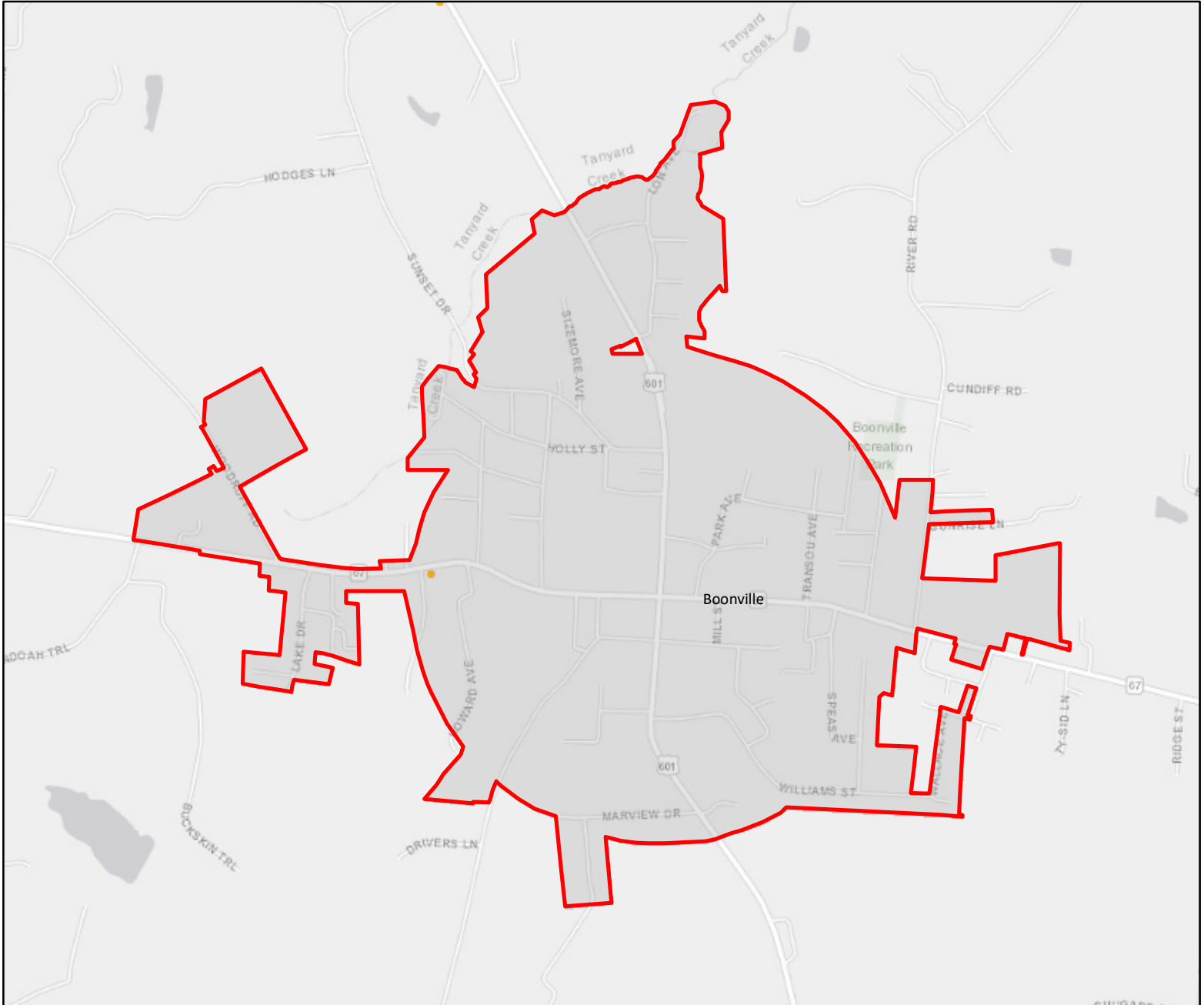
## Acres Impacted

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





# Boonville - Wildfire Events



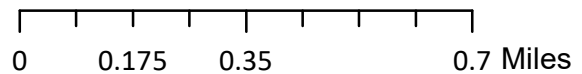
## Legend

-  Municipal Boundary
-  County Boundary

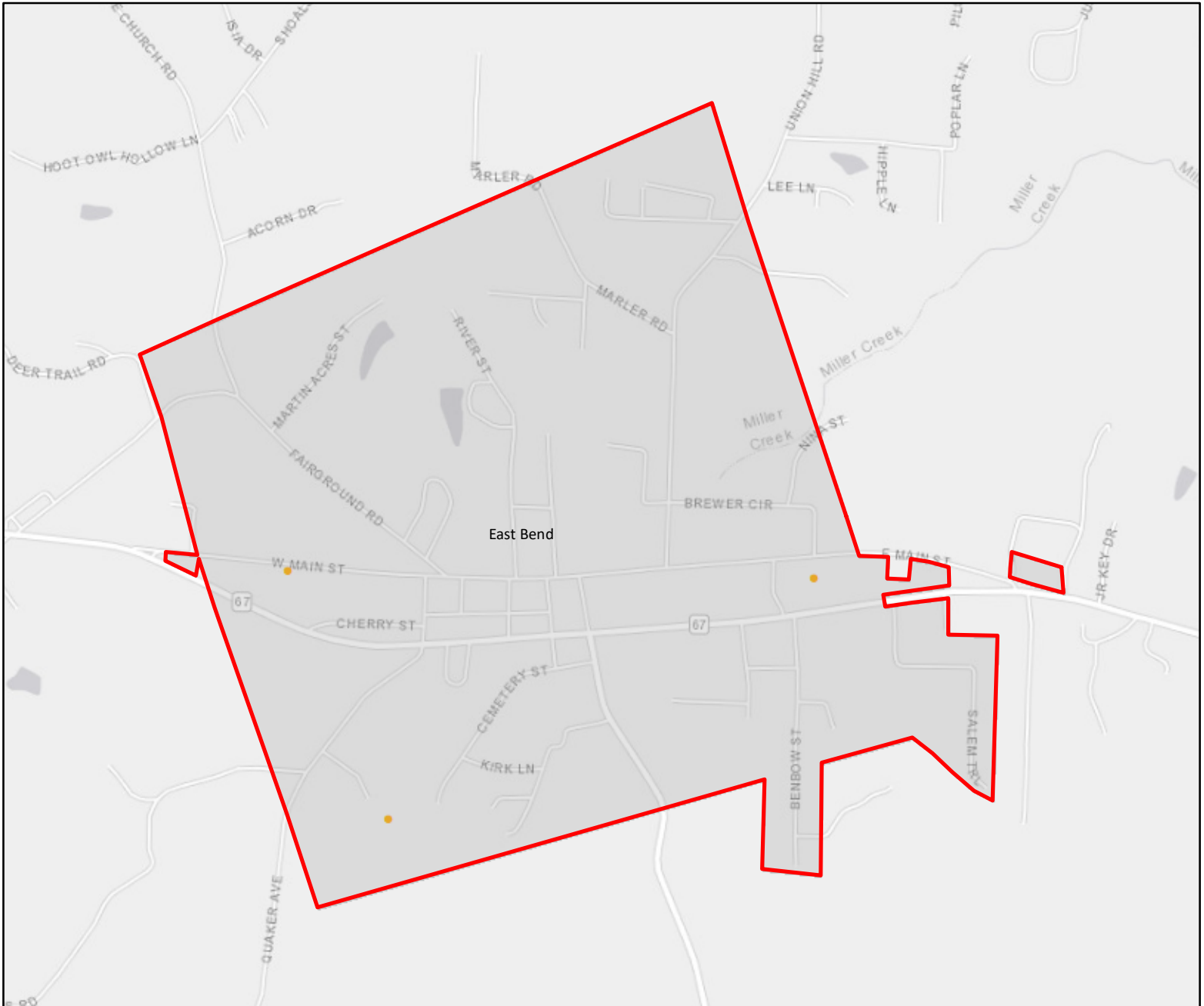
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# East Bend - Wildfire Events



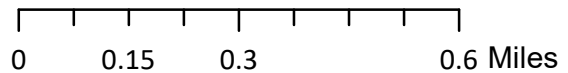
## Legend

- Municipal Boundary
- County Boundary

## Acres Impacted

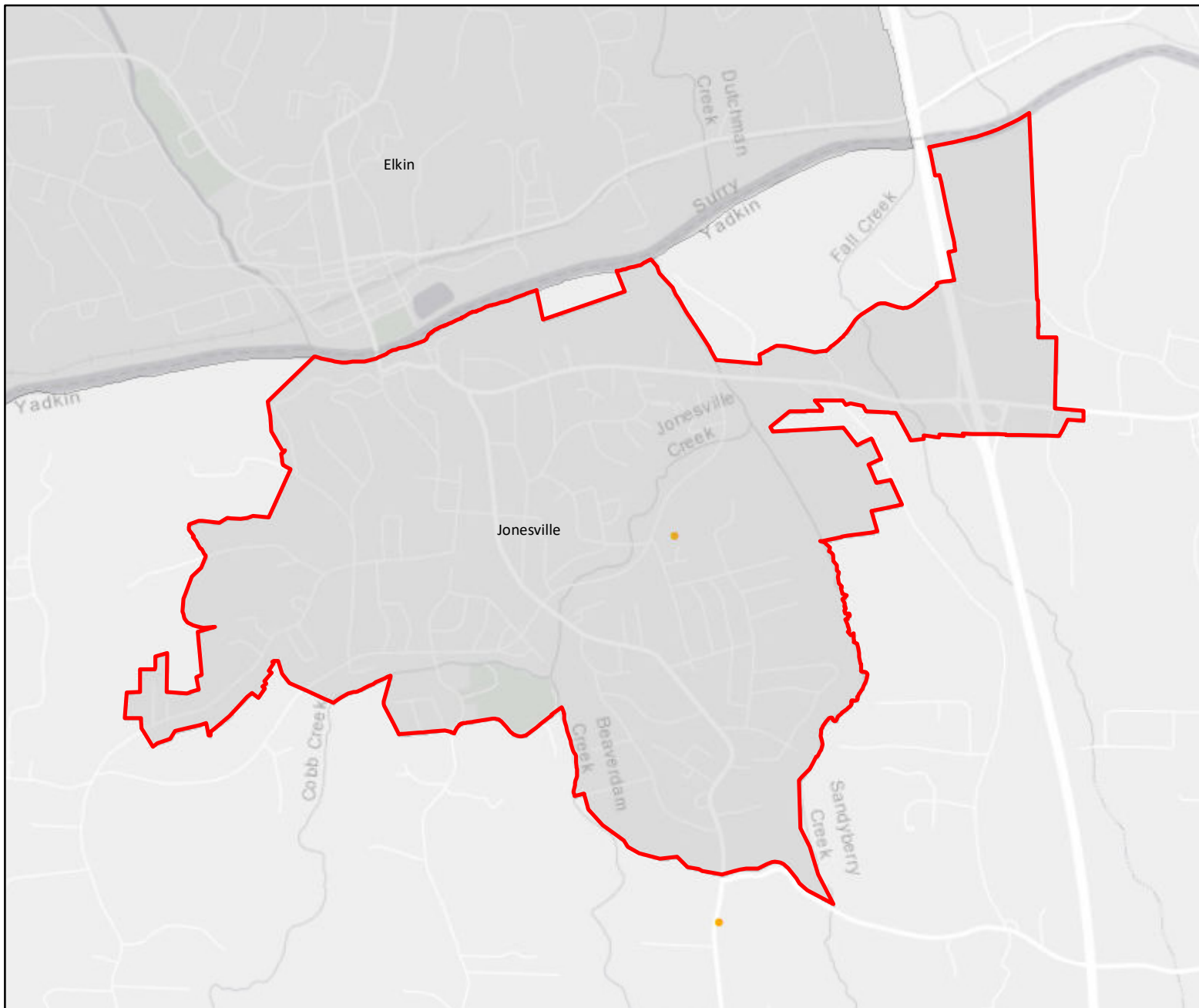
- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 500
- 501 - 1000
- >1000

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL





# Jonesville - Wildfire Events



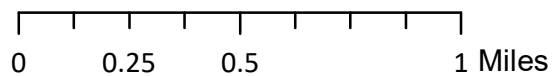
## Legend

- Municipal Boundary
- County Boundary

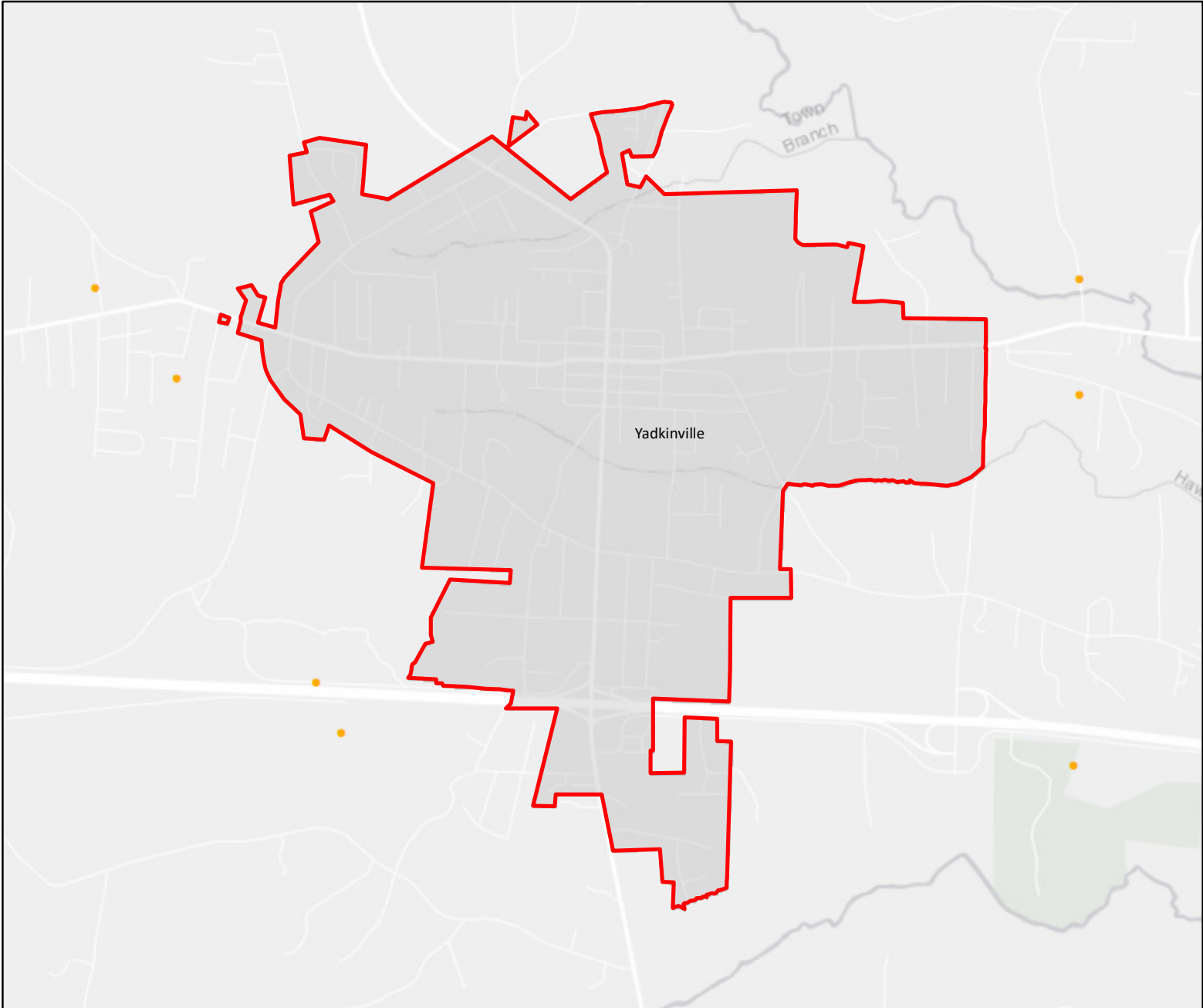
## Acres Impacted

- |          |            |
|----------|------------|
| 1 - 10   | 101 - 500  |
| 11 - 50  | 501 - 1000 |
| 51 - 100 | >1000      |



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL




# Yadkinville - Wildfire Events



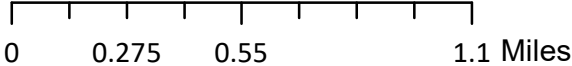
## Legend

-  Municipal Boundary
-  County Boundary

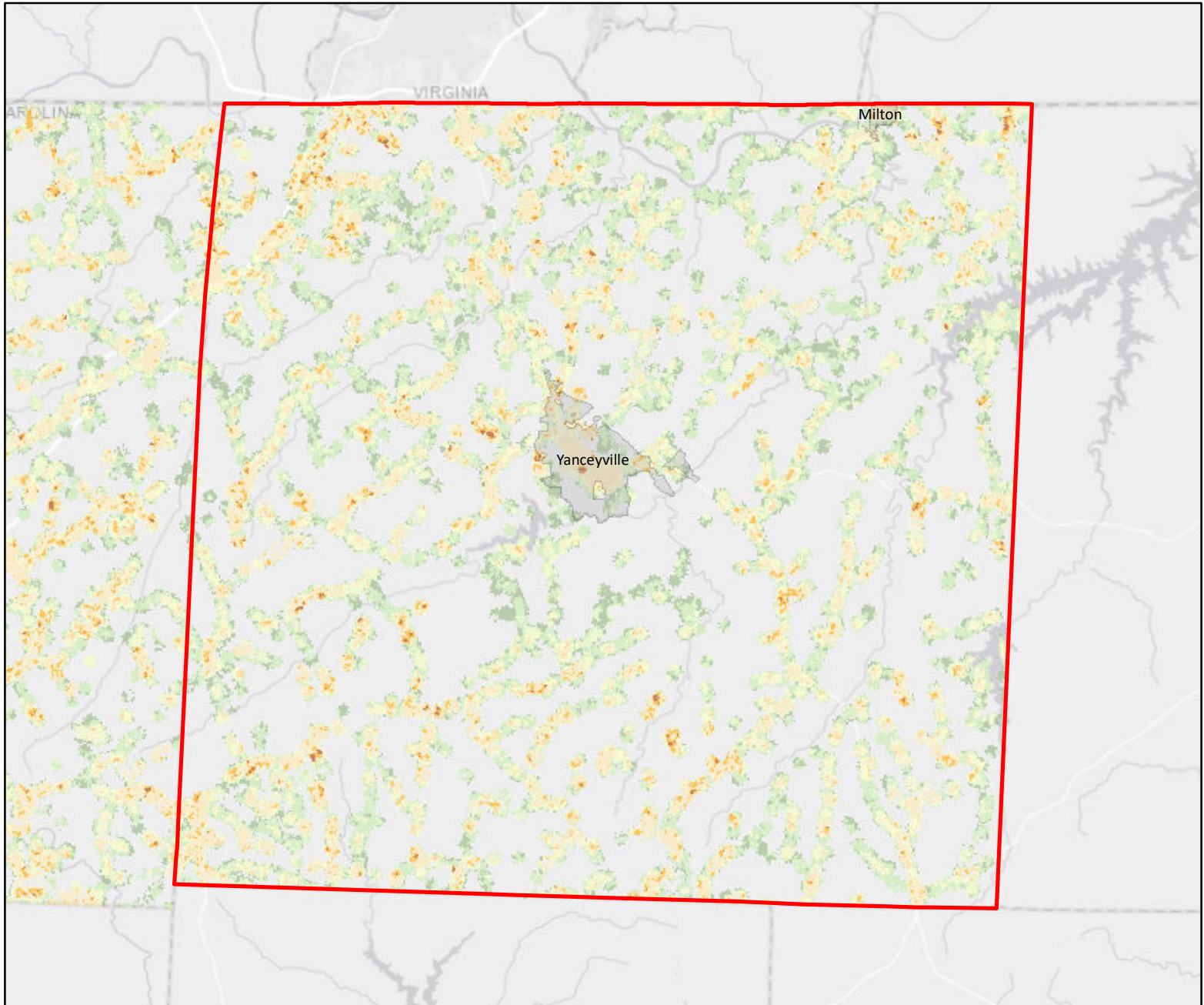
## Acres Impacted

-  1 - 10
-  11 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  >1000



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



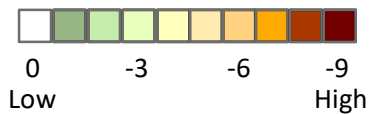
# Caswell County - Wildland Urban Interface Risk Index



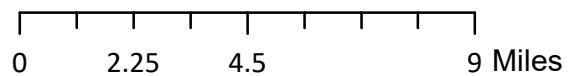
## Legend

-  Municipal Boundary
-  County Boundary

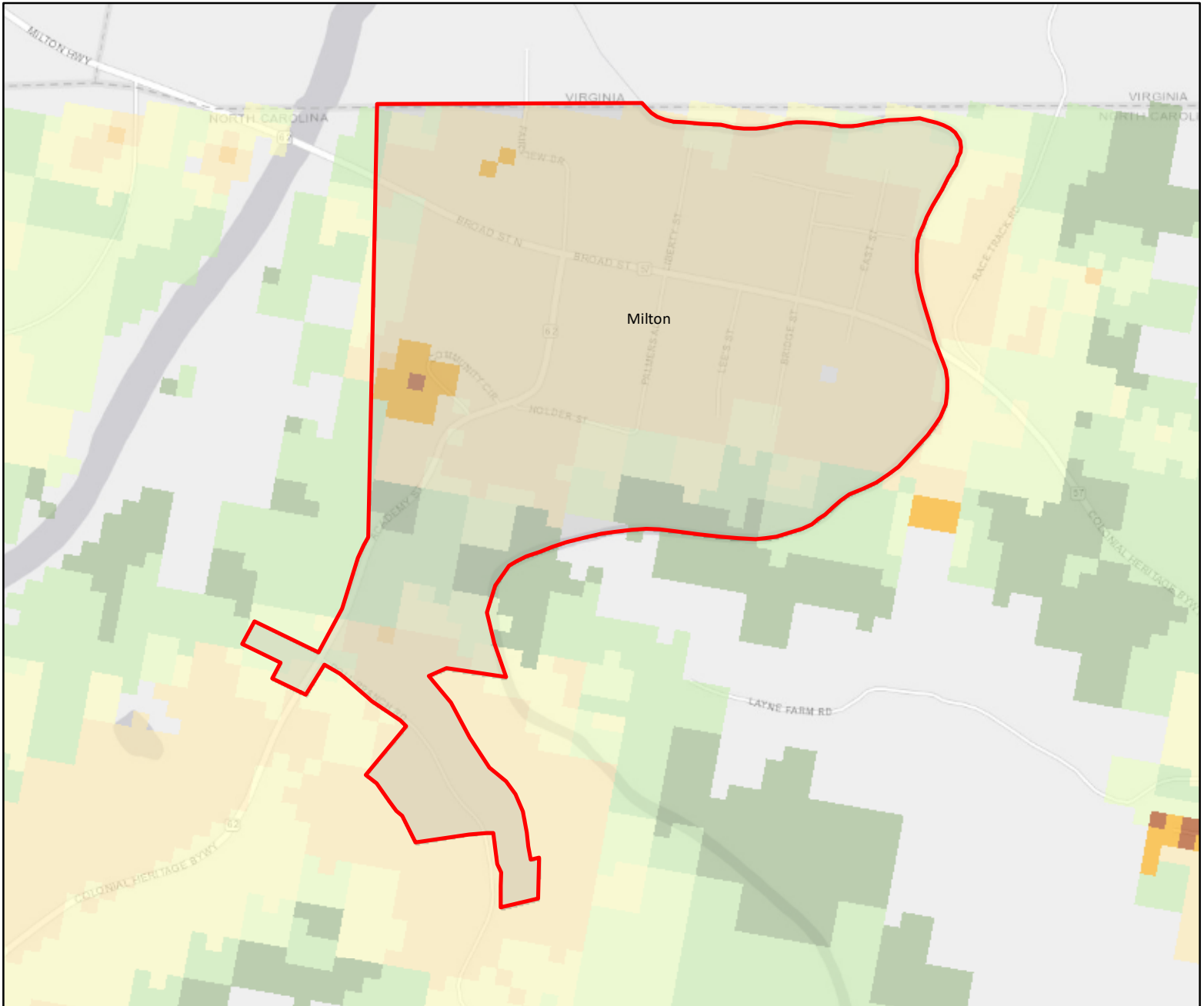
## WUI Risk Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



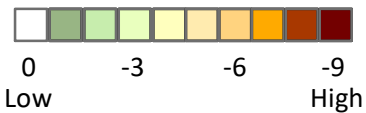
# Milton - Wildland Urban Interface Risk Index



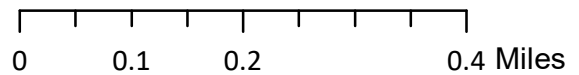
## Legend

- Municipal Boundary
- County Boundary

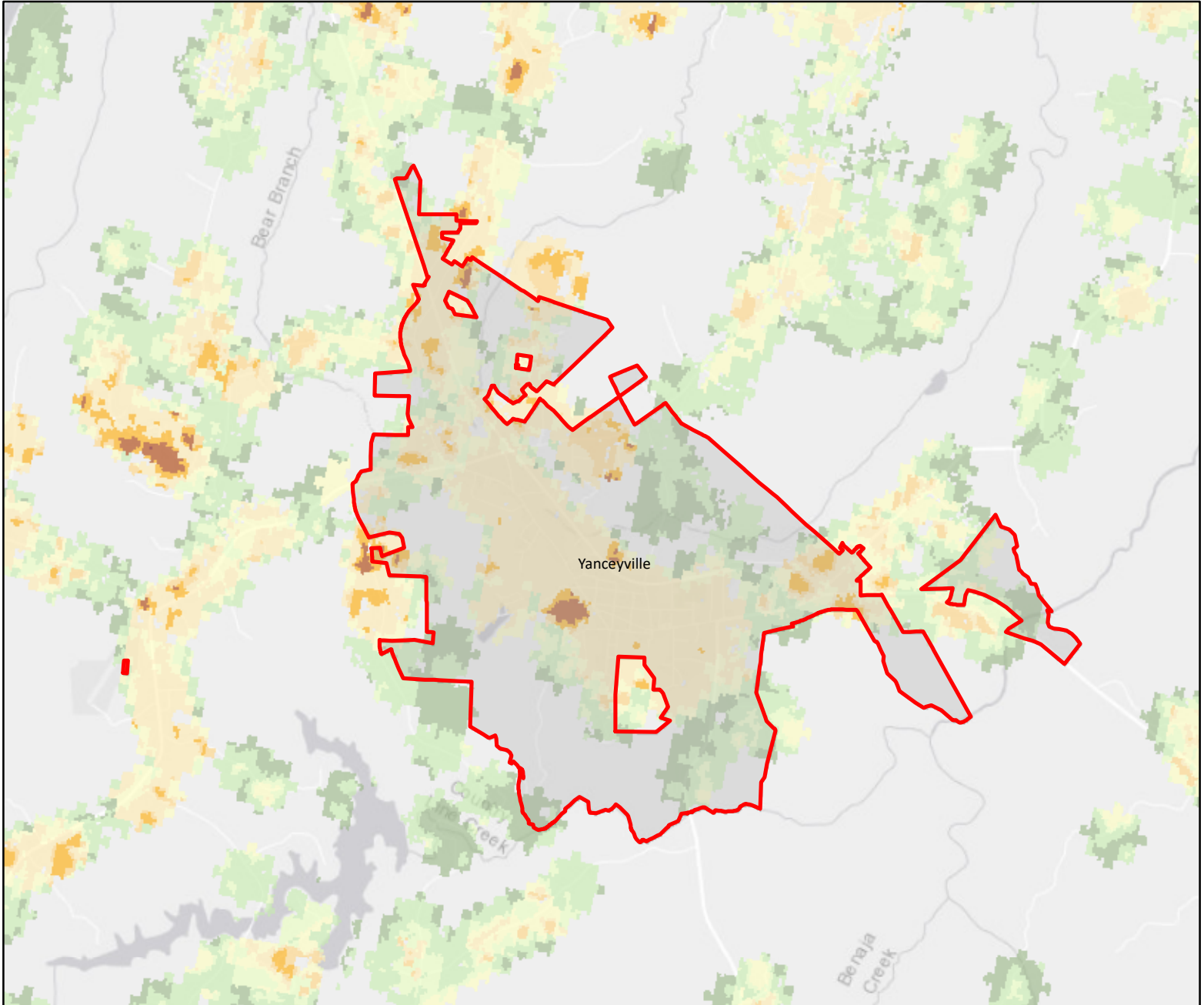
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

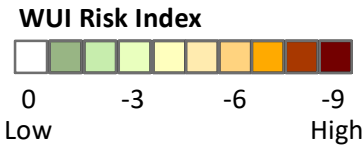


# Yanceyville - Wildland Urban Interface Risk Index

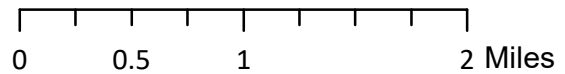


## Legend

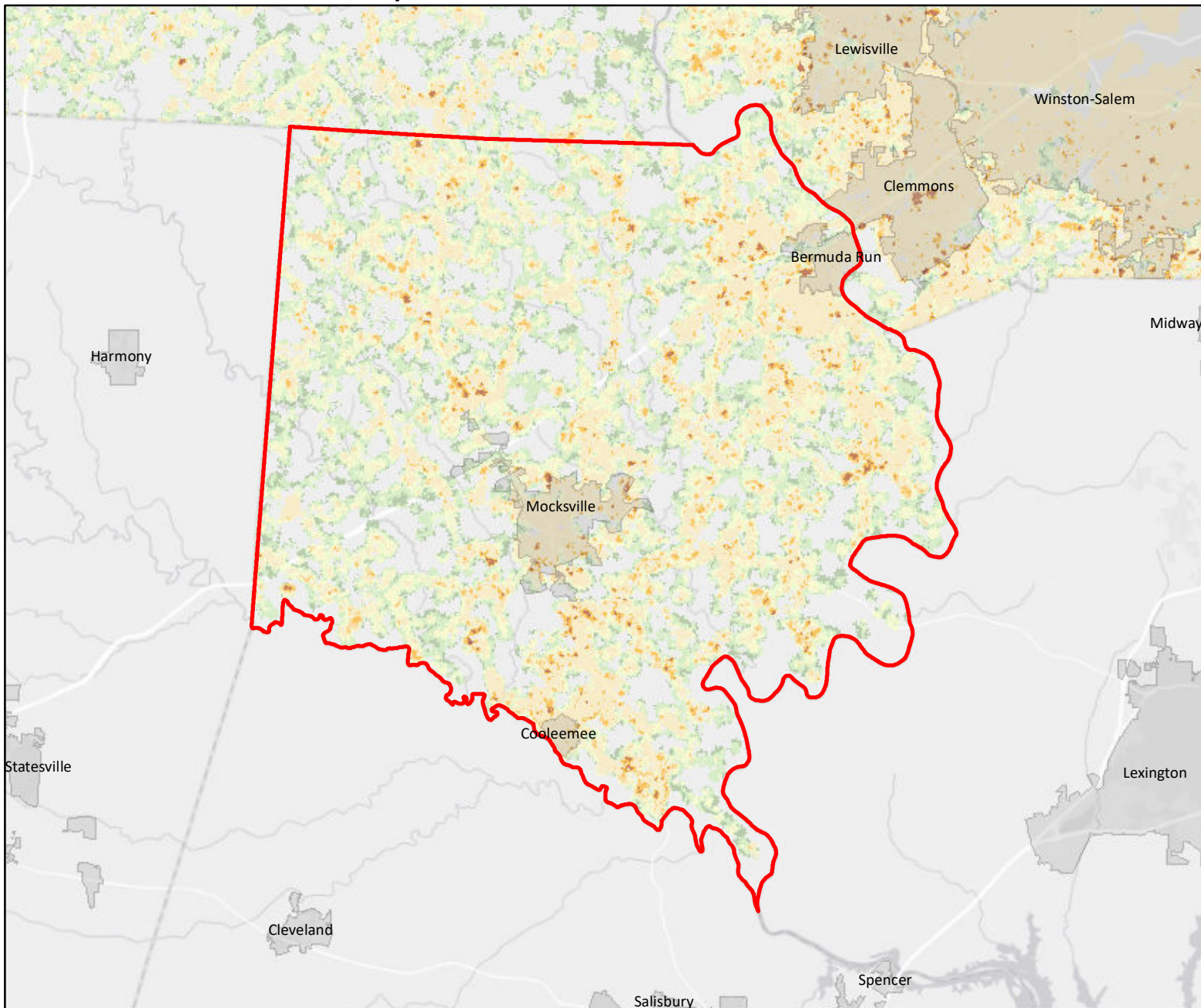
-  Municipal Boundary
-  County Boundary



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



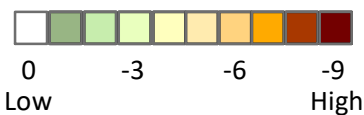
# Davie County - Wildland Urban Interface Risk Index



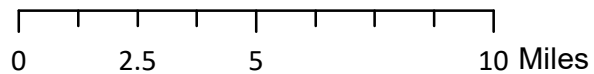
## Legend

- Municipal Boundary
- County Boundary

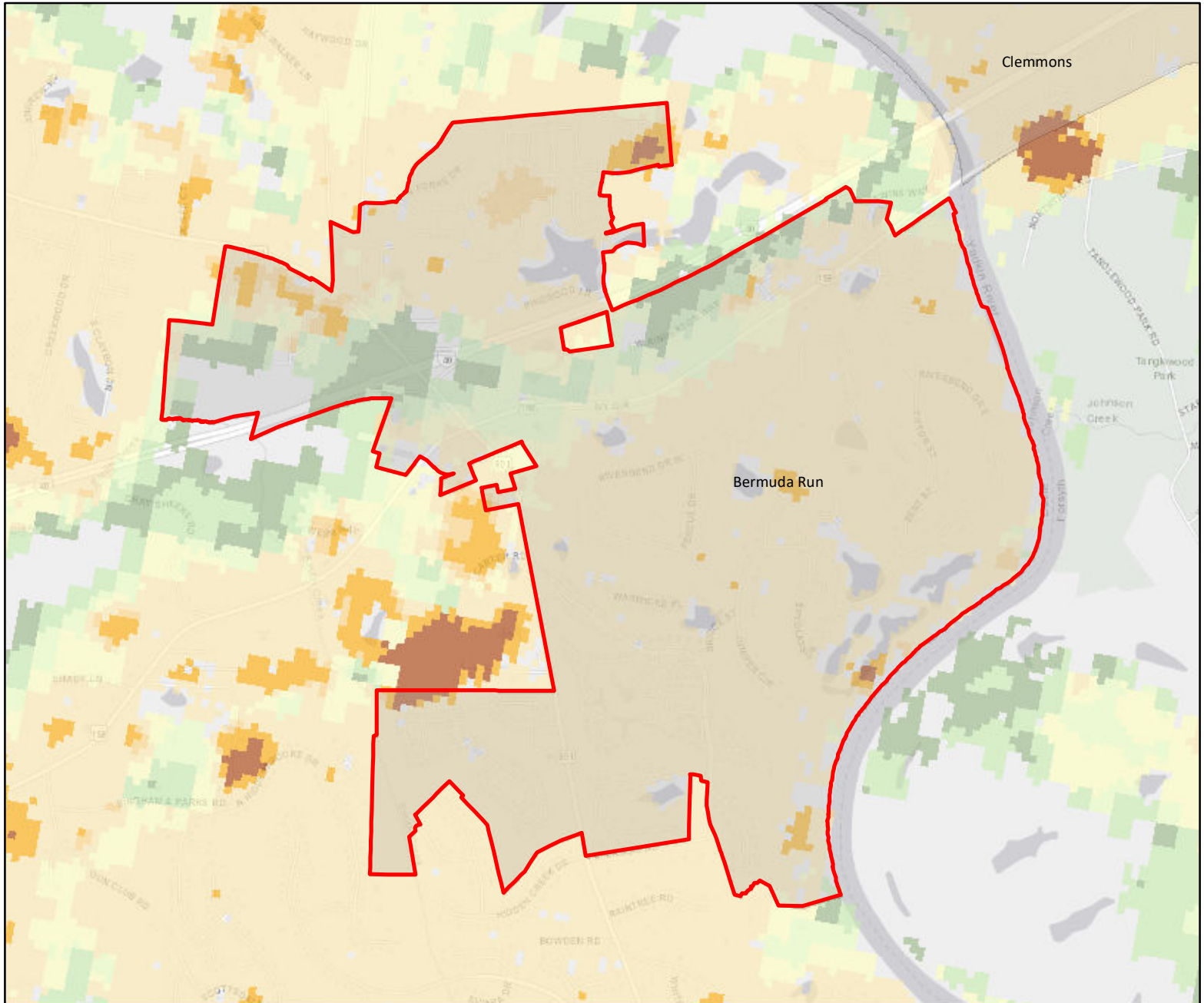
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



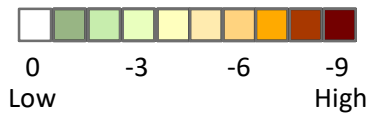
# Bermuda Run - Wildland Urban Interface Risk Index



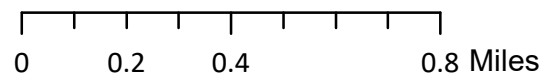
## Legend

-  Municipal Boundary
-  County Boundary

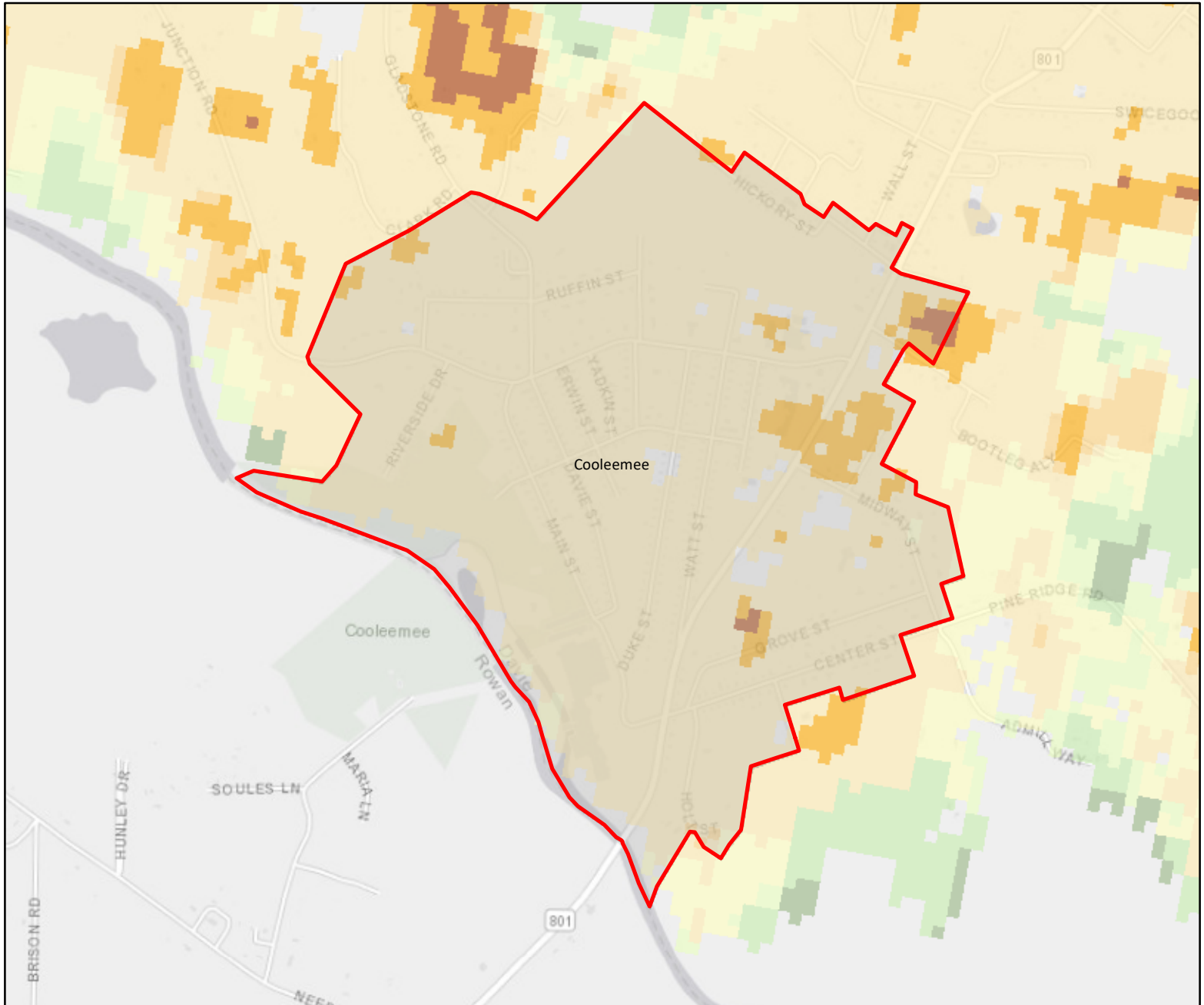
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



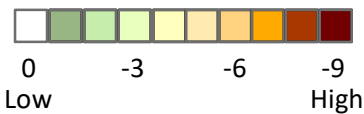
# Cooleemee - Wildland Urban Interface Risk Index



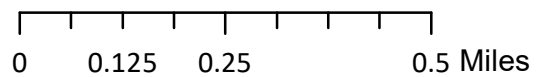
## Legend

-  Municipal Boundary
-  County Boundary

## WUI Risk Index

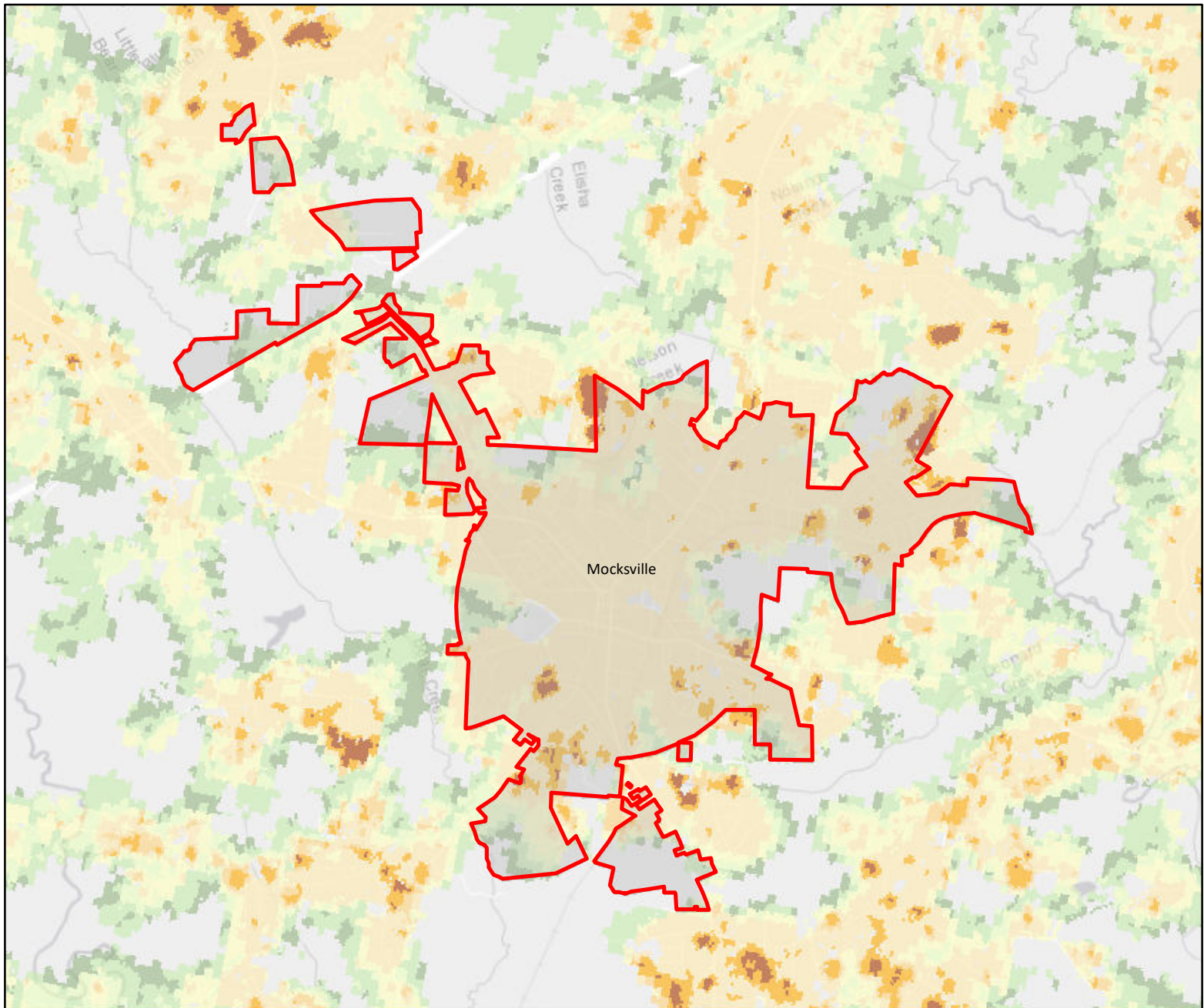


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







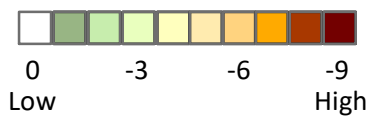
# Mocksville - Wildland Urban Interface Risk Index



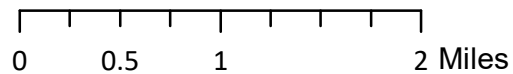
## Legend

-  Municipal Boundary
-  County Boundary

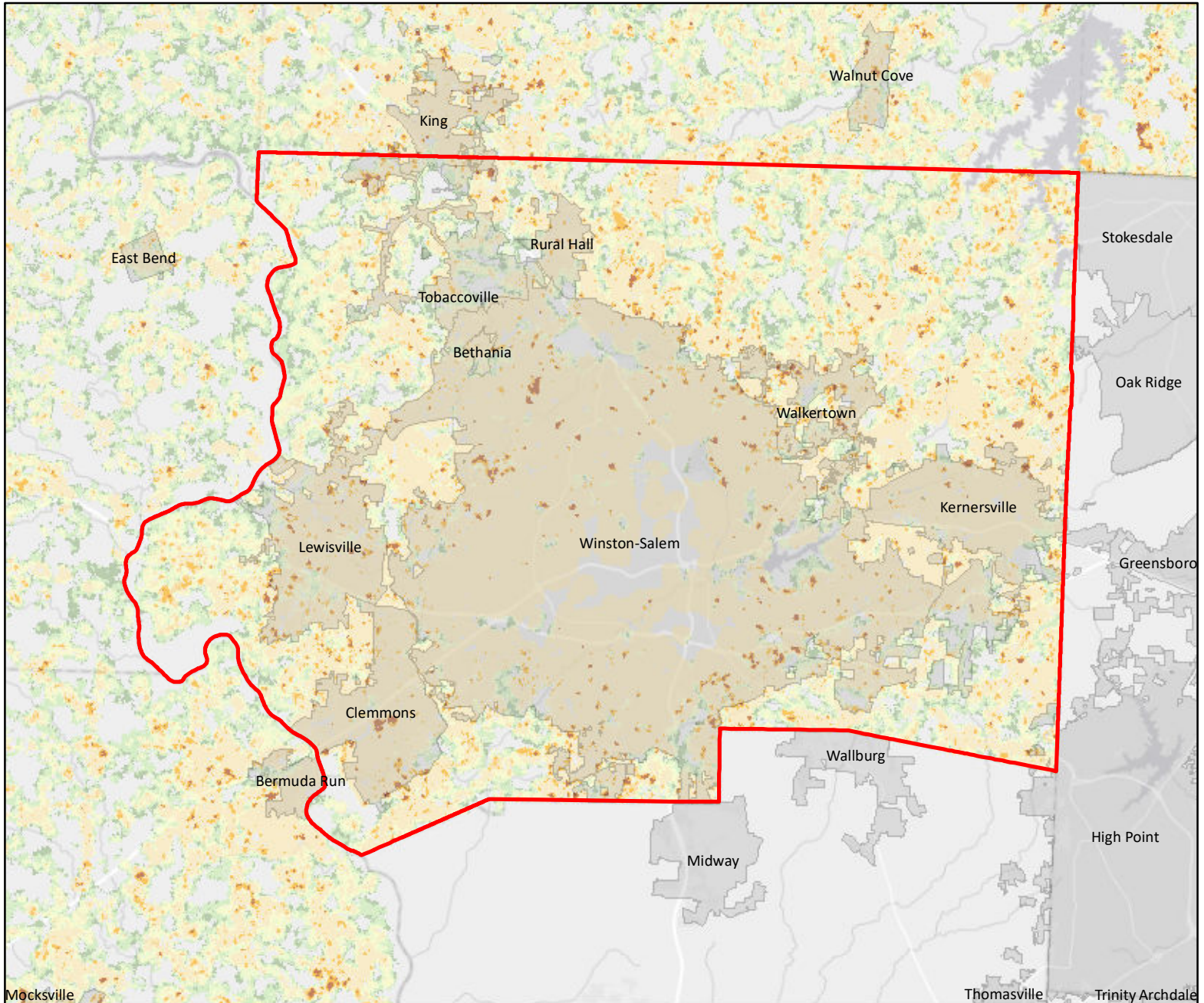
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



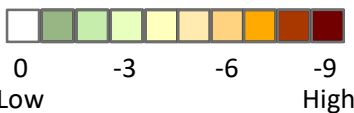
# Forsyth County - Wildland Urban Interface Risk Index



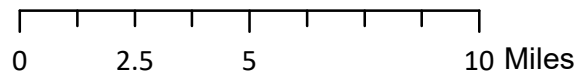
## Legend

-  Municipal Boundary
-  County Boundary

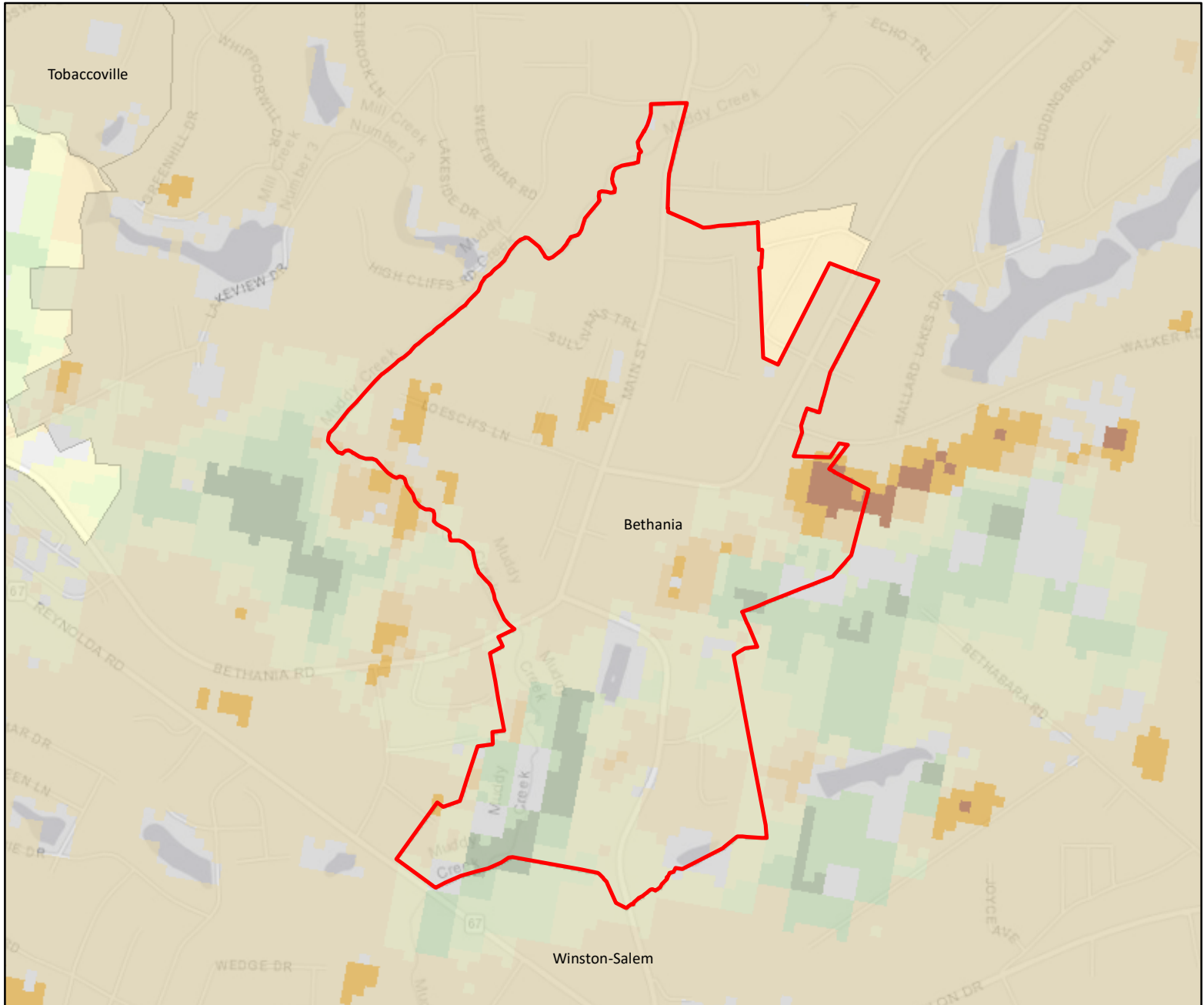
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



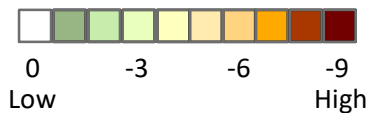
# Bethania - Wildland Urban Interface Risk Index



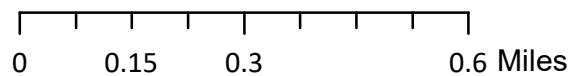
## Legend

-  Municipal Boundary
-  County Boundary

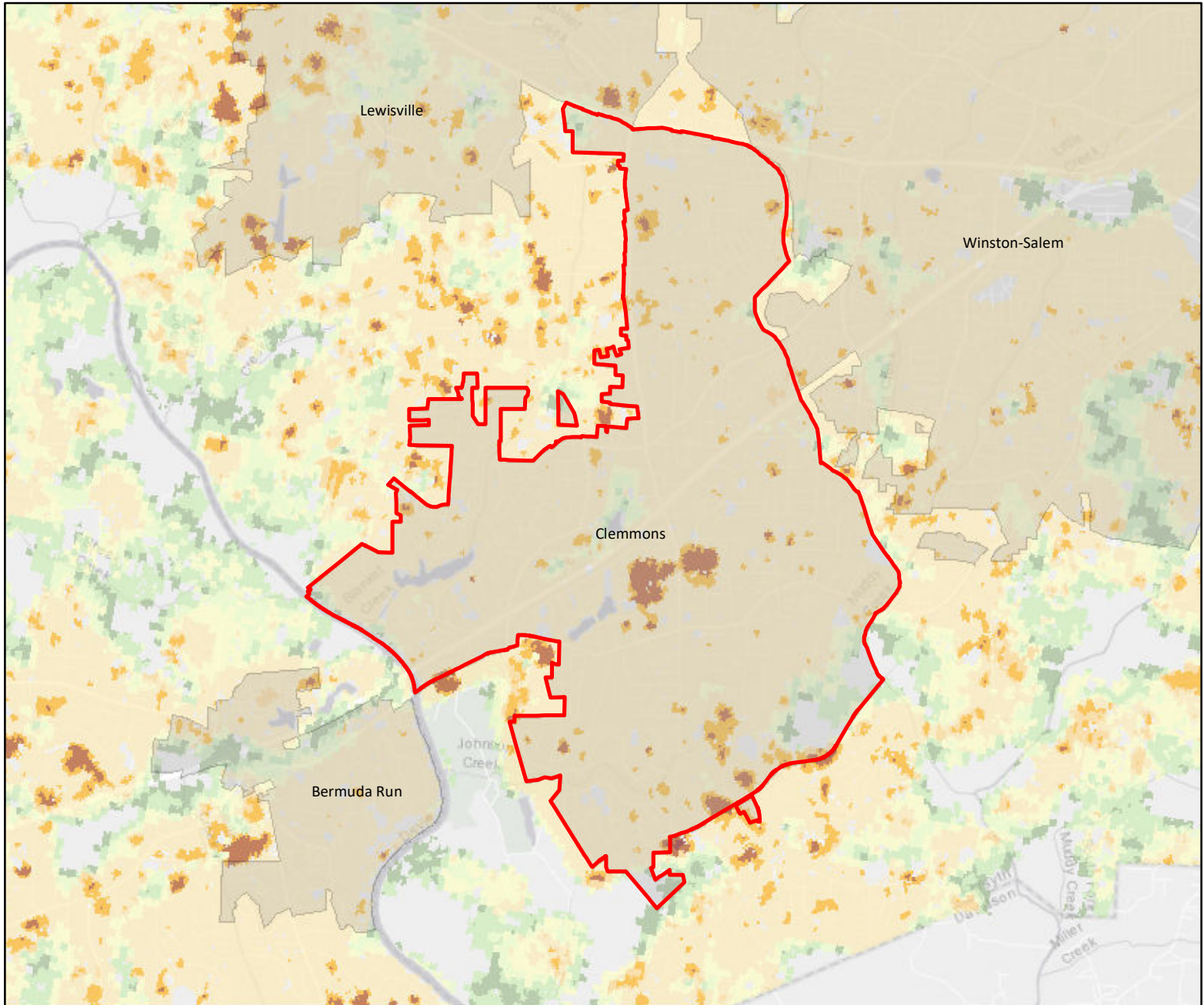
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



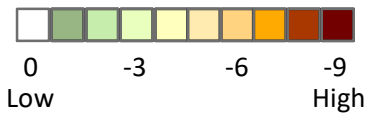
# Clemmons - Wildland Urban Interface Risk Index



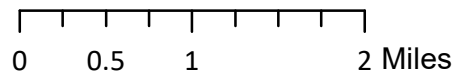
## Legend

-  Municipal Boundary
-  County Boundary

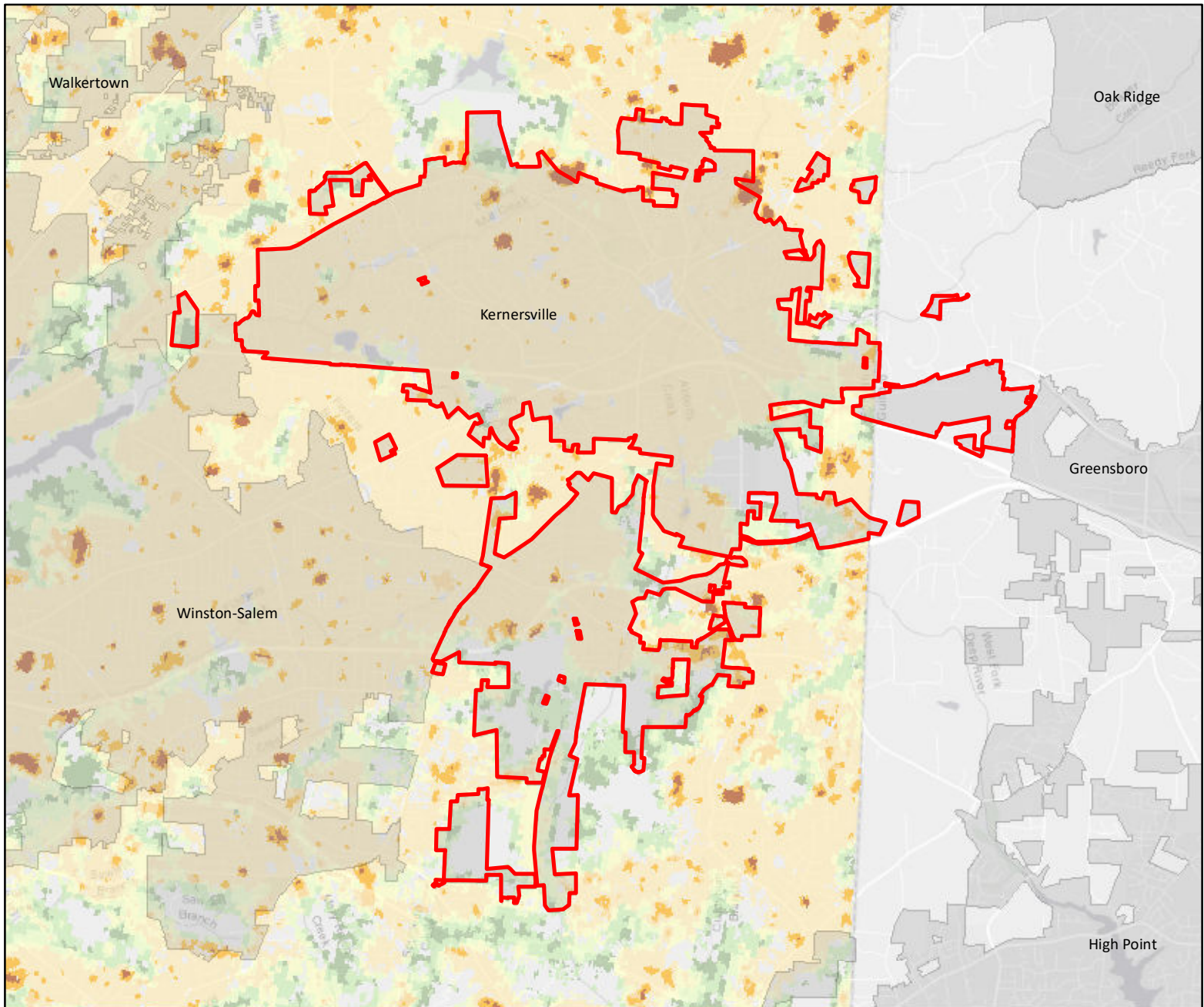
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



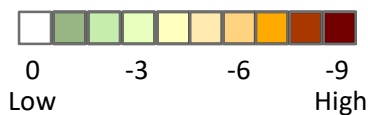
# Kernersville - Wildland Urban Interface Risk Index



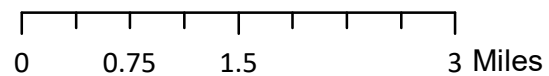
## Legend

-  Municipal Boundary
-  County Boundary

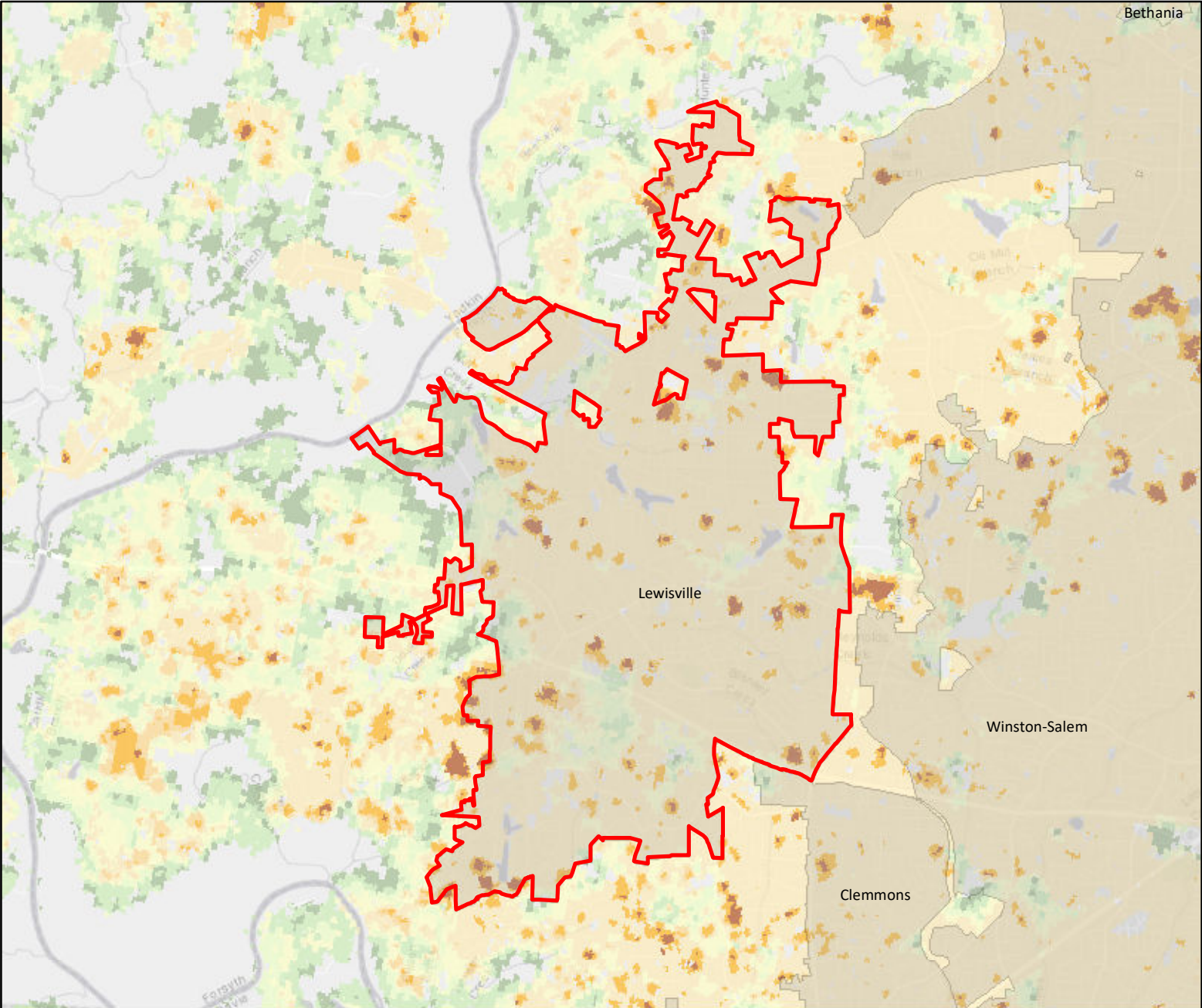
## WUI Risk Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

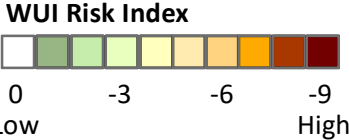


# Lewisville - Wildland Urban Interface Risk Index

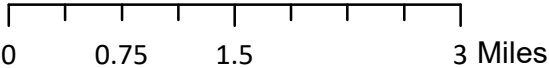


### Legend

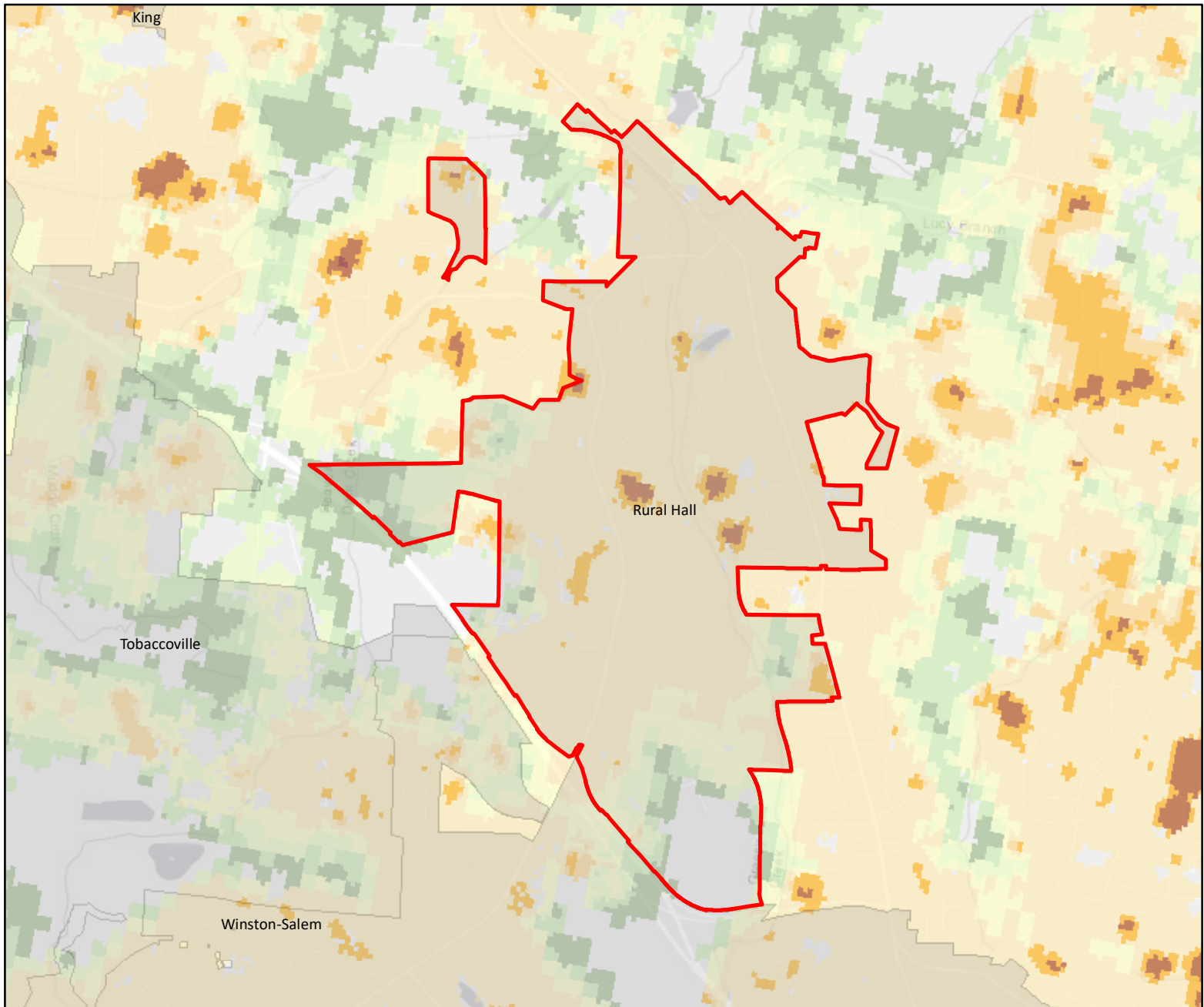
- Municipal Boundary
- County Boundary





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



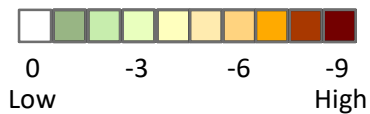
# Rural Hall - Wildland Urban Interface Risk Index



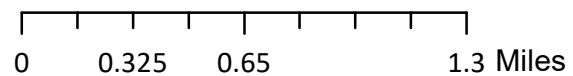
## Legend

-  Municipal Boundary
-  County Boundary

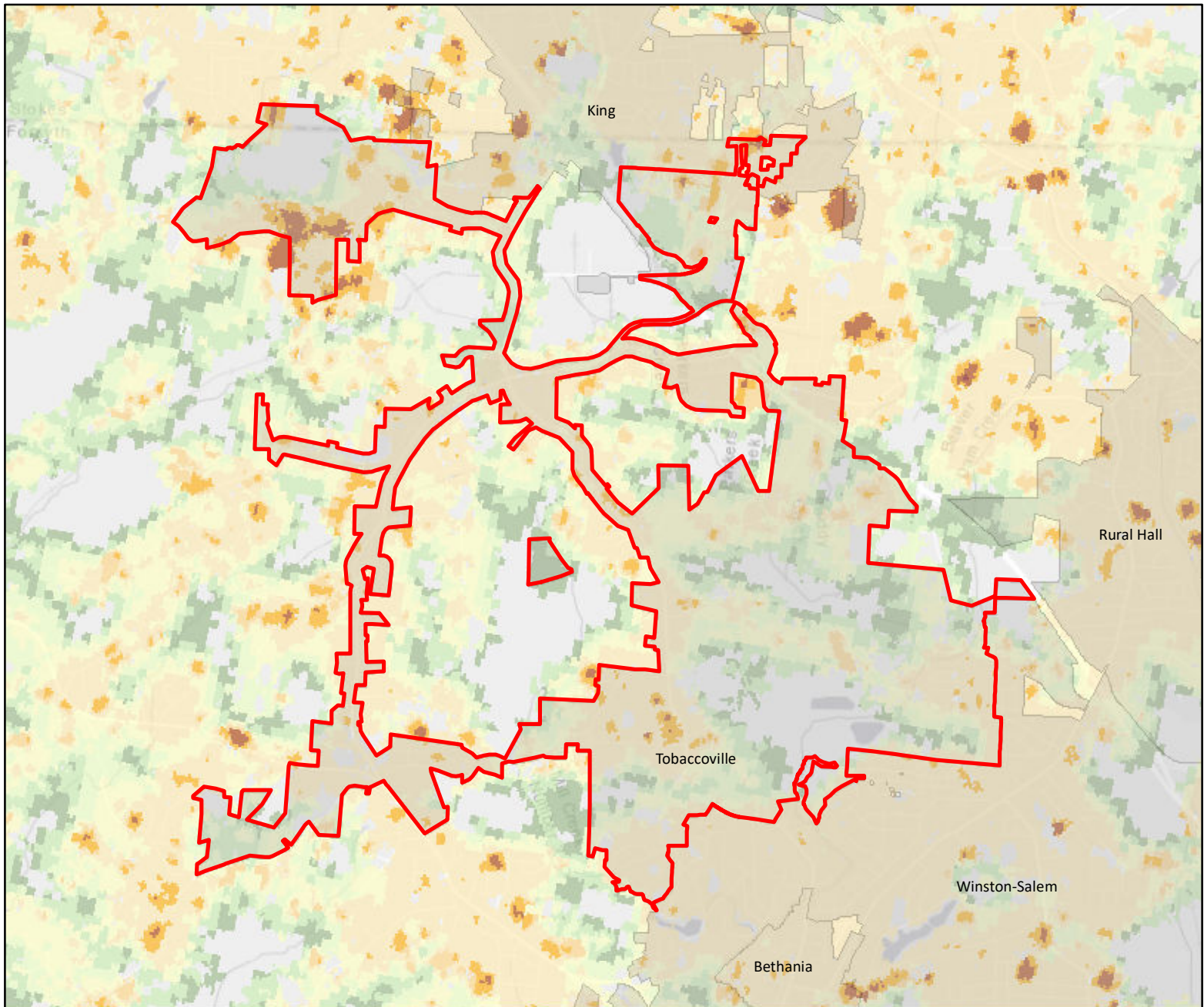
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



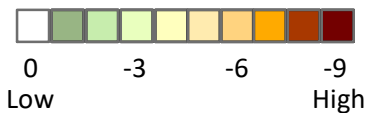
# Tobaccoville - Wildland Urban Interface Risk Index



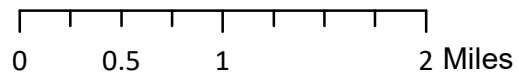
## Legend

-  Municipal Boundary
-  County Boundary

## WUI Risk Index

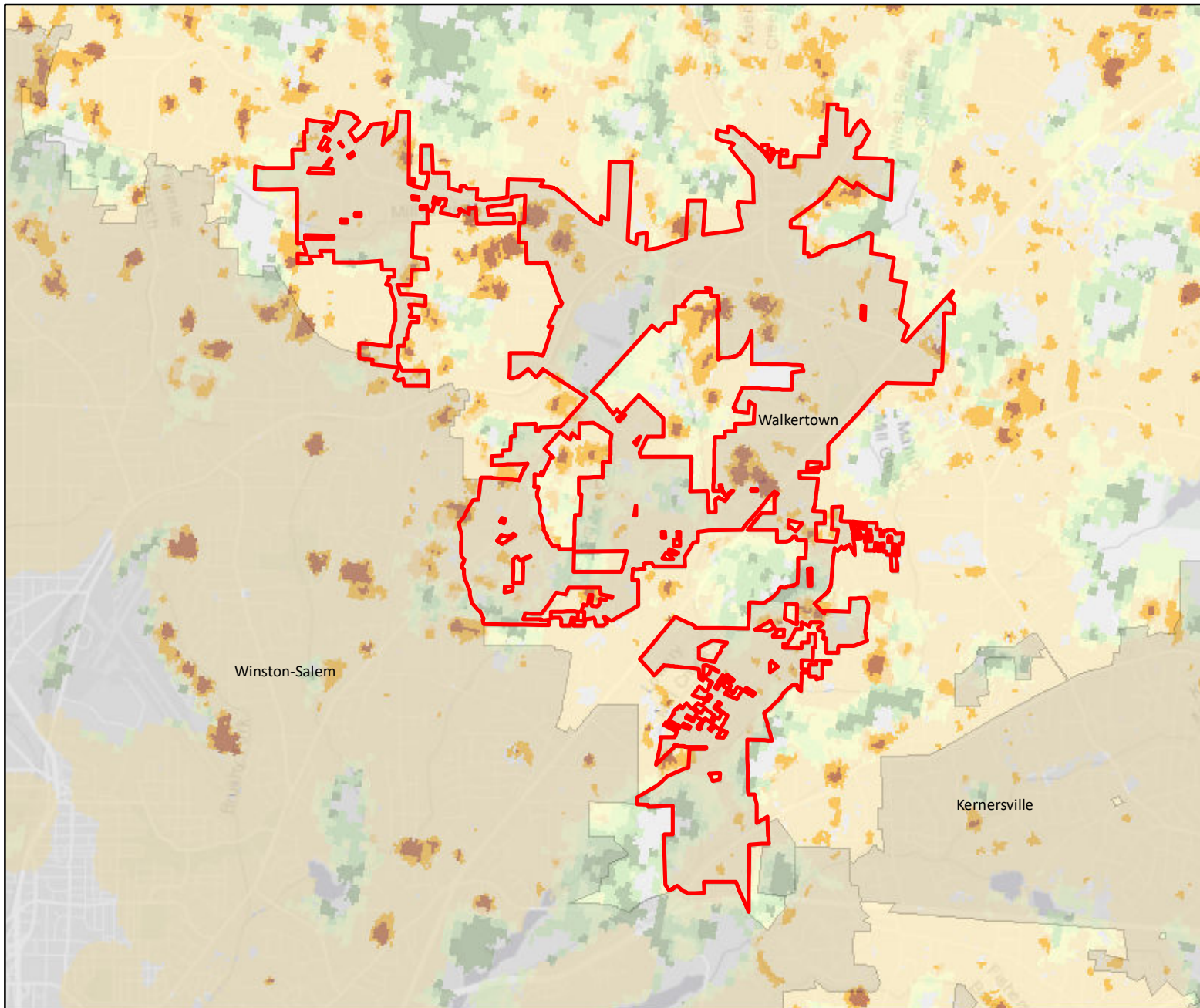


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







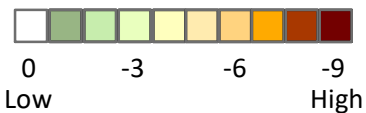
# Walkertown - Wildland Urban Interface Risk Index



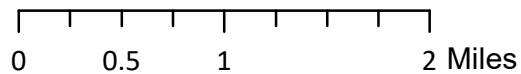
## Legend

-  Municipal Boundary
-  County Boundary

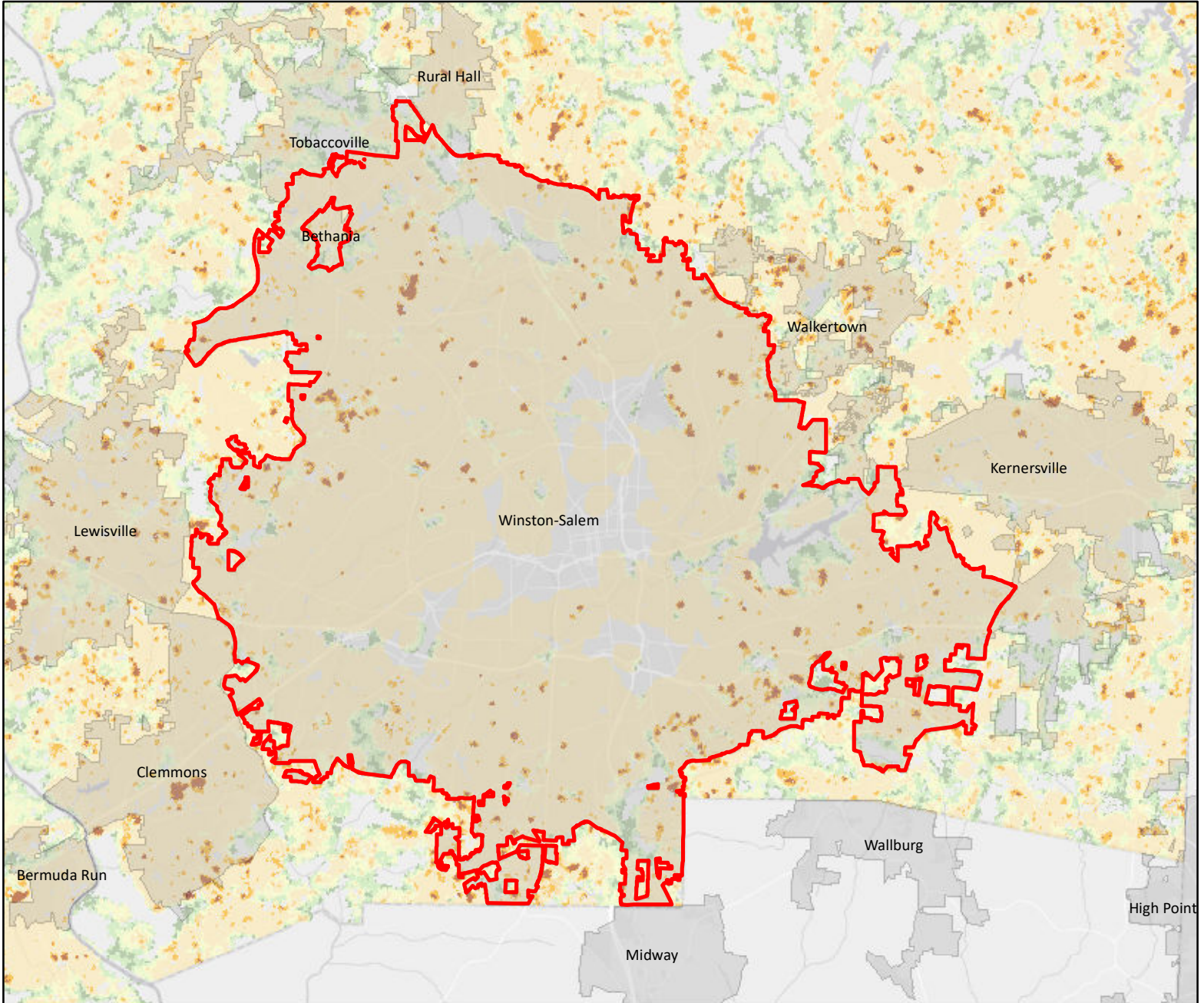
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



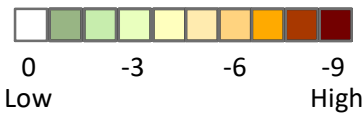
# Winston-Salem - Wildland Urban Interface Risk Index



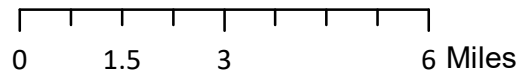
## Legend

-  Municipal Boundary
-  County Boundary

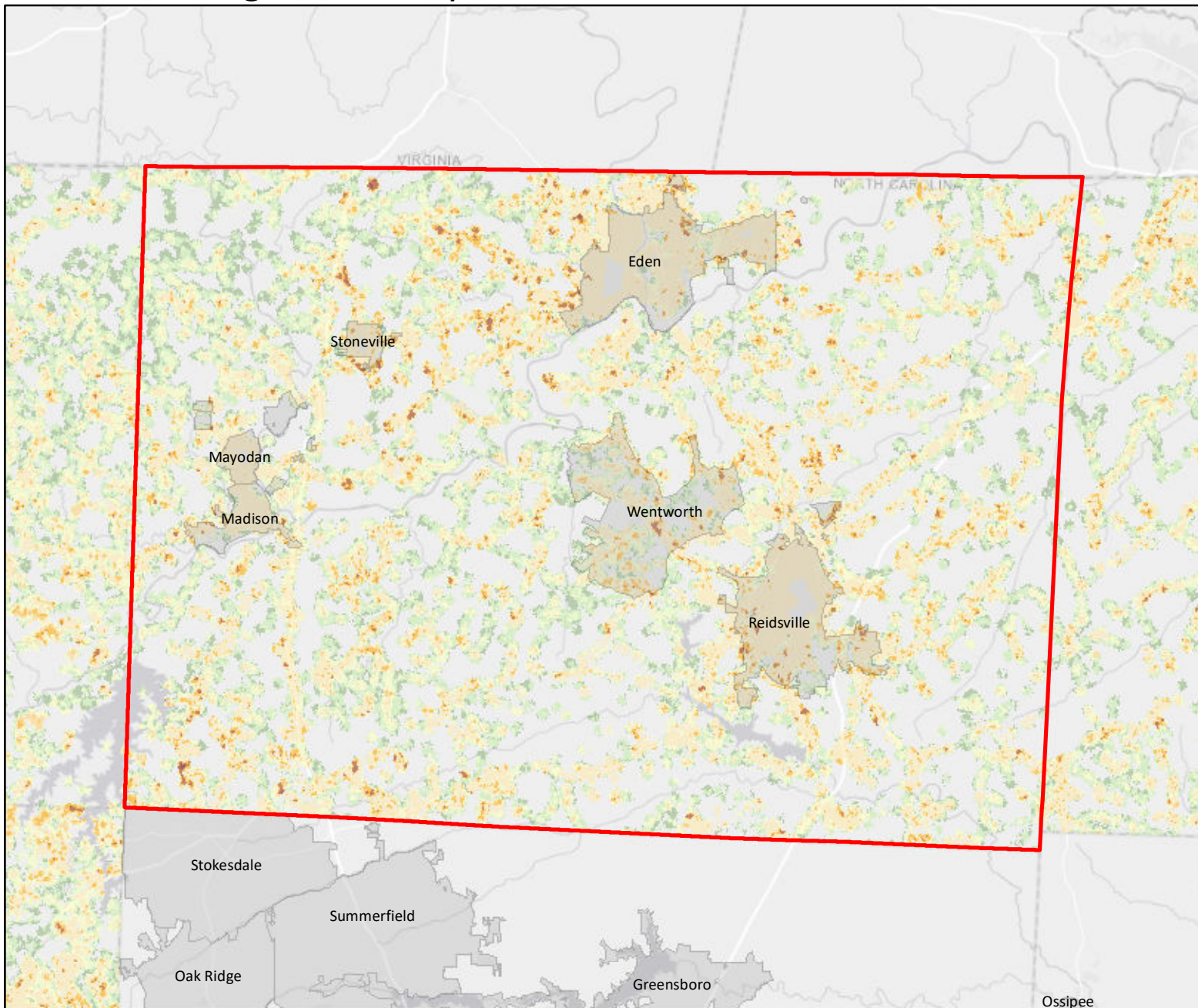
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

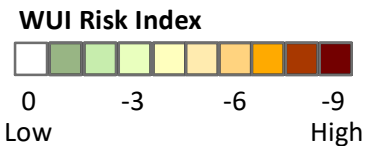


# Rockingham County - Wildland Urban Interface Risk Index

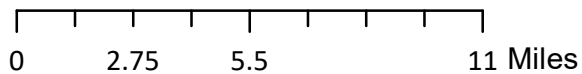


## Legend

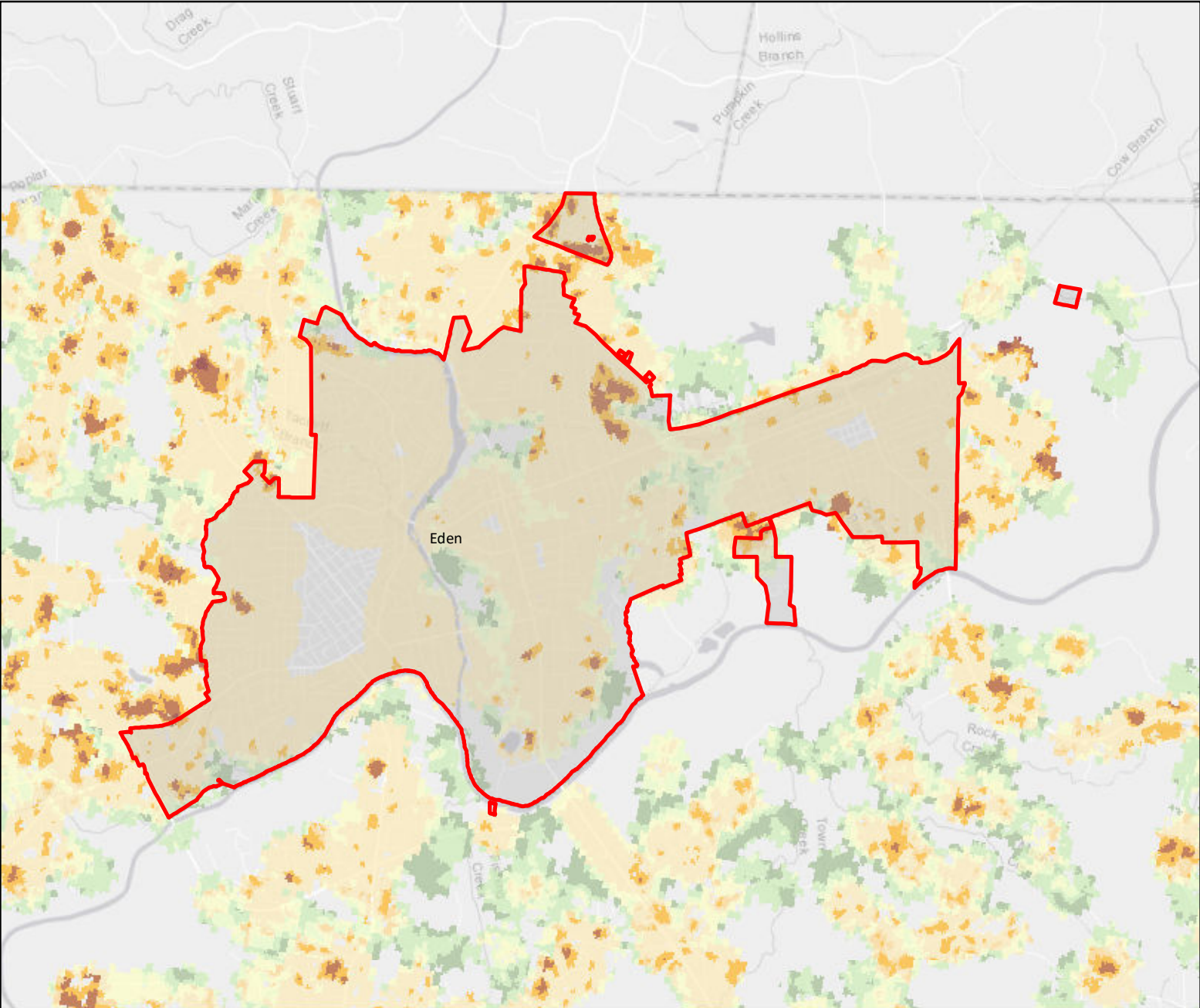
-  Municipal Boundary
-  County Boundary



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL

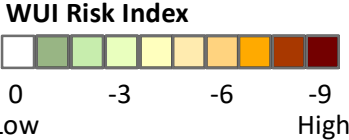


# Eden - Wildland Urban Interface Risk Index

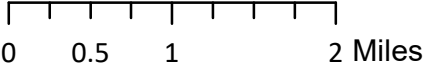


### Legend

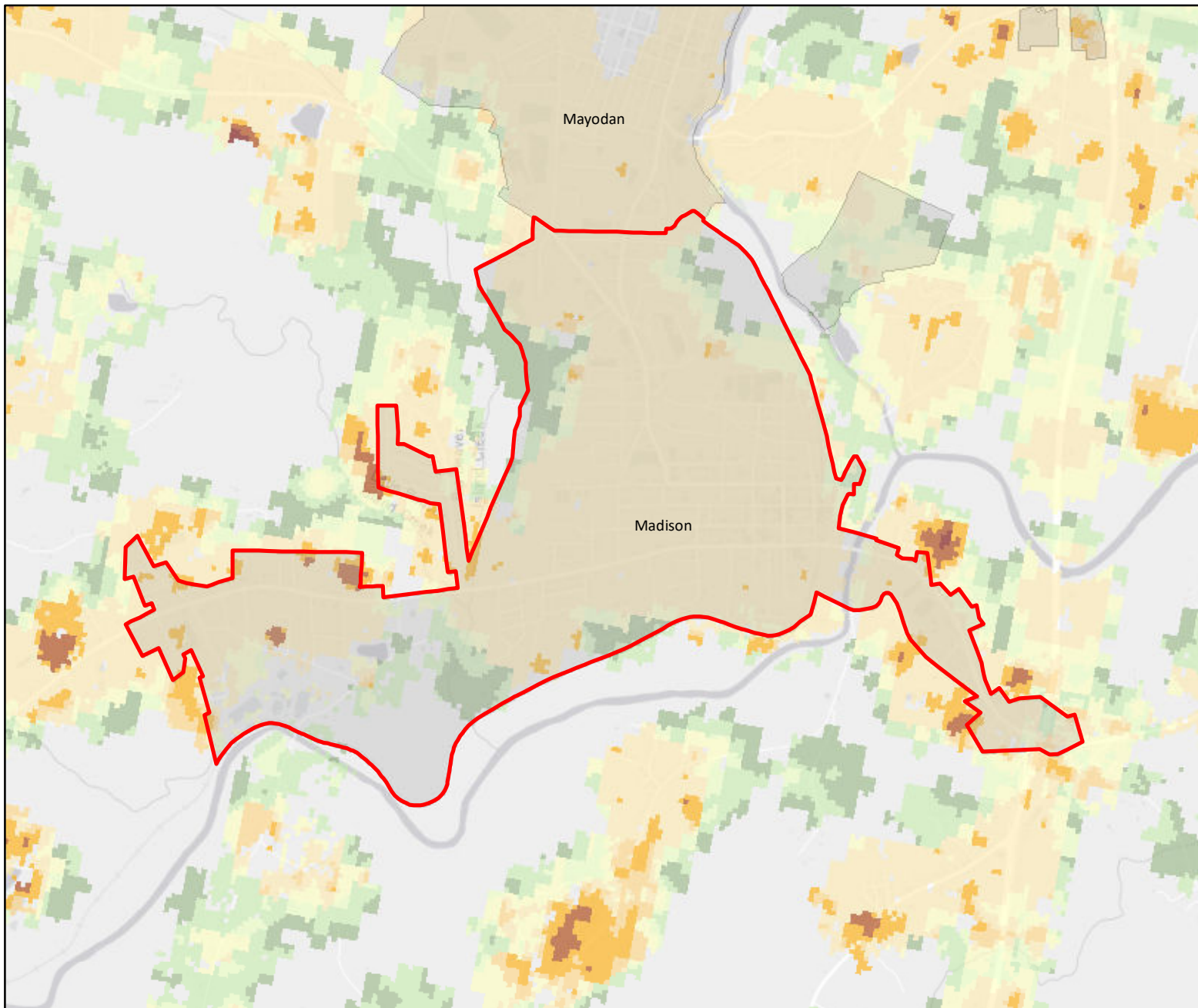
- Municipal Boundary
- County Boundary





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



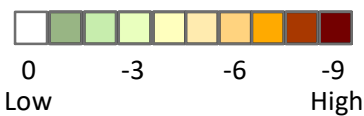
# Madison - Wildland Urban Interface Risk Index



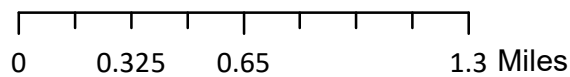
## Legend

-  Municipal Boundary
-  County Boundary

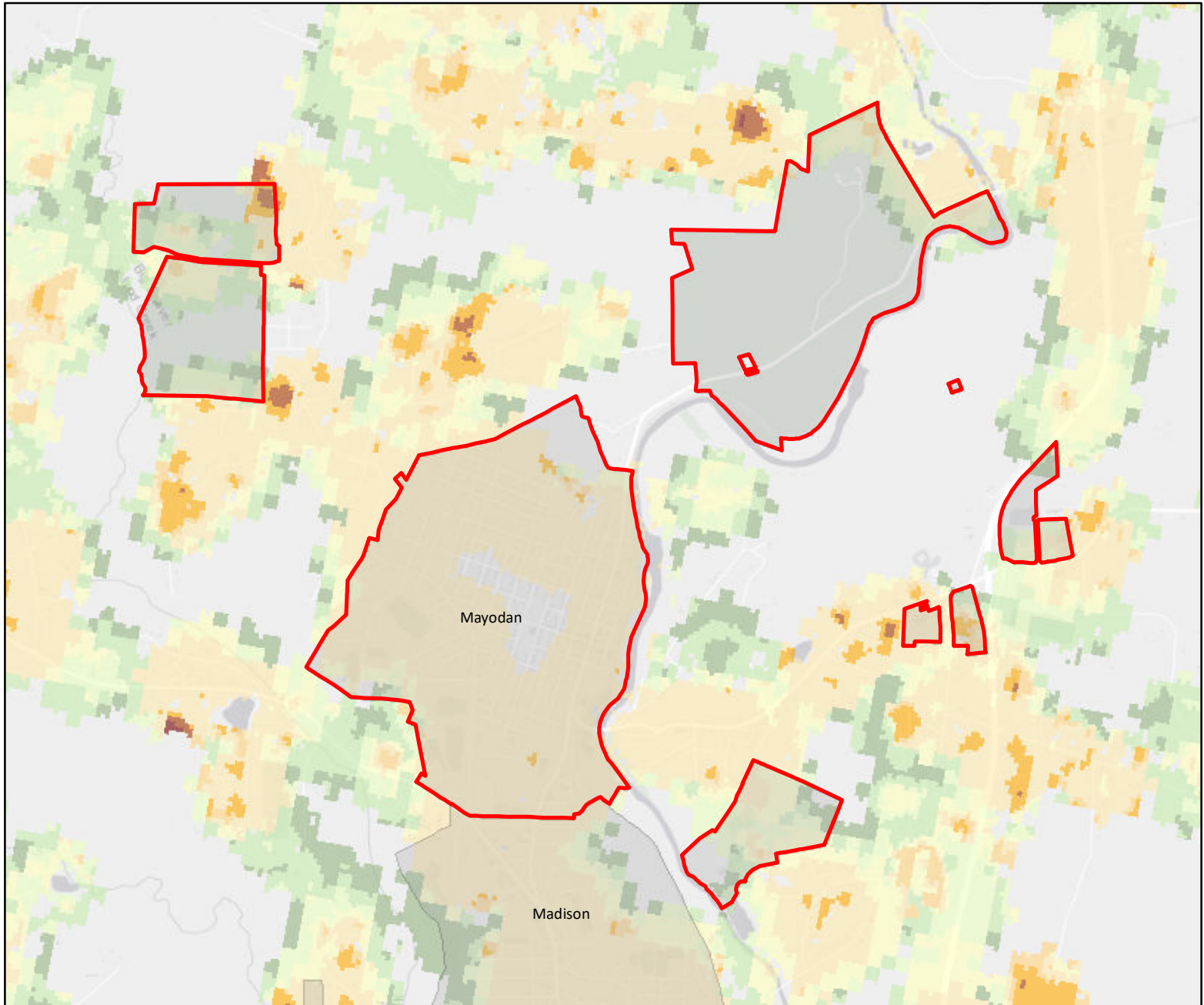
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



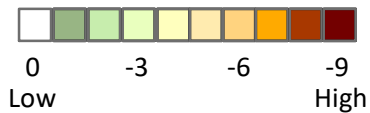
# Mayodan - Wildland Urban Interface Risk Index



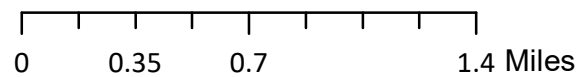
## Legend

-  Municipal Boundary
-  County Boundary

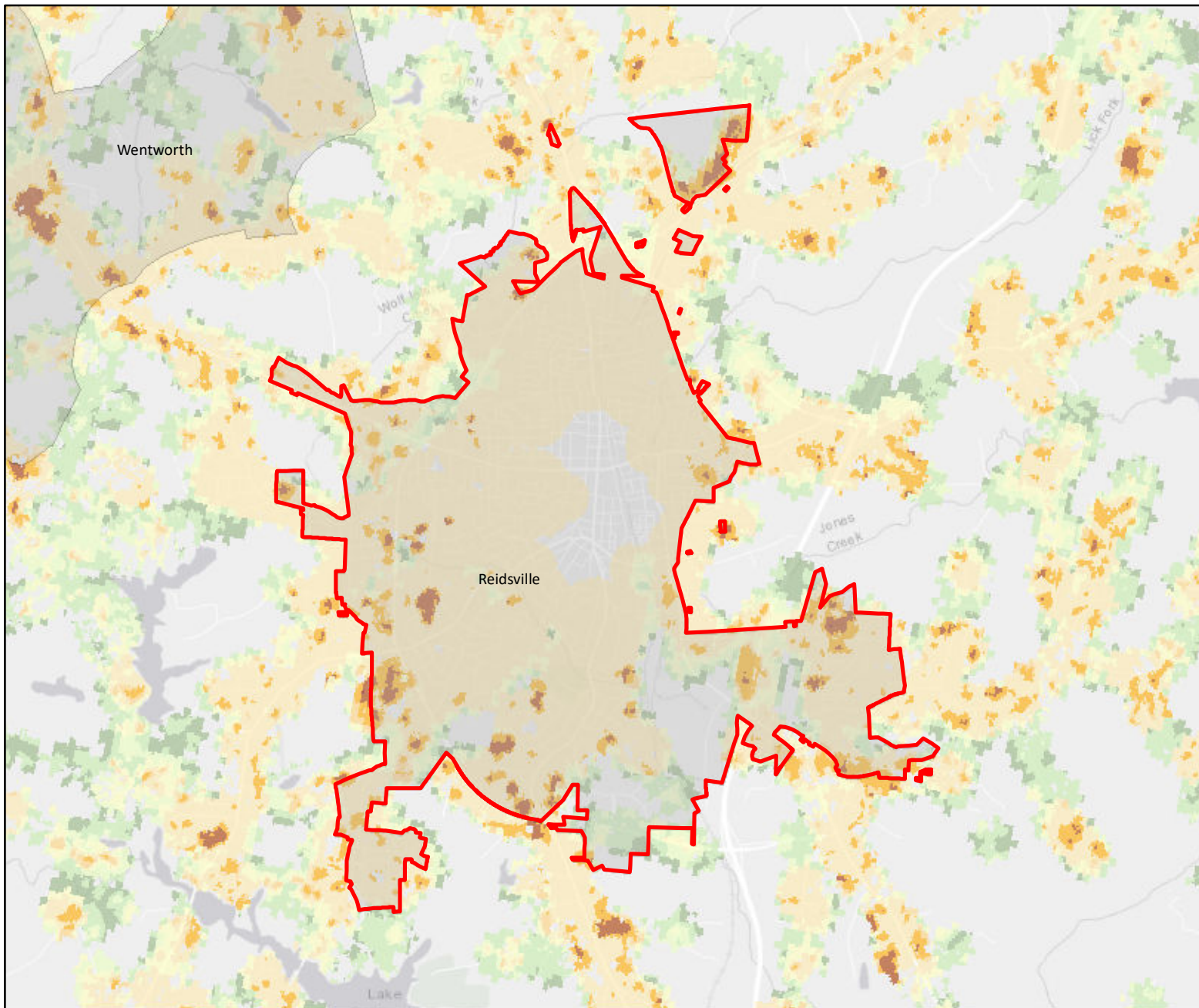
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



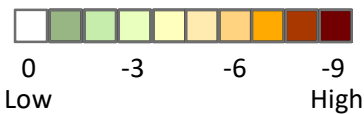
# Reidsville - Wildland Urban Interface Risk Index



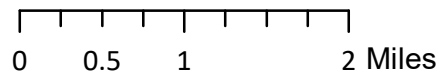
## Legend

-  Municipal Boundary
-  County Boundary

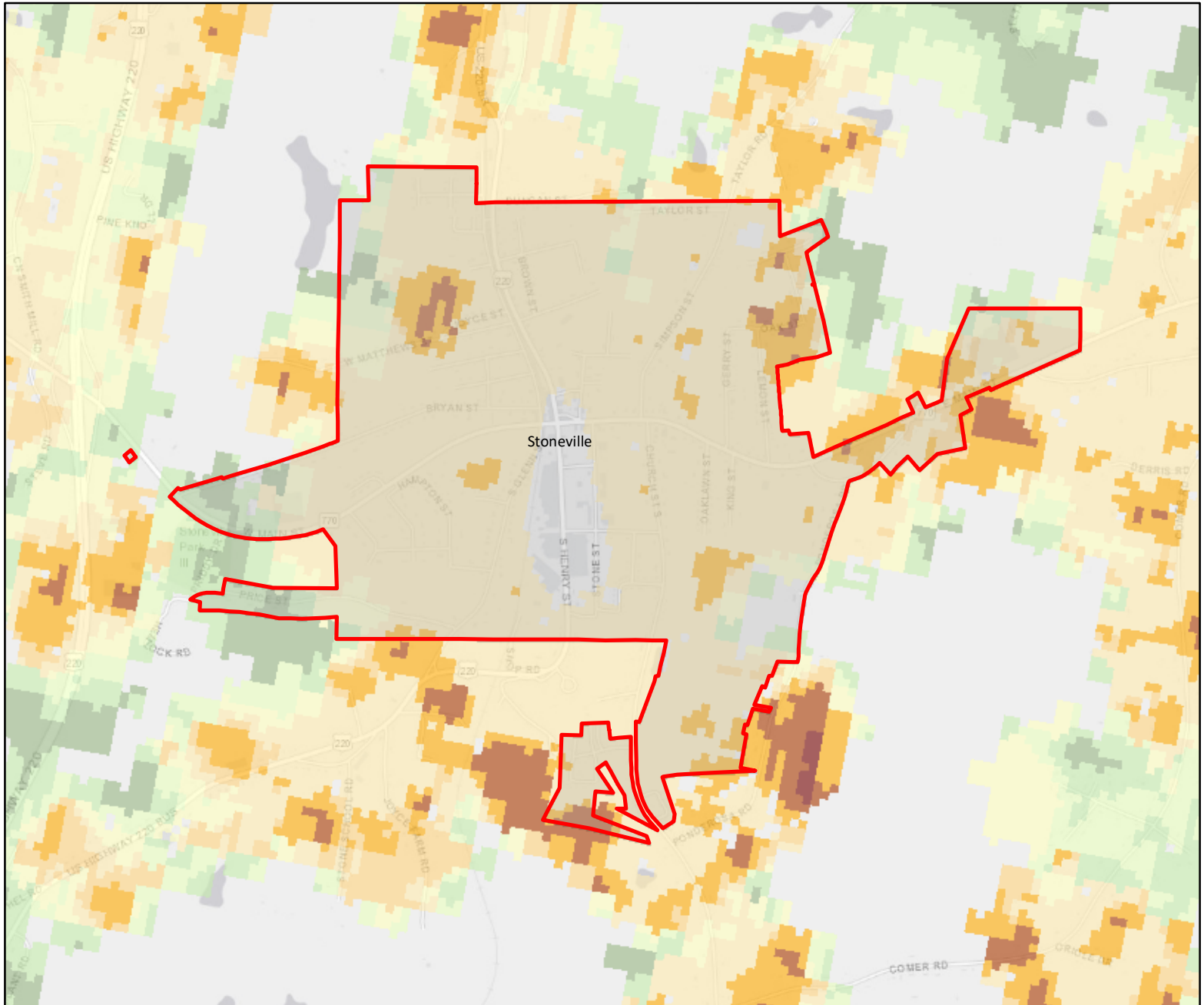
## WUI Risk Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



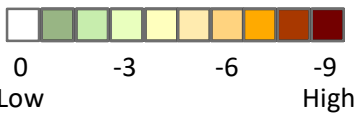
# Stoneville - Wildland Urban Interface Risk Index



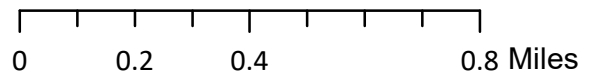
## Legend

- Municipal Boundary
- County Boundary

## WUI Risk Index

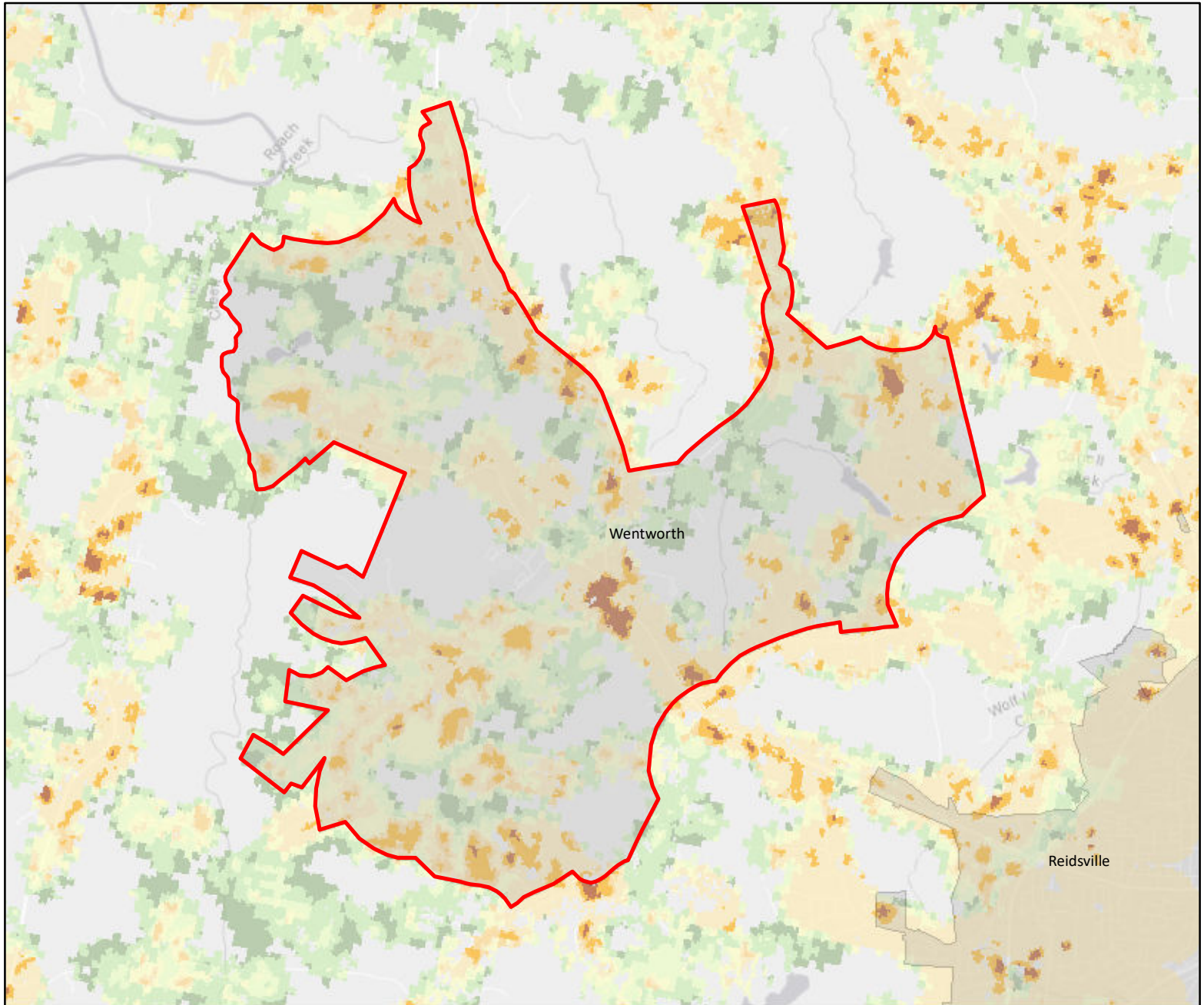


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







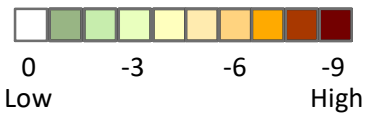
# Wentworth - Wildland Urban Interface Risk Index



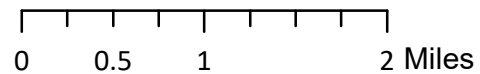
## Legend

-  Municipal Boundary
-  County Boundary

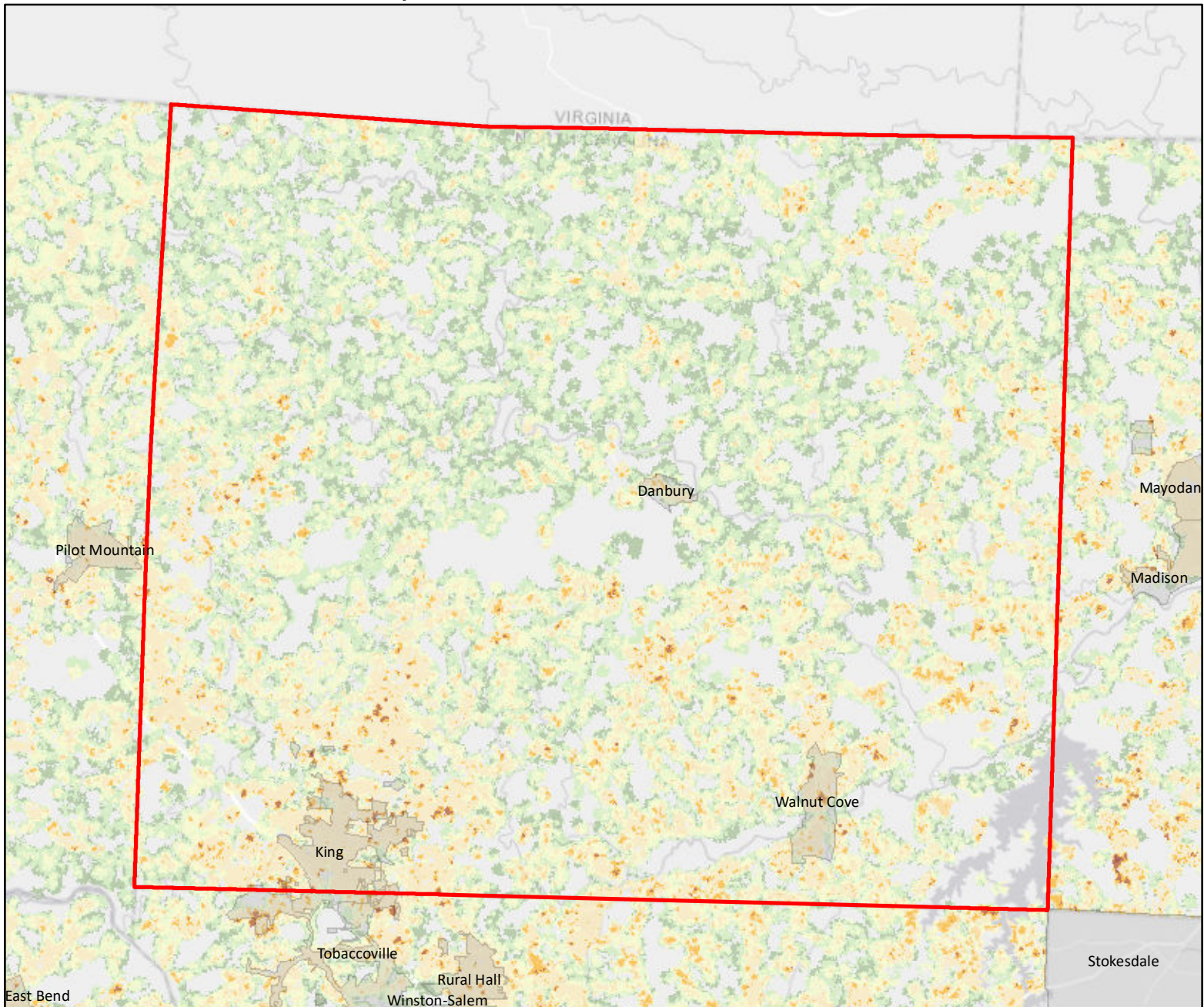
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



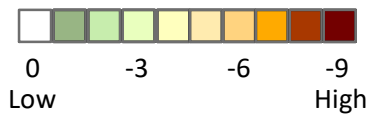
# Stokes County - Wildland Urban Interface Risk Index



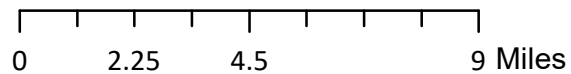
## Legend

-  Municipal Boundary
-  County Boundary

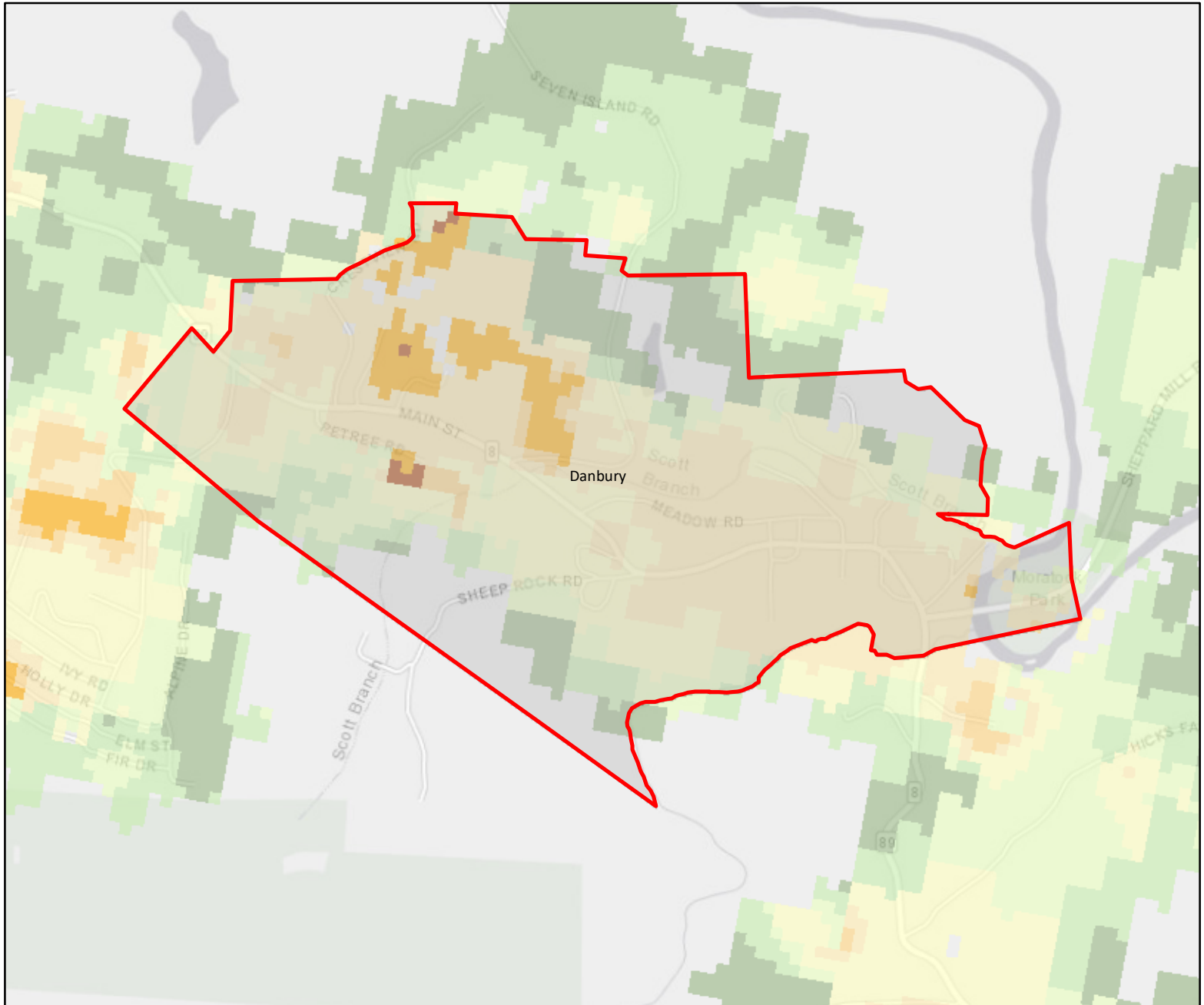
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



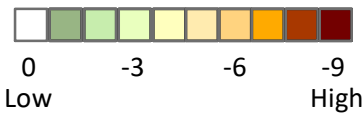
# Danbury - Wildland Urban Interface Risk Index



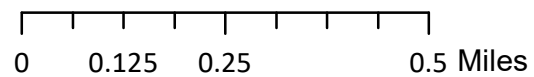
## Legend

-  Municipal Boundary
-  County Boundary

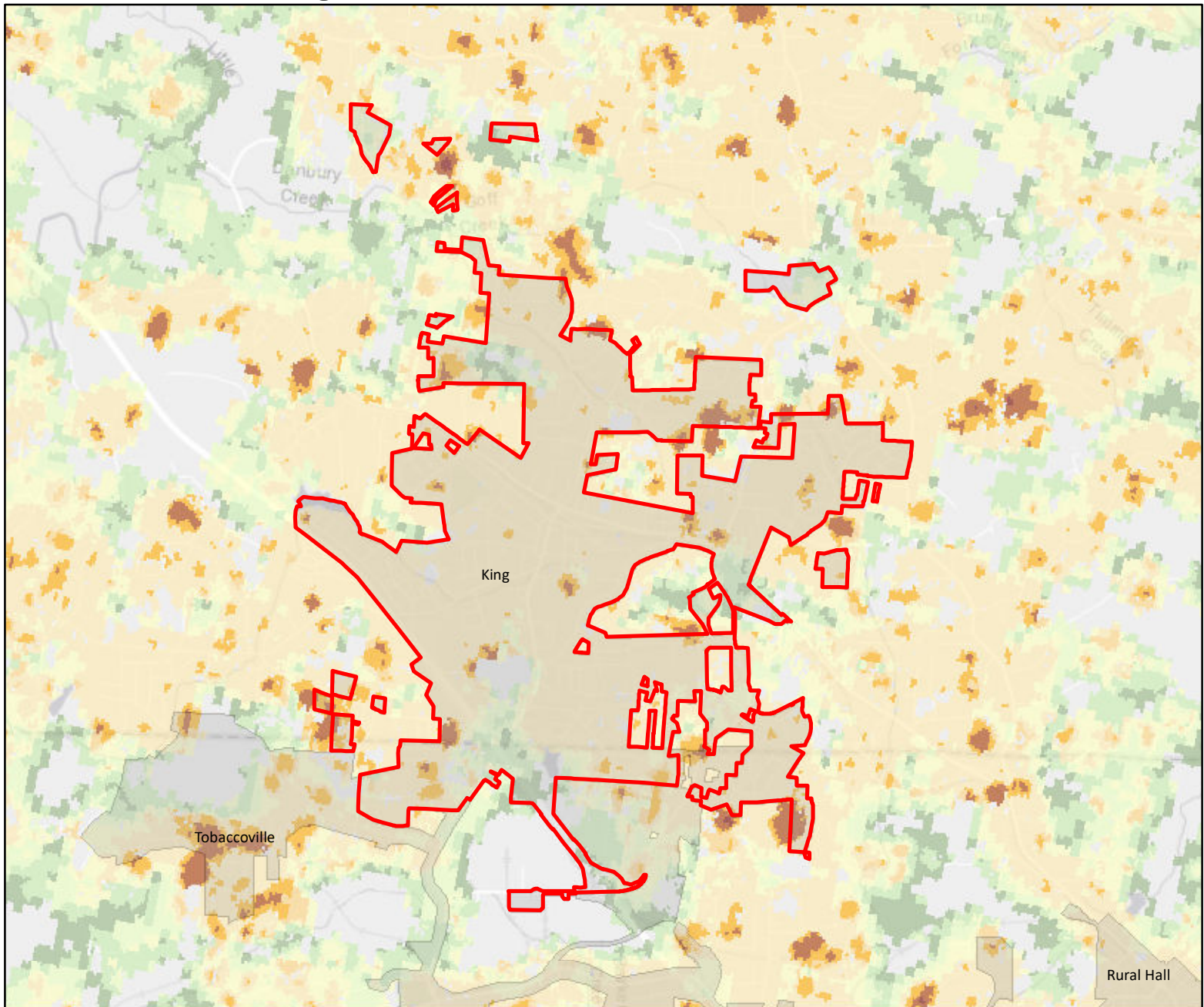
## WUI Risk Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



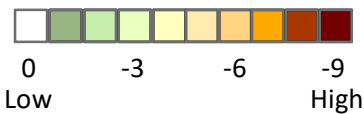
# King - Wildland Urban Interface Risk Index



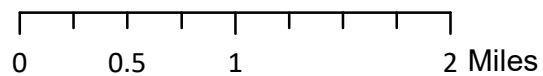
## Legend

- Municipal Boundary
- County Boundary

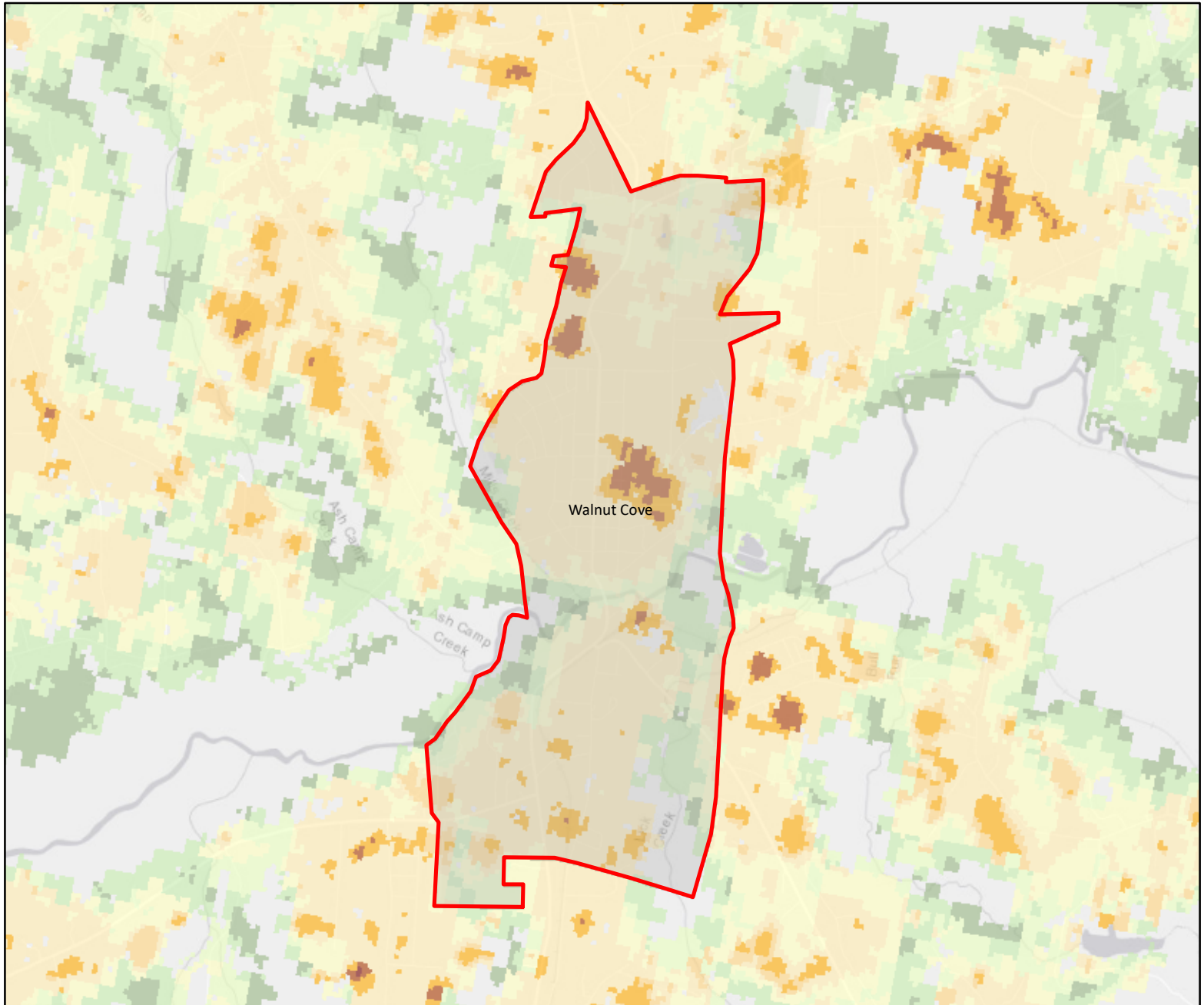
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



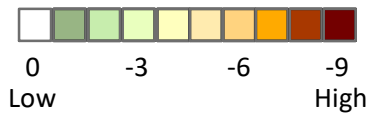
# Walnut Cove - Wildland Urban Interface Risk Index



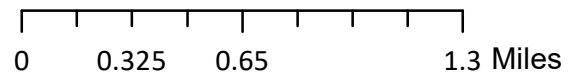
## Legend

-  Municipal Boundary
-  County Boundary

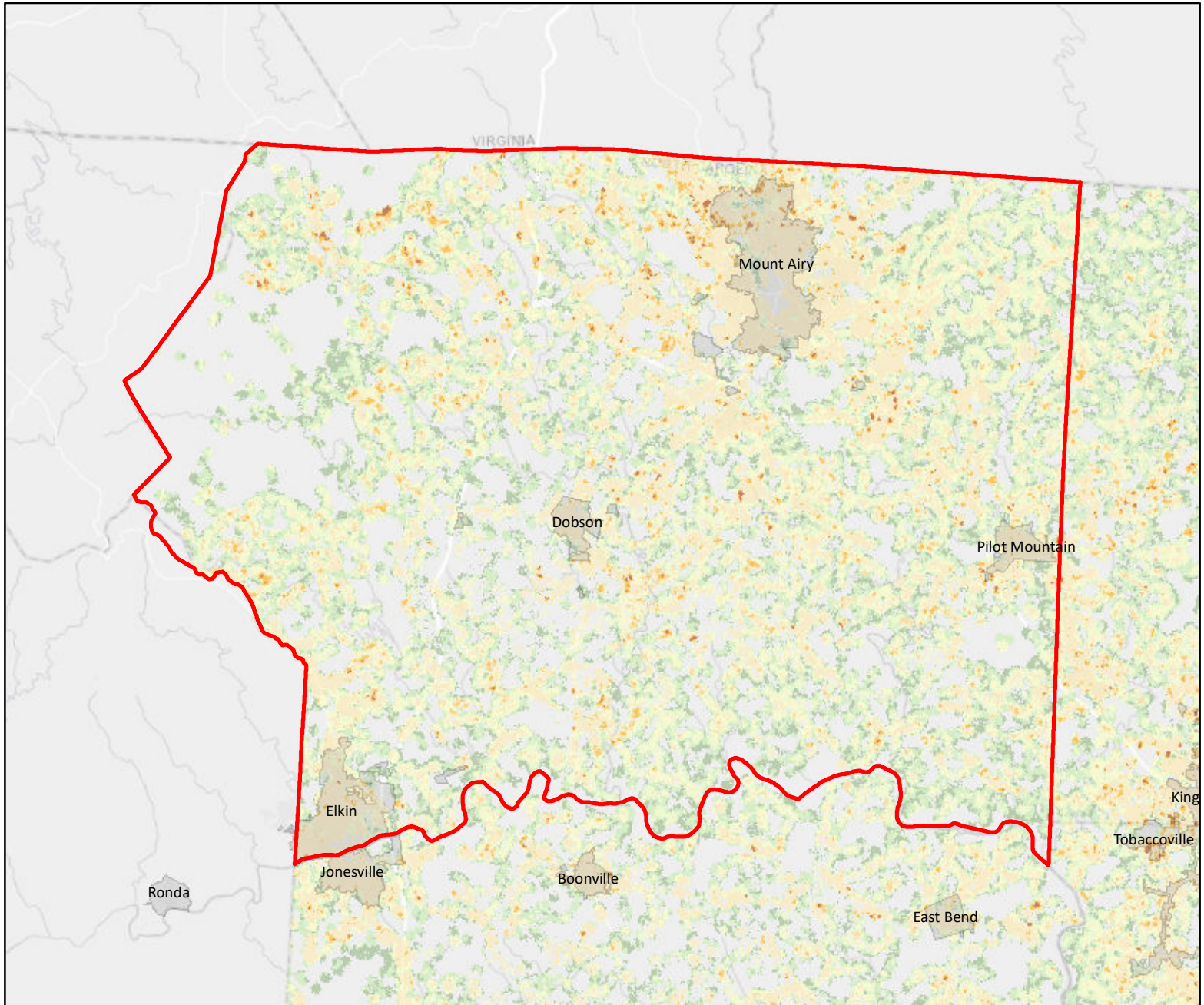
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



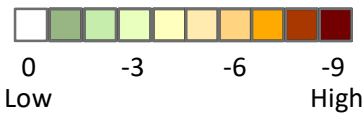
# Surry County - Wildland Urban Interface Risk Index



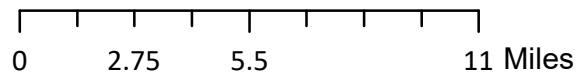
## Legend

-  Municipal Boundary
-  County Boundary

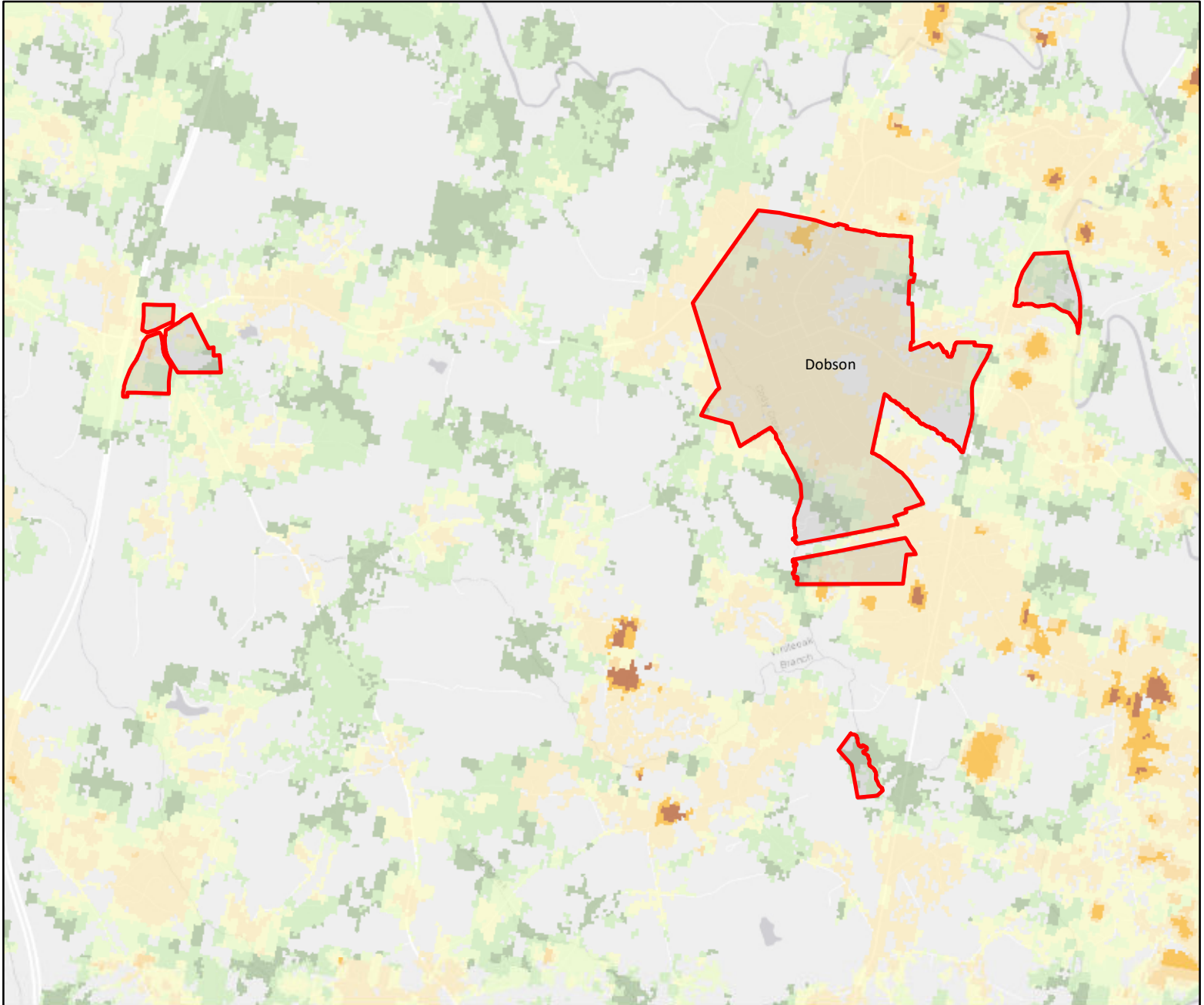
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



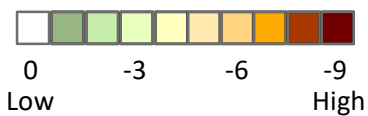
# Dobson - Wildland Urban Interface Risk Index



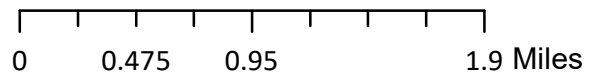
## Legend

-  Municipal Boundary
-  County Boundary

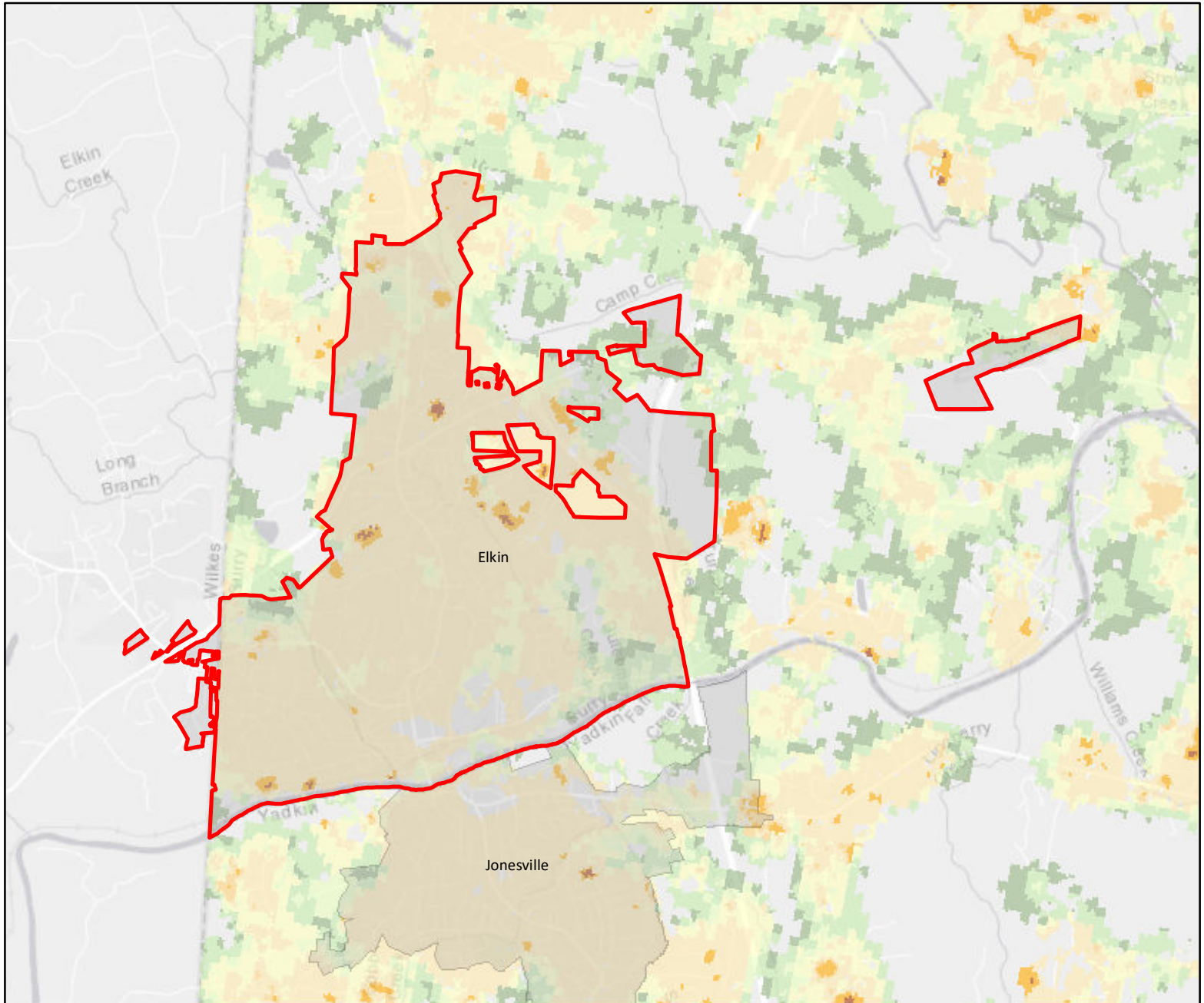
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



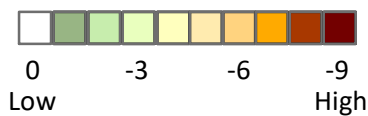
# Elkin - Wildland Urban Interface Risk Index



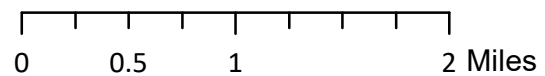
## Legend

-  Municipal Boundary
-  County Boundary

## WUI Risk Index

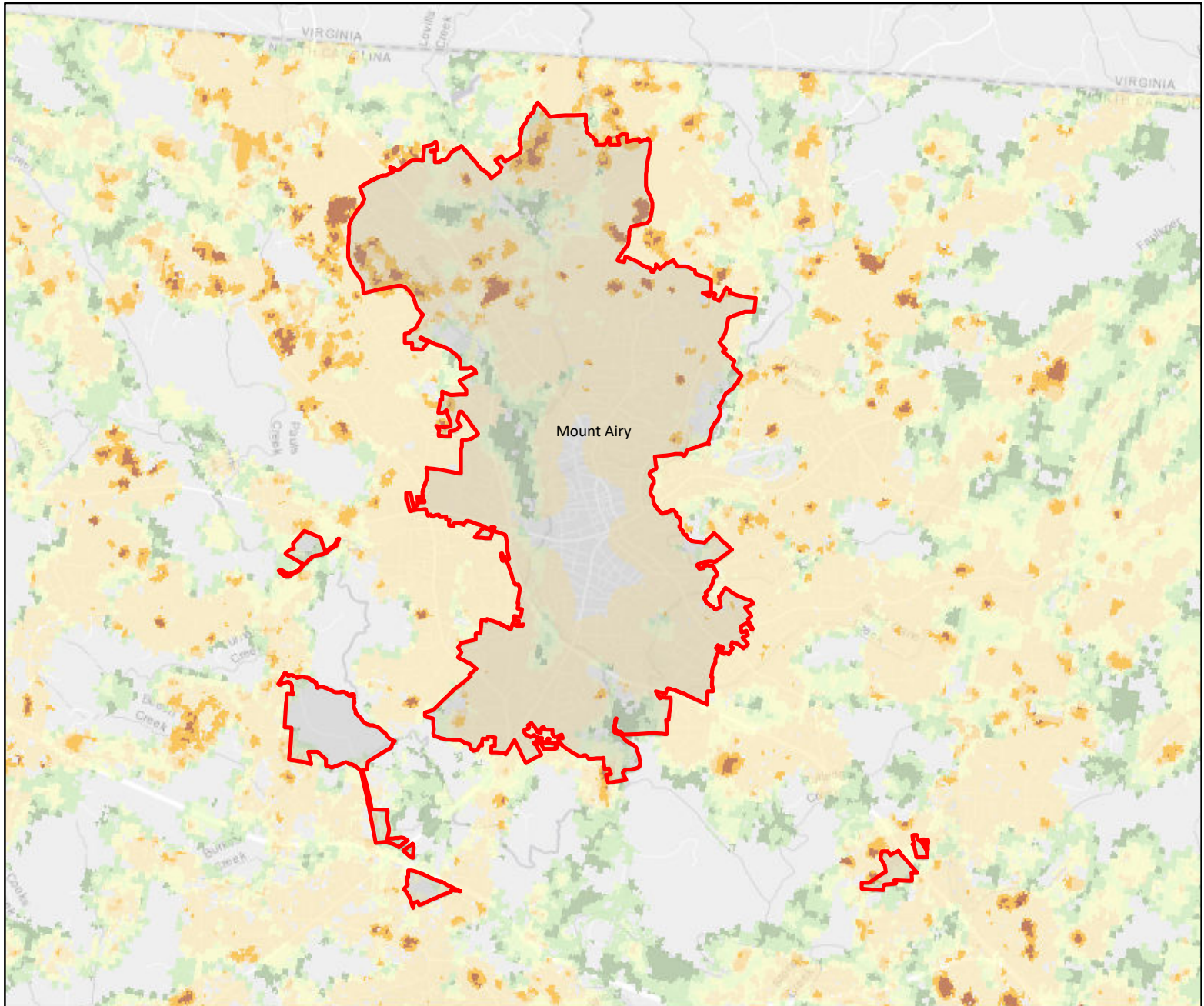


Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL







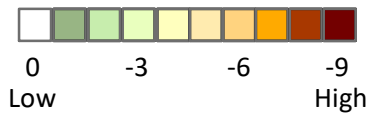
# Mount Airy - Wildland Urban Interface Risk Index



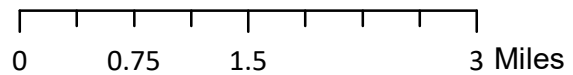
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-  County Boundary

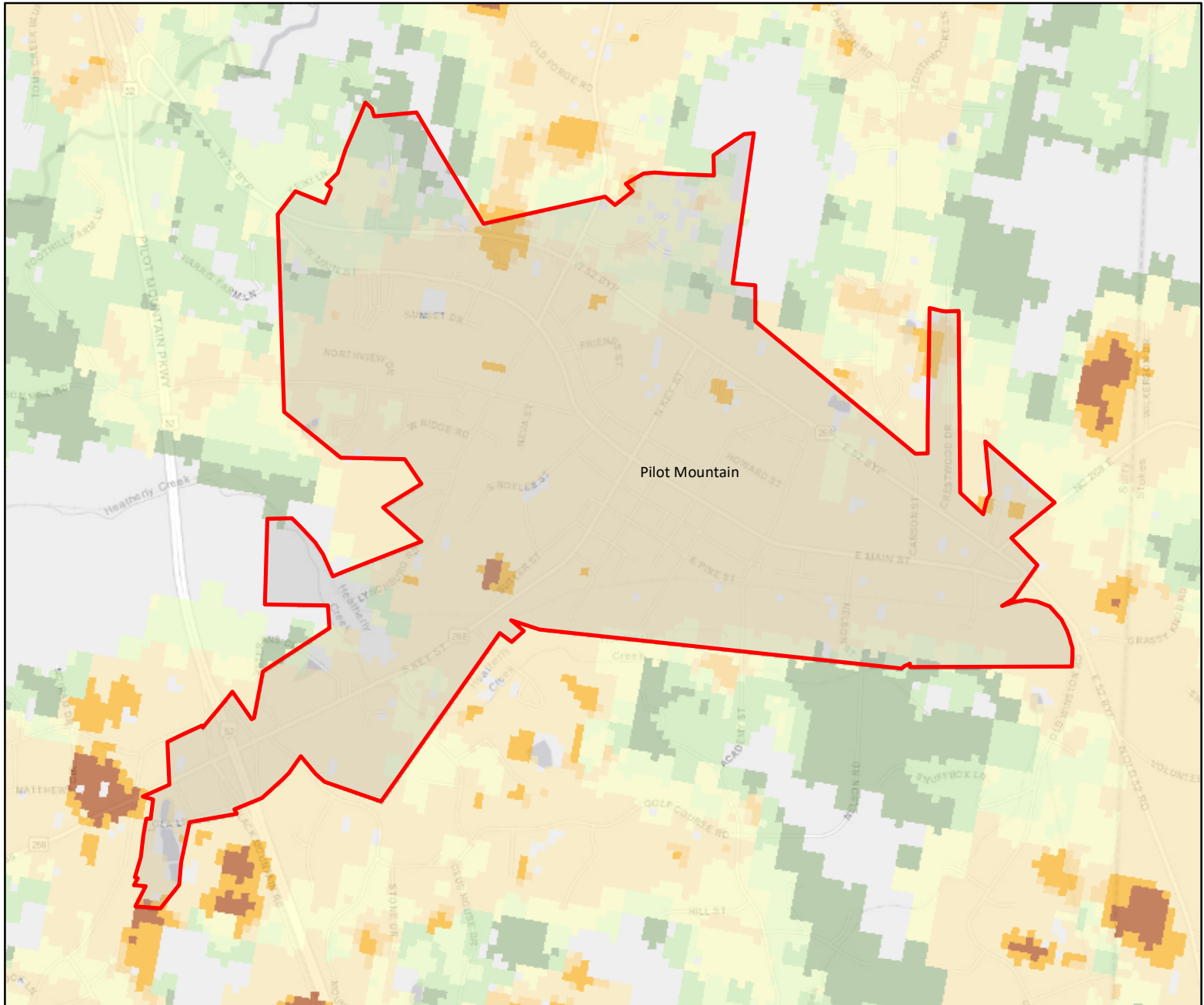
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



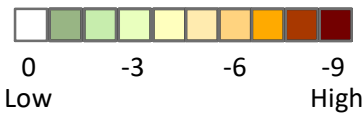
# Pilot Mountain - Wildland Urban Interface Risk Index



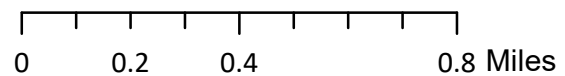
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-  County Boundary

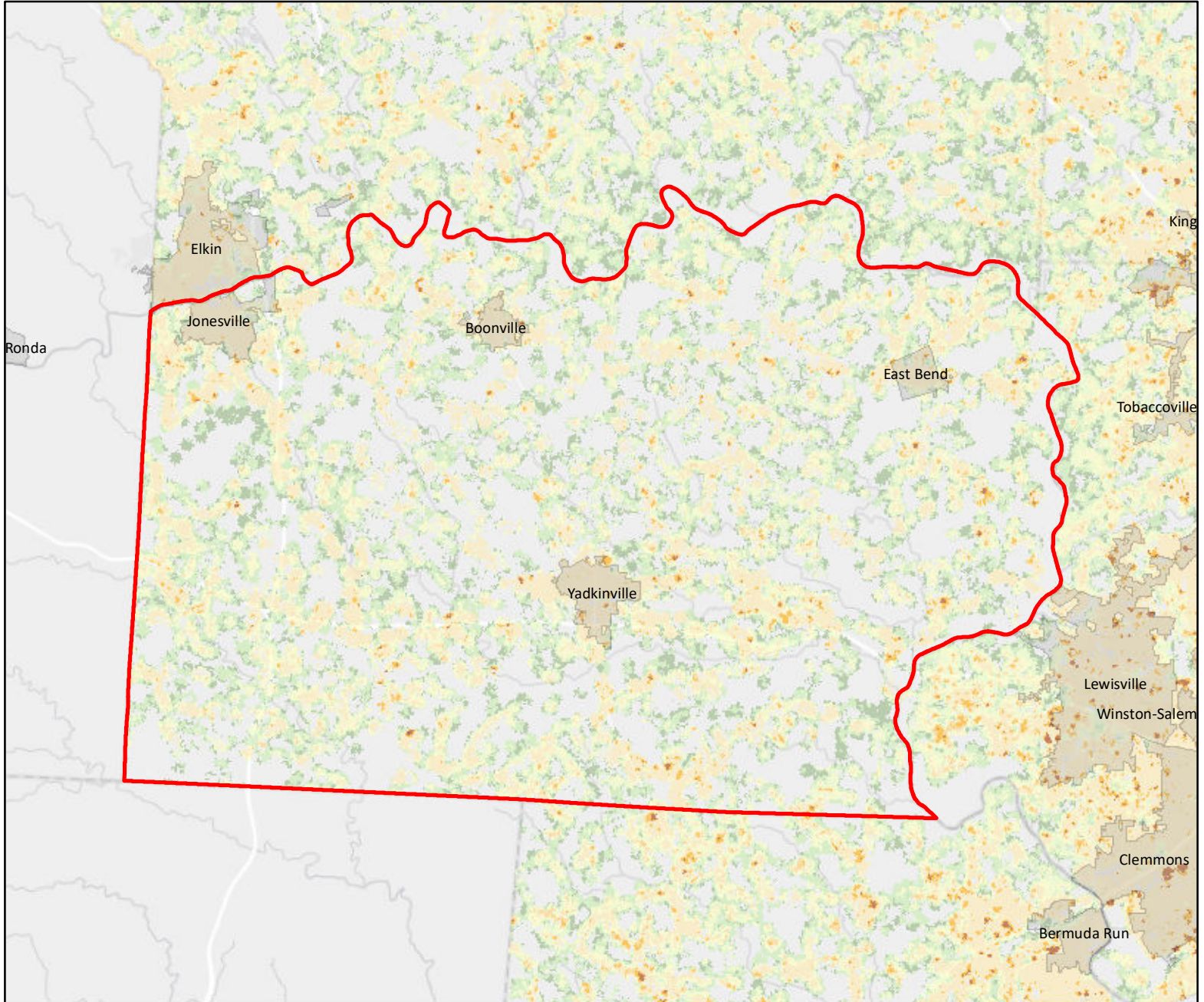
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Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



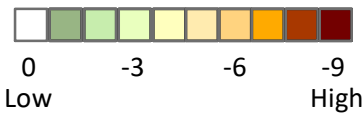
# Yadkin County - Wildland Urban Interface Risk Index



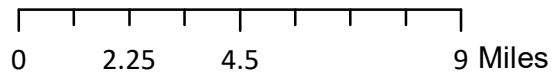
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- Municipal Boundary
- County Boundary

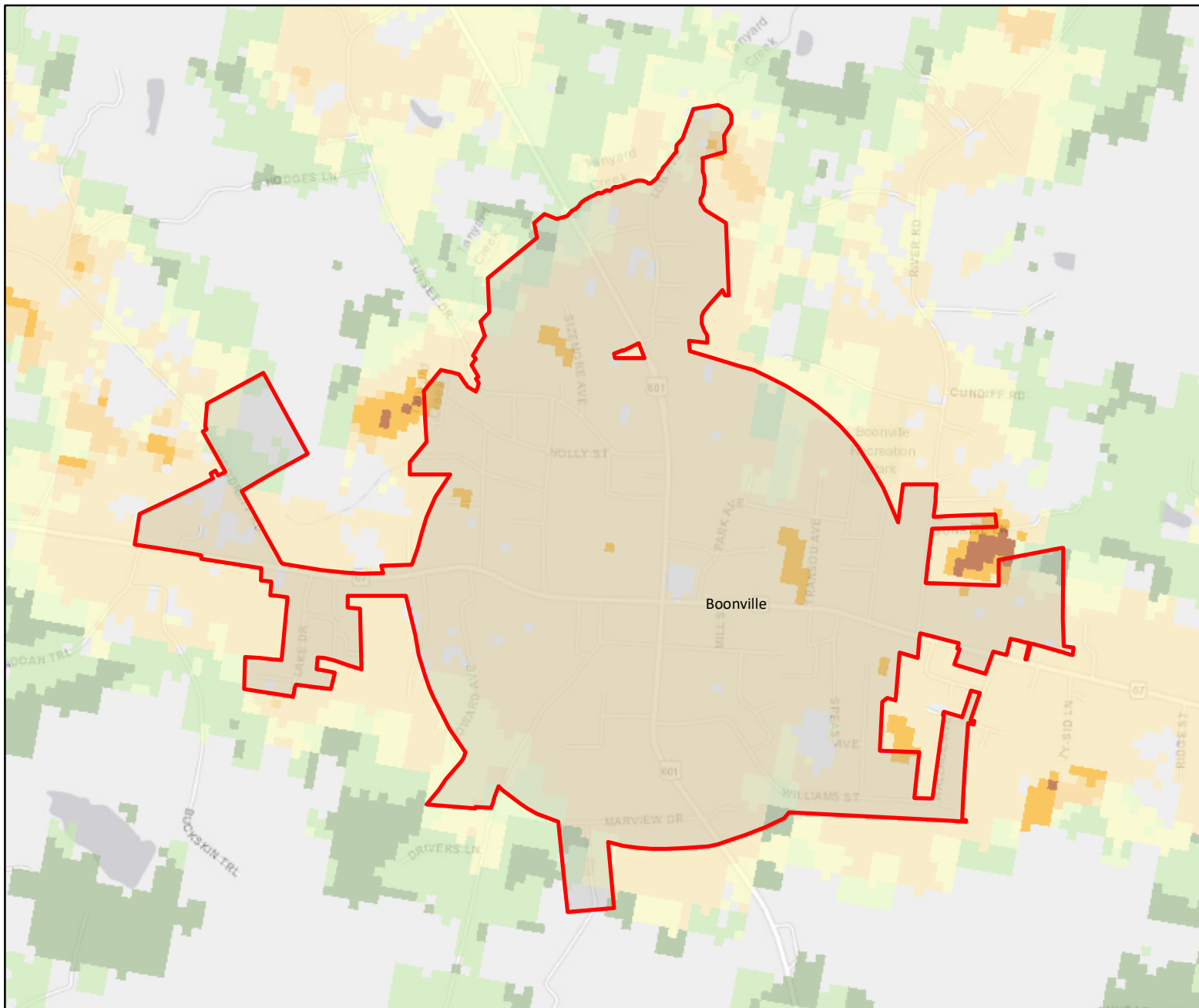
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

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WILDFIRE RISK ASSESSMENT PORTAL



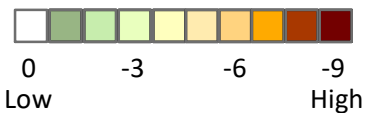
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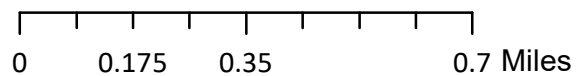
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-  County Boundary

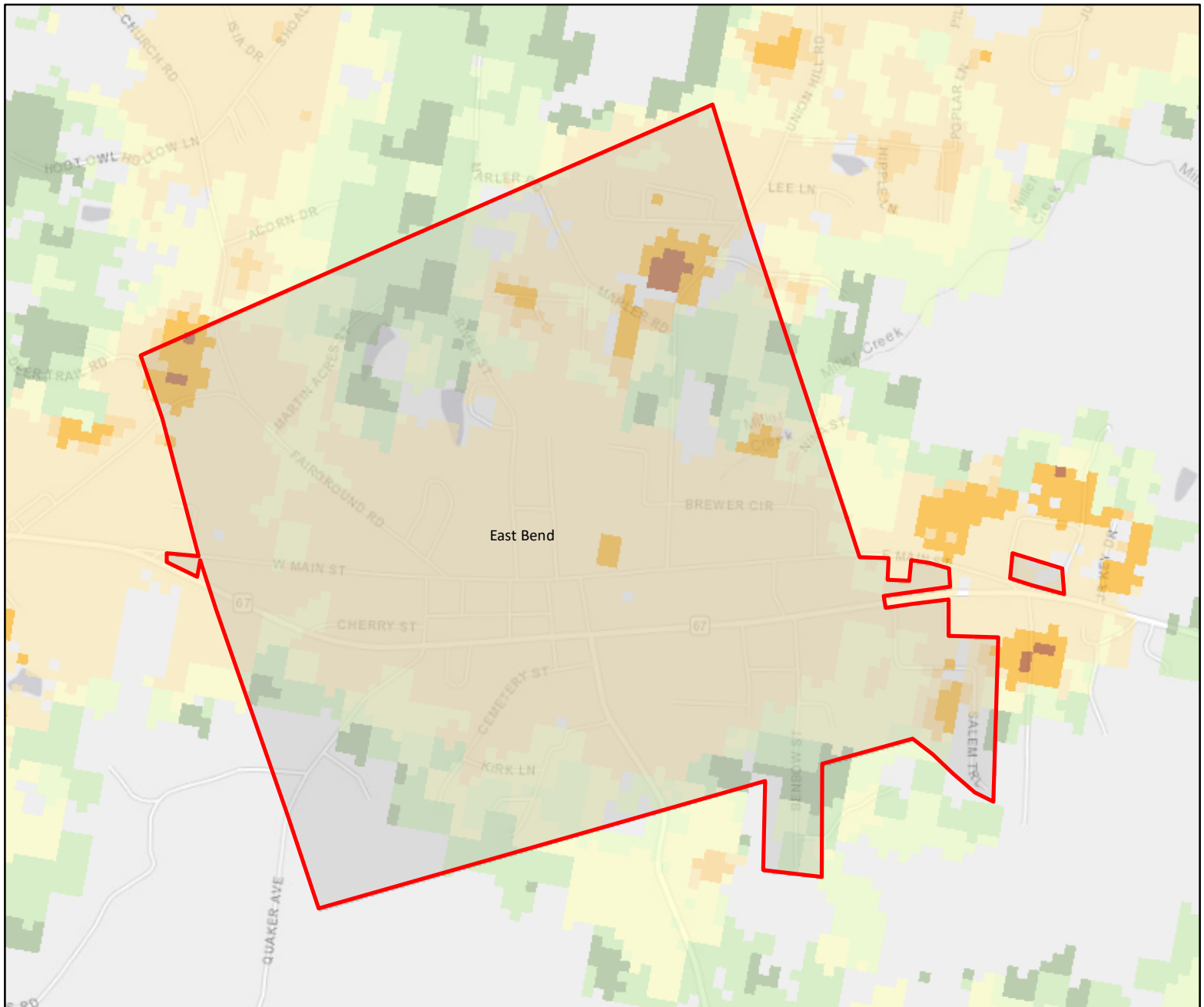
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

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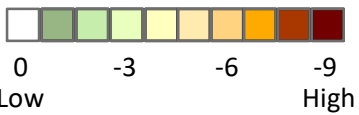
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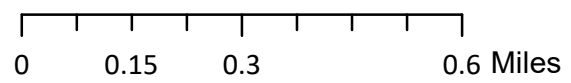
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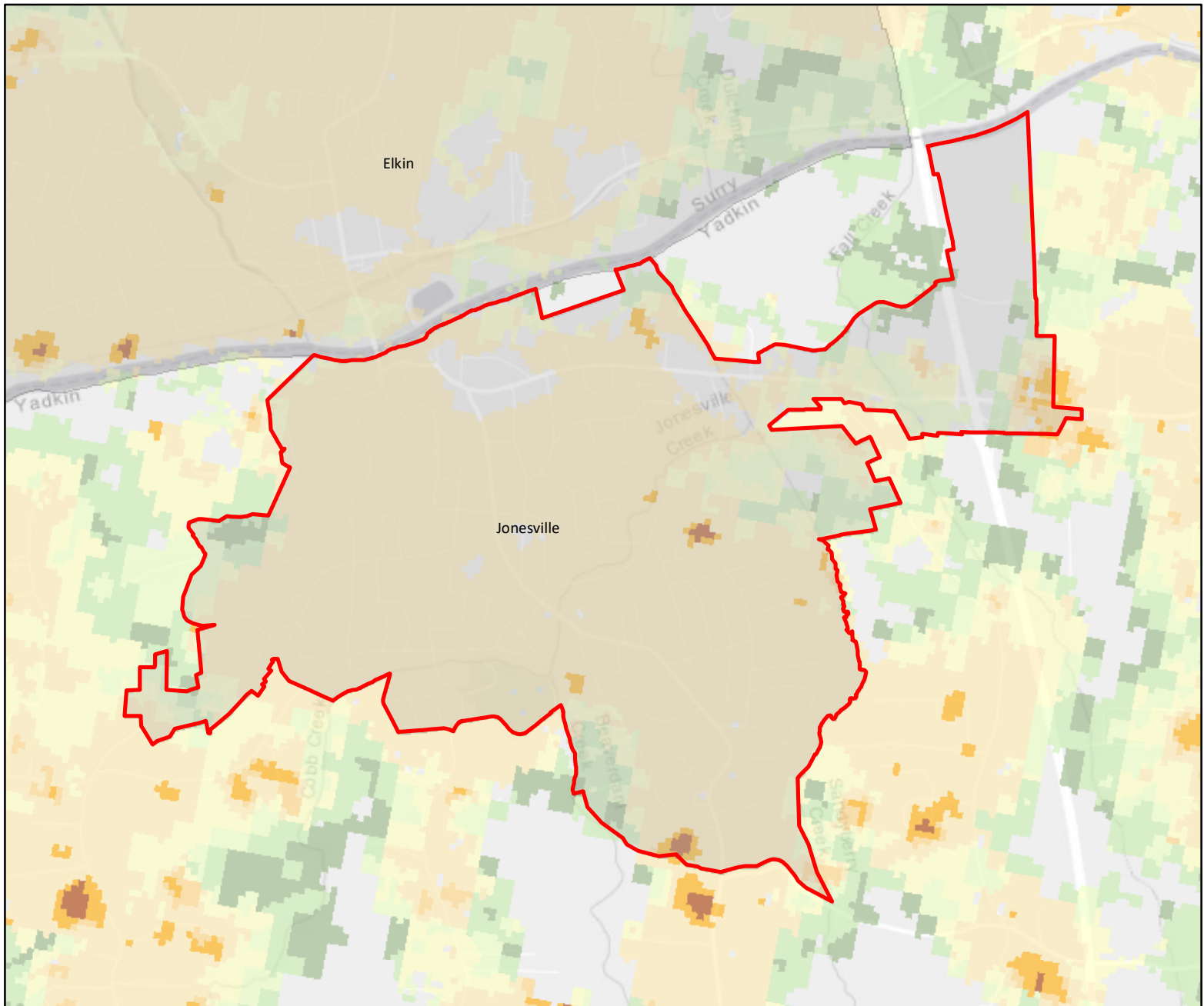
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

Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



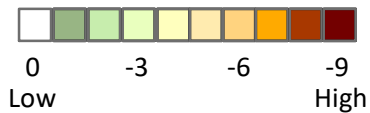
# Jonesville - Wildland Urban Interface Risk Index



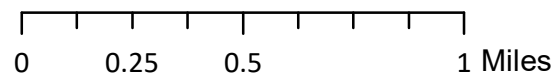
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-  Municipal Boundary
-  County Boundary

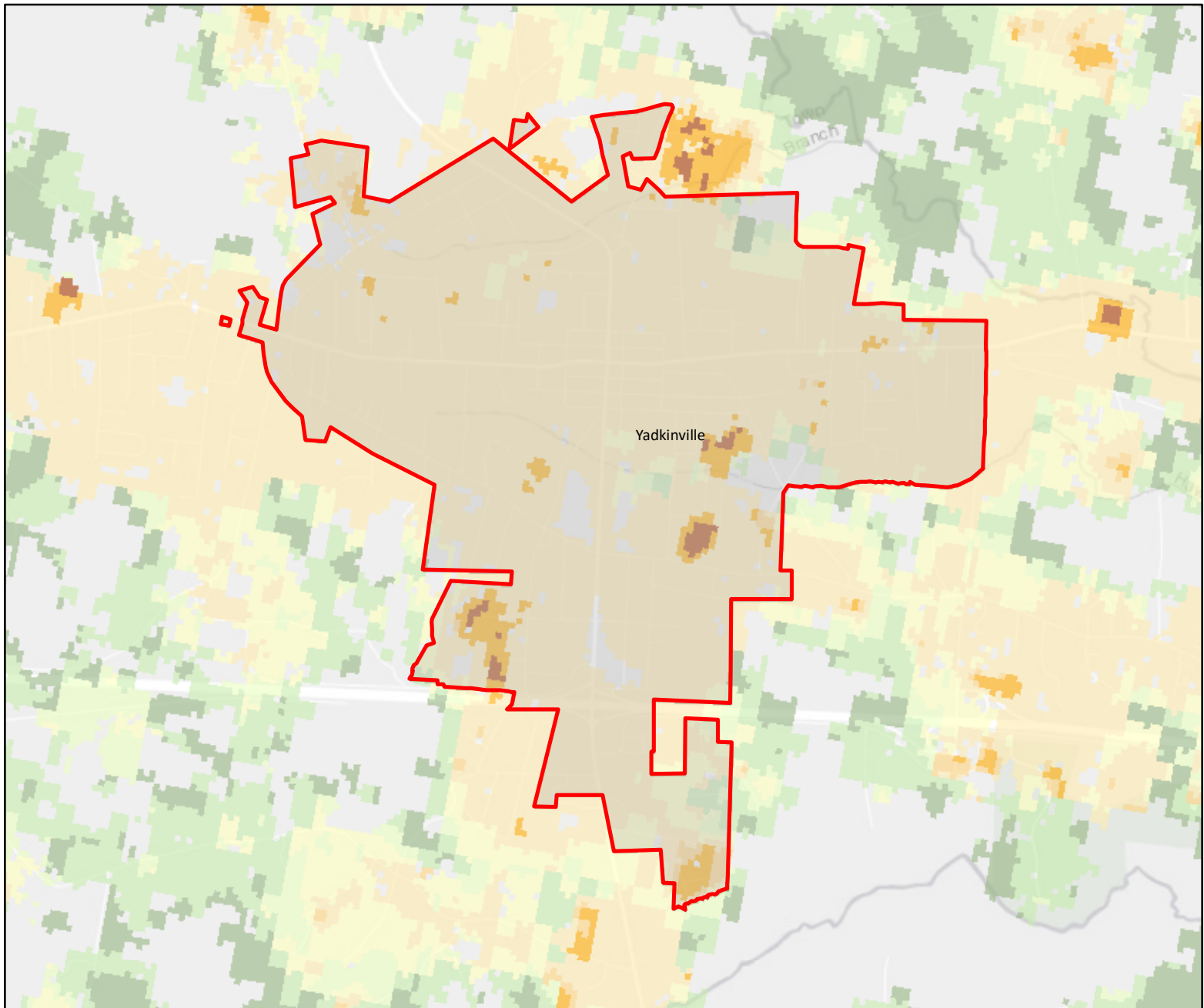
## WUI Risk Index





Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



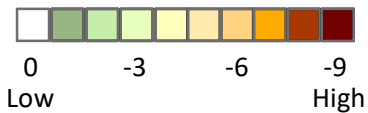
# Yadkinville - Wildland Urban Interface Risk Index



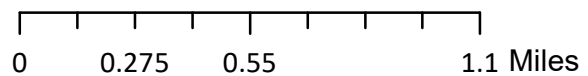
## Legend

-  Municipal Boundary
-  County Boundary

## WUI Risk Index



Data Source: SOUTHERN GROUP OF STATE FORESTERS  
WILDFIRE RISK ASSESSMENT PORTAL



# Appendix H:

## NCEI Storm Event Data

This section of the Plan includes the historic storm event data as reported to the National Centers for Environmental Information.

- ◆ H.1 – Cold/Wind Chill
- ◆ H.2 – Drought
- ◆ H.3 – Extreme Heat
- ◆ H.4 – Flood
- ◆ H.5 – Hail
- ◆ H.6 – Heavy Rain
- ◆ H.7 – Heavy Snow
- ◆ H.8 – High Wind
- ◆ H.9 – Ice Storm
- ◆ H.10 – Lightning
- ◆ H.11 – Sleet
- ◆ H.12 – Tornado
- ◆ H.13 – Thunderstorm



**TABLE H.1: COLD/WIND CHILL EVENTS (2000-2019)**

Date	Description
1/6/2014	An arctic cold front blasted through the western Carolinas during the morning of the 6th, bringing gusty winds and the coldest air mass to have affected the region since 1994. By early evening, winds of 10 to 20 mph, with stronger gusts combined with temperatures falling into the 20s and teens to produce wind chill values below 0 across the Piedmont and foothills. Although wind gradually diminished overnight, low temperatures fell into the single digits across the Piedmont and foothills. The low temperature of 6 at the Charlotte/Douglass International Airport shattered the previous daily record of 12 that had stood for more than a century.
1/7/2015	A strong arctic cold front moved through the western Carolinas during the morning and afternoon of the 7th, bringing gusty winds and very cold air to the Piedmont and foothills. By late evening, sustained winds of 5 to 15 mph combined with air temperatures in the teens to yield wind chill values near 0. Although winds gradually diminished overnight, air temperatures fell to around 10 degrees in many areas by daybreak, and wind chills of 0 to 5 above lingered until temperatures began warming during late morning. However, temperatures remained at or below freezing in many areas throughout the 8th. Record daily lows were set in the Charlotte area on the morning of the 8th.
2/19/2015	A strong arctic cold front blasted through the western Carolinas during the afternoon and evening of the 18th, bringing strong winds and very cold air to the region. Overnight, sustained winds of 5 to 15 mph combined with air temperatures in the teens to yield wind chill values around 0 by daybreak on the 19th. Although winds diminished, air temperatures failed to warm above the 20s throughout the 19th, while record lows between 0 and 10 above were recorded the morning of the 20th.
3/16/2017	The 2017 growing season began early across western North Carolina, due to an unusually warm February and early March that saw average temperatures of almost 10 degrees above normal. An episode of cold arctic high pressure in the middle of March led to a hard freeze on the morning of the 16th, when low temperatures in the lower to mid-20s were reported. This caused significant damage to berry, wheat, apple, and peach crops. While subsequent days of freezing temperatures caused further damage, the vast majority of the damage occurred on the 16th.

**TABLE H.2: DROUGHT EVENTS (2000-2019)**

Date	Description
<b>Caswell County</b>	
8/14/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. August 14th, saw 8 counties in northwest North Carolina enter into severe drought status (D2). This severe drought continued through the end of August.
9/1/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. September 18th, saw nine counties in northwest North Carolina enter into extreme drought status (D3). This extreme drought continued through the end of September. Crop damage estimated from county extension offices.
10/1/2007	The county began the month at the Extreme (D3) Category of drought. The severity was increased on October 16th to the Exceptional (D4) Category. This level of severity was maintained until October 30th when it was downgraded to the Moderate (D1) Category. Main crop losses were pasture grasses with zero percent yield, tobacco with only a 20 percent yield, corn grain with only a 30 to 40 percent yield, and soybeans with a 75% yield. Crop damage values are estimates.
11/6/2007	Severe drought conditions developed in Caswell County November 6th, and increased to extreme to exceptional drought conditions by the end of the month. The exceptional drought was limited to the extreme southeastern portion of the county.
12/1/2007	Extreme (D3) to exceptional (D4) drought conditions persisted in December.
1/1/2008	Drought conditions existed across the county through the entire month. The far southern part of the county was in the Exceptional (D4) category. The central portion was in the Extreme (D3) category, and the far northern part was in the Moderate (D2) category.
2/1/2008	Severe to exceptional drought conditions persisted for the entire month across the county. Exceptional conditions were primarily confined to the southern portion of the county.

**APPENDIX H: NCEI STORM EVENT DATA**

Date	Description
3/1/2008	Extreme (D3) drought conditions with exceptional (D4) drought in the southeast corner improved to severe (D2) drought with extreme (D3) drought conditions lingering in the southern portion of the county.
4/1/2008	The southern quarter of the county began the month in an Extreme (D3) drought with the remainder of the county under a Severe (D2) drought. On April 8, drought conditions were improved so that now the southern half of the county was under a Severe (D2) drought while the rest of the county was under a Moderate (D1) drought. On the 22nd, conditions were upgraded again so that now the entire county was under a Moderate (D1) drought.
6/17/2008	Abnormally Dry (D0) conditions began the month across the entire county. On June 10th, conditions worsened so that a Moderate (D1) Drought was across the entire county. Conditions continued to worsen so that on June 17th, all but the far northeast part of the county was under a Severe (D2) Drought. This category of drought continued through the end of the month.
7/1/2008	The month began with a Severe (D2) Drought across the entire county. On the 8th of the month, conditions improved to a Moderate (D1) Drought across the entire county.
8/12/2008	Severe drought conditions returned to the county by the middle of August and continued through the end of the month.
<b>Davie County</b>	
8/1/2000	The 2-year drought was reaching a critical stage by late summer. Many 80 to 100-foot wells were going dry. Area lakes were at record low levels causing property damage to docks, boats, etc.
9/1/2000	Overall, drought conditions continued across western North Carolina despite some locations receiving near their month's average rainfall. Low stream flow and municipal water supply remained the largest issues with many towns and cities enacting water restrictions. Citizens were quoted as saying this is the driest, they have ever seen it. Despite the drought conditions, impact on crops seemed to be minimal.
10/1/2000	Effects of the drought intensified as many areas received absolutely no rain during the month, setting records for the longest stretch without measurable rainfall in several locations. Wells and mountain streams continued to dry up and lake levels continued to drop. Many communities were forced to start more stringent water conservation measures.
11/1/2000	The long-term drought continued to affect the region. Rainfall during the month was near or slightly above normal, but this had little effect on the ground water levels. Numerous wells dried up during the fall, and well borers and drillers could not keep up with the demand. Large lakes reported record low levels and some communities continued or initiated water control measures.
2/1/2001	The long-term drought's impact became more severe, even during the winter, as water levels in lakes dropped and stream flow on rivers reached the lowest in memory. More and more communities began water restrictions and started preparing for a busy fire weather season.
3/1/2001	Despite beneficial rain during March, the drought continued to grip most of the area. Severe water restrictions were implemented in parts of the North Carolina piedmont, where reservoir had dropped to all-time low levels. In Concord, food establishments were asked to use paper and plastic products to conserve water.
4/1/2001	Some relief to the long-term drought occurred at mid-month, but for the most part, the rainfall deficit for the three-year period actually grew larger by the end of April. Mandatory water restrictions continued at a few mountain locations, with voluntary water restrictions urged at many others. Numerous wells went dry during April.
5/1/2001	Unprecedented drought conditions continued. Some rivers and lakes reached record-low levels. Well-drilling companies in the North Carolina piedmont were recording twice as much business as usual.
8/1/2001	The effects of the long-term drought became more severe, especially in the North Carolina piedmont. Critical water conditions were beginning to concern officials and residents of Charlotte.
11/1/2001	
12/1/2001	Very little active weather during December signaled that the drought was still present - and becoming critically important to more and more people. The Charlotte area recorded an all-time record dry calendar year with just 26.23 inches of rainfall during 2001. Records have been kept in the area since 1878. Many communities initiated either mandatory or voluntary water restrictions. At Kings Mountain, NC - a new pump was required at Lake Moss because the water level dropped below 2 of the 3 existing pumps. Record low ground water supplies, lake levels, and stream flows were reported across all of Western North Carolina.

**APPENDIX H: NCEI STORM EVENT DATA**

Date	Description
8/1/2002	The water supply situation reached crisis levels in some communities, as the effects of the long-term drought continued to plague western North Carolina. Particularly hard hit were several Piedmont communities along the Interstate 77 corridor. The city of Shelby was forced to buy water from surrounding communities and even from private companies and citizens. In Statesville, emergency construction of wells and a dam was necessary to prevent the city from running out of water, as the South Yadkin River reached historically low levels. Water levels on area lakes were as much as 10 feet below full pond. Most of the larger towns and cities along the I-77 corridor had imposed mandatory water restrictions by the end of the month, including the Charlotte metro area.
5/1/2004	A period of dry weather that began in August of 2003 resulted in moderate drought conditions across portions of western North Carolina by late spring of 2004. Streamflow and lake levels began to run below normal, and a few communities instituted water restrictions.
5/1/2007	The effects of an extended period of dry weather were exacerbated by an abnormally dry May, with many locations reporting one of the driest Mays in recorded history. By the end of May, many climatological stations were reporting yearly rainfall deficits as high as 10 inches. The result was severe to extreme drought conditions across much of western North Carolina by the end of the month. Water restrictions were implemented in some counties across extreme western North Carolina. The very dry conditions added to agriculture hardships caused by a hard freeze and widespread damaging winds in April.
6/1/2007	Despite an increase in thunderstorm activity, drought conditions persisted across much of western North Carolina. The persistent drought continued to cause hardships to agricultural interests that were still recuperating from the April freeze. Dollar values for the drought damage should be included in either the August or September Storm Data for this region.
7/1/2007	Drought conditions persisted across much of western North Carolina during July. By the end of July, voluntary water restrictions were instituted in almost all North Carolina counties along and west of I-77. Some mandatory restrictions were introduced in Union County, NC. Agricultural interests continued to be especially hard hit. The absence of rain negatively affected the hay crop, creating concern for the loss of livestock. Dollar values for the drought damage should be included in either the August or September Storm Data for this region.
8/1/2007	Severe to extreme drought conditions persisted across much of western North Carolina during August. By the end of the month, voluntary water restrictions continued in almost all North Carolina counties along and west of I-77. Stream flows and groundwater levels approached record low levels. Water levels on some reservoirs decreased by as much as 1 foot every 10 days. Agricultural interests continued to be especially hard hit, and the North Carolina governor requested federal disaster aid by the end of the month. Dollar values for the drought should be included in either the September or October Storm Data for this region.
9/1/2007	Extreme drought conditions persisted across western North Carolina through September, as the region experienced another month of well-below normal precipitation. By the end of the month, most locations were running a yearly rainfall deficit of 11-17 inches. Stream flows and groundwater levels were near record low levels, with many streams running at 5 percent or less of normal flow. Water levels on area reservoirs were some of the lowest in recorded history. Agricultural interests continued to be especially hard hit. Farmers continued to struggle to feed livestock due to a lack of hay and poor pasture conditions, forcing many cattle to be sold or slaughtered. Agricultural and other losses attributed to the drought are estimated to be in the hundreds of millions of dollars. County-based losses for the growing season will be included in next month's Storm Data.
10/1/2007	Unusually dry weather continued across western North Carolina through October. Although a soaking rain near the end of the month resulted in near-normal monthly precipitation for the mountains, the piedmont saw another month of well-below normal rainfall. Most areas were on pace to break yearly rainfall deficit records. By the end of the month, exceptional drought conditions were reported across the majority of the area. Water flow on area streams continued at 3 to 6 percent of normal, while lake levels remained at near-record lows. Although most cities and towns were requesting voluntary water restrictions be observed, mandatory restrictions were ordered in quite a few communities. In some areas, the water situation was becoming dire, with Monroe, NC officials reporting that water supplies would be exhausted by early 2008 if significant rain did not occur. Also, private wells were beginning to dry up in many areas. Agriculture continued to be severely impacted by the drought. As of this writing, county by county dollar estimates of drought damage have not been made available.
11/1/2007	November provided no relief from the effects of the long-term drought. In fact, another month of well-below normal rainfall made an already dire situation even worse. Many locations remained on pace to set annual

**APPENDIX H: NCEI STORM EVENT DATA**

Date	Description
	records for rainfall deficit. By the end of the month, the vast majority of the region was experiencing exceptional drought conditions. Streamflow on area rivers remained extremely low, generally less than 10 percent of normal. Meanwhile, lakes continued to gradually fall toward record low levels.
12/1/2007	The latter half of December saw a transition to a wetter pattern across the southeast. Most observing stations in western North Carolina reported above normal monthly rainfall for the first time since January 2007. However, this was not enough to put much of a dent in the long-term drought as extreme to exceptional drought conditions persisted into the New Year. Although the increase in rainfall did allow for some recharge of area streams, many were still running at less than 25 percent of normal flow at the end of the month.
1/1/2008	January saw a return to dry weather across western North Carolina. Most observing stations across the region reported a rainfall deficit of 1 to 2 inches during the month, resulting in another month of exceptional drought conditions across most of the area. Water levels on area lakes remained within a foot or two of record low stages. However, rivers and streams remained somewhat recharged from the December rains, with streamflow on most waterways running 25 to 75 percent of normal.
6/1/2008	Although near normal rainfall was observed across much of the area during the late winter and early spring, another period of abnormally dry weather in May and June exacerbated severe to extreme drought conditions over the western Carolinas and northeast Georgia. Much of the area saw less than 2 inches of rain during this period of time. By the end of the month, much of the mountains and foothills of western North Carolina were running 10 inches below normal annual rainfall. Total rainfall deficits since the beginning of 2007 were around 20 inches or more in the hardest hit areas. By the end of the month, flow on almost all major streams was running less than 10 percent of normal. Many area crops suffered.
7/1/2008	Unusually dry weather continued through the month of July, with severe to extreme drought conditions persisting across the area. Afternoon and evening thunderstorms provided some degree of relief across portions of the North Carolina piedmont, but locations across Upstate South Carolina and extreme western North Carolina reported annual rainfall deficits of nearly 11 inches by the end of the month. Mandatory water restrictions were instituted across much of the North Carolina foothills. Water well levels began to descend below record low levels, most of which were recorded during the 1999-2002 drought. The vast majority of major streams across the area continued to run 1-10 percent of normal flow. Agriculture continued to be hard hit, with some areas reporting a 100 percent loss of the corn crop.
8/1/2008	Dry weather persisted across much of the area for most of August, although portions of the North Carolina Piedmont began to see relief from the dry conditions early in the month, due to an increase in daily thunderstorm activity. Elsewhere, exceptional drought conditions persisted and even expanded slightly westward to cover more of far western North Carolina and northeast Georgia. During the early part of the month, flows on most of the major streams across the area were running at record low levels, with the French Broad River setting a minimum flow record that had stood for almost 100 years. Only a handful of streams were running at more than 1 to 7 percent of normal. Groundwater levels were 2-5 feet below normal. Significant agricultural impacts persisted, with losses to summer crops, including hay, estimated at 30%. The dry weather also affected the livestock industry, due to shortages of pasture crops necessary for feeding. By the end of the month, Tropical Storm Fay had dropped up to 11 inches of rainfall across the area, providing some relief from the drought conditions, especially across the North Carolina Piedmont.
9/1/2008	The heavy rain brought by Tropical Storm Fay in late August provided some relief to the drought conditions across the area. This was particularly true across the North Carolina piedmont, where improving conditions were aided by normal September rainfall. However, another dry month resulted in a persistence of extreme to exceptional drought conditions across the North Carolina mountains and foothills. Voluntary water restrictions remained widespread during the month. A few communities held onto mandatory restrictions early in the month, but many of these were lifted by the end of the month. Well water remained near record low levels in many areas, while lake levels persisted well below normal stages. Rainfall from Fay resulted in some improvement in streamflows, although most rivers and major streams remained at less than 25 percent of normal, with many still running at less than 10 percent of normal. By the end of the month, government officials had requested a federal disaster declaration for most of the counties in the area, due to crop damages.
<b>Rockingham County</b>	

**APPENDIX H: NCEI STORM EVENT DATA**

Date	Description
8/14/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. August 14th, saw 8 counties in northwest North Carolina enter into severe drought status (D2). This severe drought continued through the end of August.
9/1/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. September 18th, saw nine counties in northwest North Carolina enter into extreme drought status (D3). This extreme drought continued through the end of September. Crop damage estimated from county extension offices.
10/1/2007	The county began the month in the Extreme (D3) Category of drought. The severity was increased to Exceptional (D4) on October 16th. This level of severity continued until October 30th when it was downgraded to the Moderate (D1) Category. The main crop loss was hay. Crop damage values are estimates.
11/13/2007	Lack of rainfall contributed to drought conditions worsening across Rockingham County during November. By November 13th, the southern portion of the county advanced into a severe drought. By the end of the month, severe drought conditions had spread north across the rest of the county, while the southern half advanced into an extreme drought.
12/1/2007	Extreme (D3) to exceptional (D4) drought conditions continued December in the southern portions with Severe(D2) drought conditions across the north.
1/1/2008	Drought conditions existed across the county through the entire month. The far southeastern part of the county was in the Exceptional (D4) category. The central and southwestern portions were in the Extreme (D3) category, and the far northern part was in the Moderate (D2) category.
2/1/2008	Severe to exceptional drought conditions persisted for the entire month across the county. Exceptional conditions were confined to the extreme southeastern portion of the county.
3/1/2008	Extreme (D3) drought conditions with exceptional (D4) drought in southeast corner improved to severe (D2) drought with extreme (D3) drought conditions in the southeast corner.
4/1/2008	The far southeast corner of the county began the month in an Extreme (D3) drought with the remainder of the county under a Severe (D2) drought. On April 8, drought conditions were improved so that now the southeast part of the county was under a Severe (D2) drought while the rest of the county was under a Moderate (D1) drought. On the 22nd, the entire county was under a Moderate (D1) drought.
6/10/2008	A Moderate (D1) Drought began the month across the western third of the county with Abnormally Dry (D0) conditions elsewhere. On June 10th, a Severe (D2) drought returned to the far southwest part of the county with a Moderate (D1) drought across the remainder. On June 17th, the Severe (D2) drought expanded across the remainder of the county. This category of drought continued through the end of the month.
7/1/2008	The month began with a Severe (D2) Drought across the entire county. On the 8th of the month, conditions improved to a Moderate (D1) Drought.
8/12/2008	Severe drought conditions returned to the county by the middle of August and continued through the end of the month.
<b>Stokes County</b>	
9/1/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. September 18th, saw nine counties in northwest North Carolina enter into extreme drought status (D3). This extreme drought continued through the end of September. Crop damage estimated from county extension offices.
10/1/2007	The county began the month in the Extreme (D3) Category of drought. The severity was increased to Exceptional (D4) on October 16th. This level of severity continued until October 30th when it was downgraded to the Moderate (D1) Category.
11/6/2007	Severe drought conditions developed in southwestern part of Stokes County November 6th, and increased to severe to extreme drought conditions by the end of the month. The extreme drought was limited to the southeastern portion of the county.
12/1/2007	Severe (D2) drought conditions worsened to extreme (D3) drought conditions.
1/1/2008	Drought conditions existed across the county through the entire month. The southern part of the county was in the Extreme (D3) category, and the northern part was in the Moderate (D2) category.
2/1/2008	Severe to extreme drought conditions persisted for the entire month across the county.

**APPENDIX H: NCEI STORM EVENT DATA**

Date	Description
3/1/2008	Several rain events brought welcomed relief to the region. Extreme (D3) drought conditions with severe (D2) drought conditions across northern tip improved to severe (D2) drought with moderate (D1) drought conditions across the northwest corner.
4/1/2008	Most of the county began the month in a Severe Drought (D2). On the morning of the 8th, the drought category was decreased to Moderate (D1).
6/1/2008	The month began with a Severe (D2) drought across the far southwest portion of the county and Moderate (D1) across the remainder of the county. On June 10th, conditions had worsened across all but the northeast part of the county to a Severe (D2) drought. On June 17th, all of the county was categorized as being in a Severe (D2) drought. This category of drought continued through the end of the month.
7/1/2008	A Severe (D2) Drought continued across the county during the month.
8/1/2008	Severe drought conditions persisted early in the month over the western half of the county. By the middle of August, the entire county was covered in severe drought conditions.
10/1/2019	Severe drought (D2) was shown across parts of northeast Stokes County on the U.S. Drought Monitor from October 1 to October 22nd. Impacts were primarily agricultural and included pasture losses and reduced hay cuttings.
<b>Surry County</b>	
8/14/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. August 14th, saw 8 counties in northwest North Carolina enter into severe drought status (D2). This severe drought continued through the end of August.
9/1/2007	Extreme drought caused forty to fifty percent loss in tobacco crop. A twenty percent loss in grape production was noted as well.
10/1/2007	The county began the month at the Extreme (D3) Category of drought. This level of severity continued until October 2nd when it was downgraded to the Severe (D2) Category. This level of severity continued until October 30th when it was downgraded to the Moderate (D1) Category.
11/6/2007	Severe drought conditions developed in southwestern part of Surry County November 6th, and spread to the rest of the county through the end of the month.
12/1/2007	Severe (D2) to exceptional (D3) drought continued during December.
1/1/2008	Drought conditions existed across the county through the entire month. The southern part of the county was in the Extreme (D3) category, and the northern part was in the Moderate (D2) category.
2/1/2008	Severe to extreme drought conditions persisted for the entire month across the county. The extreme conditions were confined to the far southern part of the county.
3/1/2008	Several rain events brought welcomed relief to the region. Severe (D2) drought with extreme (D3) drought conditions in the southern edge improved to moderate (D1) drought with severe (D2) drought conditions across southern portions of the county.
4/1/2008	The southeast corner of the county began the month under a Severe (D2) drought. By the morning of the 1st, the Severe (D2) drought had been expanded to include most of the county. On the 8th, drought conditions improved so that all the county was only under a Moderate (D1) drought.
5/27/2008	Severe drought conditions (D2) crept back into the extreme southern portion of Surry County by the end of May.
6/1/2008	A Severe (D2) drought began the month across the southern half of the county with the remainder of the county in a Moderate (D1) drought. On June 10th, the Severe (D2) drought had spread north to include all of the county. This category of drought continued through the end of the month.
7/1/2008	A Severe (D2) Drought continued across the county during the month.
8/1/2008	Severe drought conditions persisted early in the month, and during the middle of August the southern portion of the county moved into extreme drought conditions.
<b>Yadkin County</b>	
8/14/2007	Drought conditions worsened across the northwest mountains of North Carolina, east into the foothills and piedmont. August 14th, saw 8 counties in northwest North Carolina enter into severe drought status (D2). This severe drought continued through the end of August.
9/1/2007	Corn, soybean, hay and pasture are the main crops that suffered significant loss.

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Date	Description
10/1/2007	The county began the month in the Extreme (D3) Category of drought. It continued at this level of severity until October 30th when it was downgraded to the Severe (D2) Category.
11/1/2007	The county experienced severe drought conditions early in November, with extreme drought conditions developing by the end of the month, mainly across the southern portion of the county.
12/1/2007	Severe (D2) to extreme (D3) drought conditions worsened to extreme (D3) and exceptional (D4) drought conditions in December.
1/1/2008	The county started the month under an Exceptional (D4) drought. During the morning of January 1, the level of magnitude of the drought was improved to an Extreme (D3) drought. This degree of drought continued through the month.
2/1/2008	Extreme drought conditions persisted for the month across the county.
3/1/2008	Several rain events brought welcomed relief to the region. Extreme (D3) drought improved to severe (D2) drought with extreme (D3) drought in the southeast corner of the county.
4/1/2008	The county began the month with the far southeast corner of the county under an Extreme (D3) drought and the rest of the county under a Severe (D2) drought. On the 8th, conditions improved so that only the southern half of the county was under a Severe (D2) drought with the rest of the county having a Moderate (D1) drought. This level of drought severity continued until the end of the month.
5/1/2008	Severe drought conditions (D2) along the southern portion of the county pushed north to cover the entire county by the end of the month. Meanwhile, the southwestern portion of the county dropped into the extreme drought category (D3) during the latter half of the month.
6/1/2008	An Extreme (D3) Drought began the month across the southwest part of the county, with a Severe (D2) Drought across the remainder of the county. On June 17th, the Extreme (D3) Drought covered the southern half of the county, with the Severe (D2) Drought across the rest of the county.
7/1/2008	During the entire month, an Extreme (D3) Drought continued across the southern half of the county with a Severe (D2) Drought across the northern half of the county.
8/1/2008	Extreme drought conditions continued for the county through the month of August.
9/1/2008	The extreme southwest portion of Yadkin county was under a severe drought (D2) at the beginning of September, but by the middle of the month, conditions had improved to moderate (D1) and remained that way through the end of September.
10/1/2019	Severe drought (D2) was shown across most of Yadkin County on the U.S. Drought Monitor from October 1 to October 22nd. Impacts were primarily agricultural and included pasture losses and reduced hay cuttings. The NWS COOP site at Yadkinville (LWBW2) recorded a mere 0.12 inches of rain in September. This was the driest September on record and 4th driest of any month at this station with almost complete data back to 1958 and additional data back to 1940.

**TABLE H.3: EXTREME HEAT EVENTS (2000-2019)**

Location	Date	Description
Davie County	6/29/2012	A very hot and humid airmass that spent several days building west of the Appalachians finally made it east of the mountains, bringing very hot conditions to foothills and Piedmont of North Carolina. The high temperature at Charlotte-Douglas International Airport hit 104 degrees on both the 29th and 30th, tying the all-time high. The heat index hit 105 degrees. Excessive heat affected areas east of Charlotte. The ASOS at Monroe, NC reported a heat index value of 110 degrees on 30th. Lower dewpoints over the foothills resulted in sub-advisory and warning level heat index values. The heat lasted through July 1st, before thunderstorms brought somewhat cooler conditions.
Davie County	7/1/2012	Oppressive heat continued the first day of July, with Charlotte-Douglas International Airport tying its all-time record high temperature of 104 degrees for a 3rd consecutive day. The ASOS at Monroe reported a high temperature of 105 degrees with a max heat index of at least 111 degrees. Once again, Hickory in the foothills failed to reach even heat advisory criteria. Widespread thunderstorms developed during the afternoon hours, bringing a few days of relief from the heat.
Yadkin County	6/29/2012	One heat stroke related emergency was reported where a cell phone tower worker had to be taken to hospital.



**TABLE H.4: FLOOD EVENTS (2000-2019)**

Location	Date	Description
<b>Caswell County</b>		
Unincorporated Area	4/10/2003	Strong non-thunderstorm winds combined with a saturated ground resulted in numerous trees being uprooted across Caswell, Rockingham, Surry, Stokes, and Yadkin Counties. Some trees fell on power lines, resulting in power outages. Moderate to heavy rainfall occurred during the morning and afternoon hours on the 10th, resulting in small stream flooding and road closings in Stokes, Rockingham and Caswell Counties.
Yanceyville	9/28/2015	Mineral Spring Road bridge was closed due to flooding. Several roads were closed due to flooding including in the 2500 block of Route 158.
<b>Davie County</b>		
Milton	4/25/2017	Race Track Road in Milton was closed by flooding either from Country Line Creek or backwater up a small stream draining into the larger creek. Caswell Game Lands RAWs (CGLN7) had a storm total of 7.04 over the 4-day period ending 12z on the 25th.
Yanceyville Arpt	11/13/2018	Parts of Route 158 East were flooded.
Unincorporated Area	3/20/2003	After morning flash flooding on the 20th, moderating rainfall resulted in slower rises, but continued and additional flooding along creeks and streams that persisted for several days. Flooding was especially severe in eastern portions of the county, along the Yadkin River, South Yadkin River, Dutchman's Creek, and Hunting Creek. Water on some of these streams increased to their highest levels in 7 years.
Unincorporated Area	4/10/2003	An extended period of rainfall led to slow rises on area creeks and streams, culminating in flooding along 3 creeks in the eastern portion of the county. Numerous creeks and streams flooded across the county, including Hunter Creek and the South Yadkin River.
Unincorporated Area	5/25/2003	Gradual rises along a few creeks and streams culminated in some minor flooding of adjacent roads in the Farmington Road area of Mocksville.
<b>Rockingham County</b>		
Unincorporated Area	9/9/2004	As water from the previous day's heavy rainfall continued to work its way through the Yadkin River system, Hunting Creek flooded near its junction with the South Yadkin. A farm was flooded, and a number of cattle were stranded and lost.
Unincorporated Area	9/28/2004	An extended period of moderate to heavy rainfall resulted in gradual rises along creeks and streams, which culminated in minor flooding of a few roads and low areas across portions of the northwest piedmont.
Unincorporated Area	3/20/2003	Persistent heavy rain brought widespread flooding across central North Carolina, beginning in the morning of March 20 and continuing into the afternoon. Numerous roads across the area had to be closed due to flooding, and numerous creeks overflowed their banks. Rainfall amounts were mainly between 2 and 4 inches in less than 12 hours. The heaviest rain fell in Forsyth County, where major flooding occurred along Muddy Creek, Mill Creek, and Grassy Creek, and several water rescues were needed.
Unincorporated Area	4/10/2003	Persistent showers and thunderstorms produced heavy rain and flooding across the Piedmont of North Carolina. Several creeks and streams overflowed their banks, leading to road flooding and numerous road closures. Some basements of homes were flooded in Guilford County, and a water rescue was made in Moore County.
Unincorporated Area	2/22/2003	Heavy rain on the 22nd caused small stream and urban flooding across Ashe, Alleghany, Surry, and Rockingham counties.
<b>Stokes County</b>		
Unincorporated Area	4/10/2003	Strong non-thunderstorm winds combined with a saturated ground resulted in numerous trees being uprooted across Caswell, Rockingham, Surry, Stokes, and Yadkin Counties. Some trees fell on power lines, resulting in power outages. Moderate to heavy rainfall occurred during the morning and afternoon hours on the 10th, resulting in small stream flooding and road closings in Stokes, Rockingham and Caswell Counties.

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Unincorporated Area	5/25/2003	Heavy rain resulted in the flooding of several roads across Rockingham County. Flash flooding in northwestern Caswell County resulted in water running across several roads.
Unincorporated Area	8/12/2004	A line of thunderstorms produced primarily straight-line wind damage as it progressed through Rockingham then Caswell Cos. Numerous trees were downed, homes and outbuildings were damaged, and three mobile homes were destroyed. At a separation in this line, an F1 tornado east of Mayfield was produced. This tornado descended through a yard downing and topping several trees and destroyed the roof, walls, and carport of a house. Very heavy rainfall from this line of storms prompted flooding in mainly western parts of the county. Water covered roads at the intersection of Route 220 and Route 65 due to ditches overflowing. A spotter in Stoneville measured 3.8 inches during the event.
<b>Surry County</b>		
Unincorporated Area	9/8/2004	The remnants of Tropical Depression Frances brought flooding rains to portions of Northwest North Carolina from late in the evening on the 7th through the 8th. Rainfall totals averaged 4 to 6 inches...with amounts higher in portions of the mountains. In Watauga County, the Watauga River flooded, leading to evacuations of homes in the Foscoe area. The headwaters of the New River, including the Middle and East Fork also flooded. A mud slide destroyed one home in the Bamboo area. In Surry County, Floodwaters from creeks and streams closed 20 roads.
Madison	11/12/2009	Up to seven inches of rain fell across the county November 10th through the 12th. This caused several streams and creeks to flood, as well as, the Mayo and Dan River. The flooding closed many roads throughout the northern half of Rockingham County.
Madison	4/19/2015	Dan Valley Road in Madison closed due to flooding from Mayo and Dan Rivers.
Bakers	9/28/2015	A water rescue was required from a car stuck in high water along County Home Road near Vernon Road.
<b>Yadkin County</b>		
Mayodan	9/29/2015	Flooding was reported in numerous locations across Rockingham County early on the 29th with roads closed due to high water on State Highway 135 at U.S. Route 220 in Mayodan, Highway 135 at Harrington Parkway in Eden, Wolf Island Road near Reidsville and multiple roads in and around Stoneville. Little Troublesome Creek just south of Reidsville was reported to be 6 feet out of its banks. The Dan River at Wentworth (WENN7) crested at 7AM on the 30th at 21.71 feet (Minor Flood Stage = 19 feet).
Madison	10/3/2015	The first report of flooding was 10/3 at 7:19 AM on Barry Hill Bridge. Dan Valley Road and Water Street flooded at 4:54 PM on 10/3. A swift water rescue was performed on Wolf Island Road at 6:30 AM on Saturday 10/3 to extract trapped person in vehicle. Water was reported over Springwood Drive and Country Club Road at 4:21 AM on Sunday 10/4.
Boulevard	4/25/2017	Park Road in Eden was closed due to flooding, possibly from Tackett Branch.
Madison	4/25/2017	A portion of Water Street in Madison was closed by flooding. Flooding possibly from the Mayo River and backwater effects from the Dan River. The Mayo River upstream crested at 7.49 feet at 11 AM EST. Minor Flood Stage is 8 feet.
Mayfield	4/25/2017	Berry Hill Road bridge (SR 1761) was closed due to flooding from the Dan River. The Dan River USGS gage at Wentworth (WENN7) crested at 23.14 feet (24200 cfs), the highest level since September 2004. Minor Flood stage is 19 feet. According to the latest USGS studies this represents approximately a 5-year return frequency flood or 0.2 annual exceedance probability.
Pennington	4/25/2017	Wolf Island Road near Reidsville was closed due to flooding, possibly from Wolf Island Creek.
Spray	5/18/2018	The Smith River at Eden (EDSN7) crested at 12.55 feet late on the 18th in response to the heavy rains upstream. Minor flood stage is 11 feet. Flooding was confined to lowland areas. This was the highest reading at this gauge since January 25, 2010.
Madison	9/17/2018	The river gage on the Dan River near Wentworth, NC (WENN7) rose above the flood stage of 19 feet and crested just below the Moderate flood category (25 feet) at 24.88 feet (28,900 cfs) mid-morning of the 17th. This was the 8th highest stage on record at this gage since records began in 1940 and the highest since 2003. According to USGS analysis, the frequency for the event was approximately a 10-year flood (0.1 annual chance of occurrence). Several roads were flooded

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		and closed near the confluence of the Mayo and Dan rivers in the Madison area per local news reports.
Price	9/17/2018	The river gage on the Mayo River near Price, NC (PRIN7) in northwest Rockingham County rose above the flood stage of 8 feet and crested in the Moderate flood category at 11.20 feet (13,600 cfs) mid-morning of the 17th. This was the 6th highest stage on record at this gage with over 65 years of data. According to USGS analysis, the flood frequency for the event was between a 5- and 10-year (0.2 to 0.1 annual chance of occurrence). Parts of Mayo Beach Road near the river were flooded.
Intelligence	10/11/2018	The river gage on the Dan River near Wentworth, NC (WENN7) rose above the flood stage of 19 feet and crested just below the Moderate flood category (25 feet) at 24.27 feet (27,100 cfs) in the evening of the 11th. This was the 9th highest stage on record at this gage since records began in 1940 and just below the crest set during September 2018 with the remains of Florence 2003. According to USGS analysis, the frequency for the event was approximately a 10-year flood (0.1 annual chance of occurrence). Several roads were flooded and closed near the confluence of the Mayo and Dan rivers in the Madison area per local news reports.
Intelligence	10/11/2018	The river gage on the Dan River near Wentworth, NC (WENN7) rose above the flood stage of 19 feet and crested just below the Moderate flood category (25 feet) at 24.27 feet (27,100 cfs) in the evening of the 11th. This was the 9th highest stage on record at this gage since records began in 1940 and just below the crest set during September 2018 with the remains of Florence 2003. According to USGS analysis, the frequency for the event was approximately a 10-year flood (0.1 annual chance of occurrence). Several roads were flooded and closed near the confluence of the Mayo and Dan rivers in the Madison area per local news reports.
Spray	10/11/2018	The river gage on the Smith River at Eden, NC (WENN7) rose above the flood stage of 11 feet and crested just below the Moderate flood category (14 feet) at 13.70 feet (17,400 cfs) late afternoon of the 11th. This was the 10th highest stage on record at this gage since records began in 1940 and the highest since January 2010.
Penrrington	11/12/2018	The county 911 center in Rockingham reported that Wolf Creek was out of its banks and flooding Wolf Creek Road.
Reidsville	12/20/2018	Wolf Island Creek flooded and closed a portion of Wolf Island Road.
Bakers	12/29/2018	The Dan River near Wentworth (WENN7) flooded with the gage cresting at 19.6 feet (Minor Flood stage - 19 feet) mid-morning on the 29th. Lowlands were flooded and a road or two near the river may have been blocked by high water.
Bakers	12/29/2018	The Dan River near Wentworth (WENN7) flooded with the gage cresting at 19.6 feet (Minor Flood stage - 19 feet) mid-morning on the 29th. Lowlands were flooded and a road or two near the river may have been blocked by high water.
Madison	2/24/2019	The Dan River at Wentworth (WENN7) crested above the Minor Flood stage of 19 feet reaching 22.63 feet. Several roads were flooded near the river.
Unincorporated Area	3/20/2003	A period of very heavy rain produced flash flooding during the morning on the 20th. In Monroeton three cars were washed off of Route 158, in East Bend a portion of Route 67 was washed out, and many roads were closed due to flash flooding countywide across Caswell, Stokes, and Surry counties.  A prolonged period of moderate to heavy rain on the 20th caused small stream and urban flooding in Surry, Stokes, Wilkes, and Yadkin counties. Numerous roads were flooded and closed.
Unincorporated Area	4/10/2003	Strong non-thunderstorm winds combined with a saturated ground resulted in numerous trees being uprooted across Caswell, Rockingham, Surry, Stokes, and Yadkin Counties. Some trees fell on power lines, resulting in power outages.

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		Moderate to heavy rainfall occurred during the morning and afternoon hours on the 10th, resulting in small stream flooding and road closings in Stokes, Rockingham and Caswell Counties.
Poplar Springs	5/8/2012	Eight to twelve inches of water was observed flowing across Mountain View Road.
Campbell	9/29/2015	A spotter reported that Doss Road was closed near Lawsonville, possibly due to flooding from Snow Creek.
Campbell	9/29/2015	A spotter reported that Doss Road was closed near Lawsonville, possibly due to flooding from Snow Creek.
Danbury	9/17/2018	Flooding was observed along portions of the Dan River in Stokes County including at Moratock Park in Danbury. The Dan River downstream at the Pine Hall gage (PNHN7) crested at 24.91 feet (15,700 cfs), the highest stage since January, 2010 (25.77 ft.) and the 2nd highest in the short period of record (since 2008) at this gage. Small stream flooding was also reported including Flat Shoal Creek near Sunset Park campground.
Sandy Ridge	12/20/2018	NC State Highway 770 was closed due to flooding near Buffalo Road.
Unincorporated Area	2/22/2003	Heavy rain on the 22nd caused small stream and urban flooding across Ashe, Alleghany, Surry, and Rockingham counties.
Unincorporated Area	3/20/2003	A period of very heavy rain produced flash flooding during the morning on the 20th. In Monroeton three cars were washed off of Route 158, in East Bend a portion of Route 67 was washed out, and many roads were closed due to flash flooding countywide across Caswell, Stokes, and Surry counties. A prolonged period of moderate to heavy rain on the 20th caused small stream and urban flooding in Surry, Stokes, Wilkes, and Yadkin counties. Numerous roads were flooded and closed.
Unincorporated Area	4/10/2003	Heavy rainfall on the 9th and 10th resulted in minor flooding on the Yadkin River at Elkin. The Yadkin River crested just over flood stage at 7 PM EST on the 10th.
Unincorporated Area	9/8/2004	The remnants of Tropical Depression Frances brought flooding rains to portions of Northwest North Carolina from late in the evening on the 7th through the 8th. Rainfall totals averaged 4 to 6 inches...with amounts higher in portions of the mountains. Across Rockingham County, several creeks flooded their banks. Numerous roads were flooded.
Unincorporated Area	10/8/2005	
Dobson	9/3/2012	Flooding was observed along Fisher River west of the community of Dobson. Water was reported flowing over Fisher Valley Road, Tobe Hudson Road and County Home Road near Fisher Park.
Low Gap	6/6/2013	A prolonged period of heavy rain allowed flooding to take place along Gully Creek, and one foot of water covered Lumber Plant Road. Damage values are estimated.
Westfield	4/20/2015	Park Drive in Mt. Airy closed due to flooding.
Ararat, Elkin, Shoal	4/24/2017	Radar Road near the intersection of Ararat Road was flooded and closed by overflow from the Ararat River. The nearby river gage on the Ararat (ARRN7) crested at 14.39 feet at 0700 EST. Minor Flood Stage is 13 feet. The intersection of Memorial Park Drive and James Street was under water and closed by flooding from Big Elkin Creek. Reeves Road was closed by flooding from the Ararat River.
White Plains	4/24/2017	A portion of Scott Bunker Road in Mt. Airy was flooded, possibly from Burkes Creek.
Elkin	10/11/2018	The Yadkin River at Elkin gage crested at 21.02 feet (23,200 cfs) on the afternoon of the 11th, just over the Moderate flood stage of 21 feet. It was the 7th highest level since the completion of W. Kerr Scott Reservoir in 1962 and the highest since August 17th, 1994. News reports showed the river well out of its banks and affecting a home along Old U.S. Highway 421.
Unincorporated Area	3/20/2003	A period of very heavy rain produced flash flooding during the morning on the 20th. In Monroeton three cars were washed off of Route 158, in East Bend a portion of Route 67 was washed out, and many roads were closed due to flash flooding countywide across Caswell, Stokes, and Surry counties. A prolonged period of moderate to heavy rain on the 20th caused small stream and urban flooding in Surry, Stokes, Wilkes, and Yadkin counties. Numerous roads were flooded and closed.

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Unincorporated Area	4/10/2003	Heavy rainfall on the 9th and 10th resulted in minor flooding on the Yadkin River at Elkin. The Yadkin River crested just over flood stage at 7 PM EST on the 10th.
Unincorporated Area	9/8/2004	The remnants of tropical depression Frances brought a moderate flood along the Yadkin river. At Elkins, the Yadkin river rose above the 16.0 flood stage at 0515 am on the 8th, crested at 19.91 feet during the afternoon and fell below flood stage at 19:55 pm during the evening of the 8th.
Richmond Hill	3/6/2011	Heavy rain prompted the Yadkin River to leave its banks and flood Rockford Road. The water rendered the road impassable.
Arlington	4/23/2017	Numerous roads were reported closed near the Yadkin River as the river at Elkin (ELKN7) rose very rapidly and crested in the Minor flood category at 19.62 feet (Minor Flood Stage = 18 feet, Moderate = 21) only 4 hours later. This was the highest crest on the Yadkin River at Elkin gage since September 8, 1994 when the remains of Hurricane Frances swept through the area.
Flint Hill	2/23/2019	The County dispatch center reported Butner Mill Road in East Bend closed by high water.

**TABLE H.5: HAIL EVENTS (2000-2019)**

Location	Date	Size	Description
<b>Caswell County</b>			
Yanceyville	4/17/2000	0.75	Thunderstorms on the afternoon of the 17th produced hail up to one inch in diameter and damaging winds. Thunderstorm winds downed trees and power lines in Dobson.
Estelle	6/2/2000	0.88	Thunderstorms during the evening of the 2nd produced hail up to 1 inch in diameter.
Yanceyville	7/14/2000	1.75	Thunderstorms during the evening of the 14th produced hail up to golf ball size.
Jericho	5/25/2001	0.88	Thunderstorms during the late evening of the 25th produced hail up to nickel size.
Estelle	8/2/2002	0.75	Thunderstorms during the afternoon of the 2nd produced damaging winds and hail up to dime size. Thunderstorm winds downed tree in Hays.
Yanceyville	4/30/2003	0.75	Thunderstorms during the afternoon and early evening hours on the 30th produced hail up to quarter size. Up to quarter size hail covered the ground to a depth of one inch in Reidsville.
Yanceyville	5/2/2003	1	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Yanceyville	5/2/2003	1.25	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Milton	5/25/2003	1.25	Thunderstorms during the evening hours on the 25th produced hail up to half dollar size and damaging winds. Thunderstorm winds knocked down large trees in Milton.
Yanceyville	7/9/2003	0.88	Thunderstorms during the afternoon of the 9th produced hail up to nickel size and damaging winds. Thunderstorm winds downed trees in Allison and 11 miles west of Yanceyville.
Camp Springs	8/5/2003	1	Thunderstorms during the afternoon of the 5th produced hail up to golf ball size and flash flooding. A thunderstorm produced nickel to golf ball sized hail in King during a ten-minute period. A thunderstorm produced ping pong ball sized hail 2 miles northeast of Camp Springs, destroying a tobacco crop. Heavy thunderstorm rains caused several roads in southwestern Caswell County to flood and be closed.
Camp Springs	8/5/2003	1.5	Thunderstorms during the afternoon of the 5th produced hail up to golf ball size and flash flooding. A thunderstorm produced nickel to golf ball sized hail in King during a ten-minute period. A thunderstorm produced ping pong ball sized hail 2 miles northeast of Camp Springs, destroying a tobacco crop. Heavy thunderstorm rains caused several roads in southwestern Caswell County to flood and be closed.
Camp Springs	6/23/2004	1	Severe thunderstorms produced large hail and damaging winds to the northwest piedmont of North Carolina during the afternoon of the 23rd. Large limbs were downed 4 miles east of Mayodan.
Camp Springs	5/14/2006	0.75	Numerous thunderstorms formed late in the morning on the 14th, across the mountains of North Carolina, and spread east through the piedmont during the early afternoon. The severe thunderstorms produced mainly large hail, generally less than 1 inch in diameter, with golf ball sized hail falling in Reidsville. The only wind damage occurred in Rockingham County, 5 miles southeast of Reidsville, with one tree downed.
Camp Springs	5/26/2006	0.75	An approaching cold front, and pre-existing low-pressure area east of the mountains helped trigger thunderstorms across the North Carolina foothills and piedmont during the afternoon and early evening on the 26th. These storms brought damaging winds to southeastern Rockingham county, and penny sized hail to other portions of northwest North Carolina.
Providence	6/1/2006	1	
Topnot	10/5/2006	0.75	A backdoor cold front progressed south through the region on the afternoon and evening of October 5th. This front helped prompt showers and thunderstorms across the region with

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Location	Date	Size	Description
			some of the storms reaching severe limits. Severe hail ranging from penny size to quarter size occurred.
Leasburg	6/5/2007	0.75	Penny sized hail covered the ground.
Yanceyville	6/11/2007	0.75	Severe thunderstorms produced wind damage and hail up to quarter size in northwest North Carolina.
Jericho	5/8/2008	0.75	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
Baynes	7/22/2008	0.75	A large outflow boundary from an overnight thunderstorm complex moved through the region during the morning and early afternoon hours of July 22. This prevented thunderstorm development until early evening when storms started developing. Meanwhile, a line of thunderstorms approached the area from the west. Outflow from the first storms generated scattered clusters of storms across the northwest NC and southwest VA Piedmont up to the Blue Ridge, while the more organized line of storms moved into the mountains.
Milesville	8/14/2008	0.75	Penny sized hail covered the ground.
Yanceyville	6/3/2009	1	A moderately unstable air mass and seasonably strong mid-level shear helped to produce multicellular storms on the afternoon of June 3rd which produced scattered pockets of damaging winds and some penny or larger size hail in the mountains and foothills.
Semora	7/12/2009	0.75	Thunderstorms formed in the moisture rich unstable air in advance of a cold front. Some of these storms reached severe levels, producing damaging winds and large hail.
Ridgeville	8/17/2009	0.88	A severe thunderstorm fired up across southeastern Caswell County, producing nickel sized hail.
Yanceyville	3/23/2011	0.88	As a cold front moved across the region, numerous showers and thunderstorms developed along it. Some of the storms increased to severe levels and produced damaging winds and hail.
Milesville	3/24/2012	1	A large upper level low over the central U.S. began shifting east on the 23rd bringing several rounds of heavy rainfall and numerous severe thunderstorms. Rainfall was estimated at 2 to 2.5 inches in several hours across portions of western Surry County causing the flash flooding.
Semora	7/1/2012	1	An amplified ridge over the central U.S. set the stage for scattered to numerous severe storms during the day as several short-wave disturbances dropped southeast across the southern Appalachians while surface conditions became remained very warm and unstable under the intense early July sun. Surface temperatures approached 100F over the piedmont during the afternoon creating steep lapse rates as well.
Gatewood	5/10/2014	0.75	Isolated to widely-scattered severe thunderstorms developed ahead of a strong cold front making its way across the Appalachian chain during the evening of May 10th. The strongest thunderstorm activity occurred as an upper level disturbance passed across the forecast region during the early afternoon, however limited instability prevented most of the thunderstorms from reaching severe limits.
Gatewood	10/10/2014	1	Quarter size hail fell on Dowdy Lane.
Bethel	4/20/2015	1	Hail ranged from nickle to quarter size.
Yanceyville	4/20/2015	1.75	Numerous showers and thunderstorms developed in advance of and with the passage of a cold front. Some of these storms increased to severe levels and produced hail ranging from quarter size to golf ball size. Other hail less than one inch diameter fell.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Yanceyville Arpt	4/20/2015	1	Numerous showers and thunderstorms developed in advance of and with the passage of a cold front. Some of these storms increased to severe levels and produced hail ranging from quarter size to golf ball size. Other hail less than one-inch diameter fell.
Milton	6/17/2015	1.75	Hail size ranged from 1 inch to 1.75 inches as the thunderstorm passed across the community of Milton, NC.
Hamer	7/13/2015	1	A line of thunderstorms associated with a larger cluster of storms advanced southeast through the region. A large number of trees were downed across the area, and some storms produced large hail during the late afternoon and early evening.
Yarbro	9/4/2015	1	A backdoor cold front made its way southward across the Piedmont during the evening, supported aloft by an upper level disturbance passing across the central Appalachians in the otherwise upper level ridging environment covering much of the southeast and mid-Atlantic states. The cold front and disturbance provided increased instability, allowing strong to severe thunderstorms to develop in the very warm moist air south of the cold front.
Anderson	5/22/2016	0.75	A weak upper low tracked southeast out of the Ohio Valley into Virginia during the morning hours of May 21st, spurring numerous showers and storms across the foothills of Northwest North Carolina. One of these storms became severe, producing large hail.
Camp Springs	5/22/2016	0.75	A weak upper low tracked southeast out of the Ohio Valley into Virginia during the morning hours of May 21st, spurring numerous showers and storms across the foothills of Northwest North Carolina. One of these storms became severe, producing large hail.
Milesville	6/29/2016	1	A stationary front was located across central North Carolina on the 29th, with a wave of low pressure developing along this boundary. In addition, an upper level storm system moved over the area, enhancing storm development across the North Carolina Piedmont, where storms produced damaging winds.
Milton	7/19/2016	0.75	Instability associated with the passage of an upper level trough as well as increasing low level convergence ahead of an approaching cold front supported the development widely scattered showers and thunderstorms, a few of which pulsed to severe levels.
Blanch, Gatewood, Milton, Ridgeville	9/28/2016	2.5	A quasi-stationary frontal boundary continued to produce bands of deep convection early in the morning on September 28th, as a strong upper low continued to deepen in parts of the Ohio Valley. Widespread severe weather began to occur in the midafternoon hours, mainly in the form of large hail and isolated wind damage across mainly the northern piedmont counties of North Carolina, as the storms moved off of the Blue Ridge Plateau.
Yanceyville	4/6/2017	1	A cold front moved across the area with associated showers and thunderstorms. One of these produced quarter size hail.
Ashland	5/19/2017	1.75	Above normal temperatures and abundant moisture triggered afternoon thunderstorms across portions of North Carolina ahead of a cold front. These scattered thunderstorms pulsed up periodically, producing isolated large hail and wind damage, especially for those located along and East of the Blue Ridge Mountains.
Semora	7/13/2017	1	An isolated severe thunderstorm was able to develop during the late afternoon of July 13th. Despite weak shear aloft, strong surface heating provided the instability to cause one thunderstorm to intensify to severe levels for a brief period of time.
Ashland	3/17/2018	1	Hail occurred in the 2400 block of Camp Springs Road.
Providence	5/25/2019	1	Hail up to the size of quarters fell just north of the town of Providence.
Topnot	5/31/2019	1.75	Hail up to the size of golf balls fell near the intersection of Pleasant Grove Church Road and Highway 158 about four miles east of Yanceyville.
<b>Davie County</b>			
Mocksville	5/27/2000	0.75	Severe thunderstorms produced large hail in the northwest piedmont during the afternoon.
Mocksville	5/27/2000	1.75	Severe thunderstorms produced large hail in the northwest piedmont during the afternoon.
Mocksville	5/27/2000	0.75	Severe thunderstorms produced large hail in the northwest piedmont during the afternoon.



**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Advance	5/28/2000	1	For the third time in four days severe thunderstorms produced large hail and damaging wind in spots along and north of the Interstate 40 corridor between Hickory and Greensboro. A 60-mph wind gust was estimated by a weather spotter north of Hickory.
Farmington, Mocksville	5/28/2000	1.75	For the third time in four days severe thunderstorms produced large hail and damaging wind in spots along and north of the Interstate 40 corridor between Hickory and Greensboro. A 60-mph wind gust was estimated by a weather spotter north of Hickory.
Mocksville	4/28/2002	0.75	
Advance	6/2/2002	1	
Mocksville	6/2/2002	0.75	Reported along the Yadkin River at Highway 64.
Mocksville	7/2/2002	1	Hail was reported at the intersection of Highway 158 and Baltimore Rd.
Mocksville	7/4/2002	0.88	
Mocksville	4/30/2003	1	
Cooleemee	5/2/2003	0.75	
Mocksville	5/2/2003	0.75	
Farmington	5/3/2003	1	Hail covered some roads in locations from Farmington to Hillsdale.
Mocksville	5/3/2003	0.75	
Mocksville	5/3/2003	1	
Sheffield	6/8/2003	1	
Mocksville	7/16/2003	0.75	
Mocksville	7/19/2003	0.75	
Mocksville	8/17/2003	0.75	
Mocksville	7/28/2005	0.75	
Cooleemee	4/3/2006	0.75	
Mocksville	6/2/2006	0.75	
Advance	6/11/2006	1	Hail a little larger than quarter size accumulated to a depth of 1 to 2 inches near the intersection of highway 801 and I-40.
Farmington	6/23/2006	0.75	Penny size hail at a rest stop on Interstate 40 in eastern Davie county.
Mocksville	7/22/2006	0.75	Numerous trees down along Harper Rd near I-40 and other trees down along Rainbow Rd and Redland Rd.
Advance	9/28/2006	0.75	Quarter size hail and a few trees down in the Farmington area. Also, penny size hail in the Advance area around the same time.
Farmington	9/28/2006	1	Quarter size hail and a few trees down in the Farmington area. Also, penny size hail in the Advance area around the same time.
Sheffield	9/28/2006	1	
Mocksville	4/11/2007	0.75	Severe thunderstorms developed during the early morning hours on the 12th over the western Piedmont of North Carolina.
Mocksville	4/15/2007	0.75	Severe thunderstorms developed during the early afternoon hours over the foothills and western Piedmont of North Carolina.
Mocksville	6/8/2007	0.88	Reported on Bear Creek Church Rd.
Mocksville	4/19/2008	0.75	Two mini-supercells developed over the western Piedmont of North Carolina during the evening hours. The first storm spawned a couple tornadoes and large hail.
Advance	7/22/2008	0.75	Hail reported in the Bermuda Run community.
Mocksville	5/6/2009	1	Thunderstorms developed along a stationary front, producing a few reports of large hail over the western Piedmont of North Carolina.
Advance	6/9/2009	1	Hail up to quarter size covered the ground in the Advance community.
Mocksville	7/25/2010	1.75	Scattered thunderstorms developed along a cold front over western North Carolina during the afternoon hours. Some of the storms produced damaging winds and large hail.
Mocksville	3/23/2011	0.88	An isolated thunderstorm developed over the western North Carolina Piedmont during the late evening hours. The storm produced a little wind damage and small hail.

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Location	Date	Size	Description
Bixby	5/23/2011	2.5	Tennis ball size hail was reported along Interstate 40, a little to the west of Mocksville.
Calahaln	5/23/2011	0.75	Penny size hail was reported to the north of Sheffield.
Sheffield	5/23/2011	1.75	Numerous reports of quarter to golf ball size hail were received from the Sheffield community to the city of Mocksville.
Sheffield	5/23/2011	0.75	Penny size hail was reported near Sheffield with a second thunderstorm.
Farmington	7/3/2011	1.25	Isolated thunderstorms developed over western North Carolina during the afternoon hours. One storm in the mountains and one storm in the western piedmont produced severe weather.
Mocksville	3/2/2012	1.5	A warm front triggered a few thunderstorms as it lifted across western North Carolina. Large hail accompanied one of the storms over the western piedmont.
Mocksville	3/24/2012	1	Quarter size hail fell in Mocksville and along highway 64 east of town.
Advance	3/25/2012	0.75	Thunderstorms developed over the western North Carolina piedmont during the early morning hours as an upper low moved across the region. The storms produced copious amounts of hail. In a few instances snow plows were used to clear the hail off of roads.
Cooleemee	3/25/2012	1	Thunderstorms developed over the western North Carolina piedmont during the early morning hours as an upper low moved across the region. The storms produced copious amounts of hail. In a few instances snow plows were used to clear the hail off of roads.
Farmington	5/1/2012	0.75	Thunderstorms developed over the North Carolina mountains during the afternoon hours. Several of the storms produced hail.
Sheffield	5/22/2012	1	Up to quarter size hail was reported on Ben Anderson Rd.
Sheffield	6/13/2013	1	Quarter size hail fell in the Sheffield community.
Cornatzer	6/17/2014	1.75	Spotter reported hail up to the size of golf balls covering the ground.
Bixby	4/28/2016	1	Public reported quarter size hail near the intersection of Highway 64 and I-40.
Cooleemee	5/2/2016	1	Spotter reported quarter size hail.
Fork	3/1/2017	0.75	Ham radio operator reported 3/4-inch hail near the intersection of Junction Rd and Davie Academy Rd.
Sheffield	6/13/2017	1.5	Spotter reported up to ping pong ball size hail.
Sheffield	8/19/2019	1	Spotter reported up to quarter size hail.
<b>Forsyth County</b>			
Kernersville	6/3/2000	1.75	
Lewisville	6/15/2000	0.75	Dime size hail was reported along Highway 421 near the Yadkin River.
Lewisville	6/1/2002	0.75	
Winston Salem	7/3/2002	1	Quarter sized hail was reported in the west side of Winston Salem near County Club Road.
Clemmons	4/29/2003	1	
Winston Salem	5/2/2003	0.75	
Clemmons	5/3/2003	1.75	
Rural Hall	8/5/2003	1.75	
Rural Hall	8/5/2003	0.75	
Walkertown	5/9/2004	0.75	
Winston Salem	5/9/2004	0.75	
Lewisville	3/23/2005	1	Quarter sized hail reported at Kyland and Dozier Roads.
Tobaccoville	3/23/2005	2.75	
Clemmons	4/3/2006	1	
Clemmons	4/3/2006	0.75	
Rural Hall	4/3/2006	1	QUARTER SIZED HAIL REPORTED ON HIGHWAY 52 NORTH JUST SOUTH OF RURAL HALL.

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Location	Date	Size	Description
Winston Salem	4/3/2006	0.88	NICKEL SIZE HAIL REPORTED AT THE INTERSECTION OF SHALLOW LAWN AND MURRAY DRIVE.
Winston Salem	4/3/2006	1	QUARTER SIZED HAIL REPORT AT THE INTERSECTION OF HIGHWAY 421 AND INTERSTATE 40.
Winston Salem	5/26/2006	0.75	PENNY SIZE HAIL REPORTED NEAR THE INTERSECTION OF HWY 52 AND WEST CLEMMONSVILLE ROAD.
Winston Salem	5/26/2006	0.75	
Clemmons	6/11/2006	0.75	
Kernersville	6/11/2006	0.75	Reported on Interstate 40 in Kernersville.
Winston Salem	7/19/2006	0.75	
Kernersville	7/22/2006	0.88	Reports of nickel hail near Sedge Garden.
Winston Salem	8/30/2006	0.75	Reported near Silas Creek Parkway and Interstate 40.
Winston Salem	9/28/2006	0.88	Reported halfway between Kernersville and Walkertown near HWY 158 and 66.
Clemmons	10/11/2006	1	Scattered showers and thunderstorms were associated with a weak cold front.
Clemmons	4/15/2007	0.75	Three rounds of severe weather struck Central North Carolina from the morning hours through the afternoon and into the evening. Widespread reports of damaging winds and large hail occurred with a rapidly intensifying surface low and attendant cold frontal passage. A powerful 70 knot low-level jet also aided in the initial round of severe storms. Thunderstorms re-developed in the late afternoon and evening hours as an amplifying upper level shortwave trough rotated across Central North Carolina.
Winston Salem	6/4/2007	0.75	Scattered thunderstorms developed during peak heating and continued into the evening hours as mid-level shortwave energy moved across the area.
Rural Hall	6/16/2007	0.75	Penny size hail was reported on Highway 52 near Rural Hall.
Winston Salem	6/16/2007	0.88	Nickel size hail was reported at the intersection of Ebert Road and Ardmore Road.
Winston Salem	6/16/2007	0.88	Nickel size hail was reported at the intersection of Pope Street and Lois Street.
Winston Salem	6/16/2007	0.88	Nickel size hail was reported just north of Hanes Mall on Stratford Road.
Pfafftown	6/19/2007	0.75	Penny size hail was reported near Reynolda Road and Shattalon Drive.
Pfafftown	6/19/2007	0.75	Strong daytime heating featuring temperatures in the lower to mid-90s help trigger widely scattered storms. The more organized storms formed along a pre-frontal trough across the western piedmont.
Winston Salem	6/25/2007	0.75	Penny size hail was reported on Highway 158.
Walkertown	6/27/2007	0.75	Scattered thunderstorms developed along lee side trough during peak time heating.
Kernersville	8/3/2007	0.75	A weak upper level trough with strong daytime heating resulted in isolated convection.
Lewisville	8/22/2007	1.75	Golf ball size hail was reported on Highway 421 in Forsyth County near the Yadkin County line.
Pfafftown	8/22/2007	0.75	Penny size hail was reported 2 miles west of Pfafftown.
Walkertown	8/22/2007	0.88	Public reported that the nickel size hail lasted for a couple of minutes.
Pfafftown	6/9/2009	1	Quarter-size hail was reported near Pfafftown.
Brookwood	7/20/2009	1	Quarter-size hail was reported at Smith Reynolds Airport.
Kernersville	7/20/2009	0.88	Nickel-size hail was reported at the intersection of Dobson Street and Old Valley School Road.
Hanes	9/28/2009	0.88	Nickel sized hail was reported at the intersection of Knollwood Street and Stratford Road.

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Location	Date	Size	Description
Dennis	6/2/2010	0.88	Penny to nickel size hail was reported at the intersection of Baux Mountain road and Lake Woussicket Road.
Brookwood	4/9/2011	1	As a backdoor cold front moved into an environment with high shear and moderate instability, isolated severe storms with large hail developed in the Triad.
Winston Salem	4/9/2011	1	The one-inch hail lasted for 5 minutes.
Winston Salem	4/9/2011	1	As a backdoor cold front moved into an environment with high shear and moderate instability, isolated severe storms with large hail developed in the Triad.
Winston Salem	4/9/2011	1	As a backdoor cold front moved into an environment with high shear and moderate instability, isolated severe storms with large hail developed in the Triad.
Union Cross	4/27/2011	1	Quarter sized hail was reported near Kernersville, North Carolina.
Union Cross	5/16/2011	1	Cold mid-level temperatures associated with a strong upper low over portions of Georgia and South Carolina, produced isolated severe hail in Davidson and Forsyth counties.
Kernersville	5/27/2011	1	With moisten laden air in place, a series of upper level disturbances in advance of an upper level trough moving into the area from the Tennessee Valley produced heavy rainfall of 3 to 5 inches along with severe hail and isolated thunderstorm wind damage.
Clemmons	6/9/2011	1	Strong to severe thunderstorms developed along the upslope regime of the southern Appalachians and drifted east into the western piedmont of North Carolina. The storms produced mainly quarter-size hail with one storm producing hail the size of walnuts.  Several trees were also blown down.
Tobaccoville	8/14/2011	1.75	An unseasonably strong amplifying upper level trough and attendant surface cold front moved east across the area during the afternoon. As the storms moved east off the higher terrain, they strengthened as the encountered moderate instability in place east of the mountains, producing widespread thunderstorm wind damage from the Triad to the Triangle. Hail ranging from quarter to golf ball size hail was reported, along with localized flash flooding.
Five Points	3/20/2012	1	Quarter size hail was reported a few miles northwest of Midway at the Walmart off of Highway 150.
Lewisville	5/22/2012	0.75	Penny sized hail was reported near United States Highway 421 near exit 242.
Kernersville	6/16/2014	1	Nickel to quarter size hail was reported near Kernersville Lake Park.
Easton View	6/19/2014	1	Severe storms initially developed along a pre-frontal thermal trough in place across the western Piedmont of North Carolina during the early to midafternoon hours. By the early evening, new storm development along a southward surging outflow boundary from a well-defined multicell cluster over southeast Virginia produced thunderstorm wind damage and severe hail.
Lewisville	6/19/2014	1	Quarter size hail reported near NC Highway 421.
Lewisville	4/9/2015	1	Quarter sized hail was reported along a swath from near Lewisville to near Pfafftown.
Swaintown	4/20/2015	1.25	Hail the size of quarters to half dollars was reported along a swath from several miles southwest of Winston Salem to a couple miles northwest of Sedge Garden.
Hanes	5/2/2016	1	The remnants of an upstream MCS interacted with a warm moist and unstable air mass across the Piedmont of central North Carolina during afternoon peak heating and produced scattered thunderstorms and several multi-cell clusters of severe storms. Some of these storms produced large hail and wind damage.
Hanes	5/2/2016	1.75	The remnants of an upstream MCS interacted with a warm moist and unstable air mass across the Piedmont of central North Carolina during afternoon peak heating and produced scattered thunderstorms and several multi-cell clusters of severe storms. Some of these storms produced large hail and wind damage.
Cityview	5/12/2016	1.75	Hail up the size of golf balls fell near Winston-Salem State University.
Guthrie	9/28/2016	1.25	A slow-moving cold front moving into the area coupled with deep upper low settling southward into the Tennessee Valley region set the stage for multiple rounds of convection

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Location	Date	Size	Description
			during the afternoon into the evening. Some of these storms produced large hail and flash flooding. Some of the flooding was significant across the Sandhills region, where 6 to 10 inches or rain fell. Multiple roads were flooded and/or washed out, homes and businesses flooded, and dams were topped or breached across the Sandhills region.
Rural Hall	5/19/2017	1	Hail up to the size of quarters was fell along a swath from Rural Hall to Kernersville.
Easton View	7/18/2017	1	Quarter size hail was reported along Clemmonsville Road.
Lewisville	4/15/2018	1.25	A strong upper low moved from Iowa across the Lower Great Lakes region, with a deep trough taking on a negative tilt while swinging into North Carolina. An associated strong cold front approached western North Carolina that afternoon and pushed east and east-northeast across central North Carolina on the night of the 15th. A strengthening and backing flow at all levels led to a surge of moisture into NC. Moderate instability, strong deep layer shear, and high low-level storm-relative helicity were also present. The result was a quasi-linear convective system with embedded mesovortices, which produced widespread severe weather, including a tornado in Greensboro, as it moved through North Carolina.
Guthrie	5/31/2019	1	Quarter size hail was reported at West Mountain Street.
Kernersville	5/31/2019	1	A vigorous shortwave trough and associated cold front moved across the area an interacted with a moist and unstable air mass to produce scattered storms. Multiple storms produced large hail and damaging wind across the area.
<b>Rockingham County</b>			
Reidsville	4/17/2000	0.75	Thunderstorms on the afternoon of the 17th produced hail up to one inch in diameter and damaging winds. Thunderstorm winds downed trees and power lines in Dobson.
Ruffin	5/28/2000	0.75	Thunderstorms on the afternoon of the 28th produced hail up to golf ball size and damaging winds. Thunderstorm winds downed trees and power lines in southwestern Rockingham County.
Stoneville	5/28/2000	1	Thunderstorms on the afternoon of the 28th produced hail up to golf ball size and damaging winds. Thunderstorm winds downed trees and power lines in southwestern Rockingham County.
Ruffin	6/2/2000	0.75	Thunderstorms during the evening of the 2nd produced hail up to 1 inch in diameter.
Mayodan	6/3/2000	1	Thunderstorms during the afternoon of the 3rd produced damaging winds and hail up to golf ball size. Thunderstorm winds downed trees across eastern Wilkes County and large tree limbs 2 miles north of Mt Airy.
Monroeton	6/3/2000	1.75	Thunderstorms during the afternoon of the 3rd produced damaging winds and hail up to golf ball size. Thunderstorm winds downed trees across eastern Wilkes County and large tree limbs 2 miles north of Mt Airy.
Reidsville	6/3/2000	0.75	Thunderstorms during the afternoon of the 3rd produced damaging winds and hail up to golf ball size. Thunderstorm winds downed trees across eastern Wilkes County and large tree limbs 2 miles north of Mt Airy.
Wentworth	6/14/2000	0.75	Thunderstorms during the afternoon of the 14th produced hail up to dime size.
Wentworth	7/28/2000	1	Thunderstorms during the evening of the 28th produced damaging winds and hail up to 1 inch in diameter. Thunderstorm winds on the afternoon of the 28th downed trees onto Phillips Road, 1 mile north of Walnut Cove.
Eden	5/2/2002	0.75	A thunderstorm during the afternoon of the 2nd produced hail up to dime size.
Madison	8/2/2002	0.75	Thunderstorms during the afternoon of the 2nd produced damaging winds and hail up to dime size. Thunderstorm winds downed tree in Hays.
Reidsville	4/26/2003	1	Thunderstorms during the late afternoon hours on the 26th produced hail up to quarter size which covered the ground in Reidsville.
Reidsville	4/26/2003	0.88	Thunderstorms during the late afternoon hours on the 26th produced hail up to quarter size which covered the ground in Reidsville.

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Location	Date	Size	Description
Mayfield	4/30/2003	0.75	Thunderstorms during the afternoon and early evening hours on the 30th produced hail up to quarter size. Up to quarter size hail covered the ground to a depth of one inch in Reidsville.
Reidsville	4/30/2003	1	Thunderstorms during the afternoon and early evening hours on the 30th produced hail up to quarter size. Up to quarter size hail covered the ground to a depth of one inch in Reidsville.
Reidsville	5/2/2003	0.75	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Stoneville	5/2/2003	0.88	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Bethany	5/29/2003	0.75	An isolated severe thunderstorm during the afternoon hours on the 29th produced hail up to three quarters of an inch in diameter.
Madison	7/19/2003	0.75	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Oregon Hill	8/17/2003	0.8	Thunderstorms during the late afternoon and early evening of the 17th produced damaging winds and hail up to penny size. Thunderstorm winds downed trees in Wentworth and 1 mile west of Danbury.
Stoneville	5/16/2004	1	An isolated severe storm produced hail up to the size of quarters.
Ayersville	6/6/2005	0.75	Thunderstorm winds during the evening of 6th downed trees in Pine Hill in Stokes county. A thunderstorm during the evening of the 6th produced penny sized hail 7 miles east of Ayersville.
Eden	4/3/2006	0.88	A cold front moved through the area on April 2nd into April 3rd. Some of the storms in the line of storms associated with the front became severe...and produced penny to nickel size hail, and some trees were downed by 70 mph winds.
Eden	4/3/2006	1.75	Severe thunderstorms formed in the unstable air in advance of an approaching cold front on the afternoon of the 3rd. Hail up to the size of golf balls was reported, and damaging wind gusts downed a couple of trees.
Eden	4/3/2006	0.88	Severe thunderstorms formed in the unstable air in advance of an approaching cold front on the afternoon of the 3rd. Hail up to the size of golf balls was reported, and damaging wind gusts downed a couple of trees.
Wentworth	4/3/2006	1.75	Severe thunderstorms formed in the unstable air in advance of an approaching cold front on the afternoon of the 3rd. Hail up to the size of golf balls was reported, and damaging wind gusts downed a couple of trees.
Reidsville	5/14/2006	1.75	Numerous thunderstorms formed late in the morning on the 14th, across the mountains of North Carolina, and spread east through the piedmont during the early afternoon. The severe thunderstorms produced mainly large hail, generally less than 1 inch in diameter, with golf ball sized hail falling in Reidsville. The only wind damage occurred in Rockingham County, 5 miles southeast of Reidsville, with one tree downed.
Reidsville	5/26/2006	0.75	Hail covered the ground.
Eden	6/11/2006	0.88	Downburst preceded by brief period of nickel sized hail and accompanied by damaging winds broke a home owners flag pole and downed numerous large tree limbs.

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Location	Date	Size	Description
Madison	7/13/2006	0.88	In advance of an approaching cold front, thunderstorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100-year-old, 50-foot-tall, with a 3 foot diameter trunk oak tree and a 40 foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
Reidsville	3/28/2007	0.88	Thunderstorms during the afternoon associated with an upper short wave along a quasi-stationary boundary produced severe hail up to the size of a golf ball.
Reidsville	6/11/2007	0.75	Severe thunderstorms produced wind damage and hail up to quarter size in northwest North Carolina.
Stoneville	7/10/2007	0.88	Thunderstorms formed over parts of North Carolina the afternoon of the 10th. Some of these storms increased to severe levels producing damaging winds and large hail.
Oregon Hill	8/13/2007	0.75	Penny sized hail fell 2 miles south of Oregon Hill, NC.
Ellisboro	8/22/2007	0.75	Penny sized hail lasted up to five minutes.
Mayfield	4/12/2008	0.88	Severe thunderstorms produced damaging winds that downed trees. Nickel size hail also was reported with one of the storms.
Intelligence, Madison, Mayodan	5/9/2008	0.75	An upper disturbance moving across the Ohio Valley into the Mid-Atlantic States helped develop thunderstorms across northwest North Carolina during the evening of May 9th. A few storms became severe producing up to golf ball size hail.
Eden, Mayfield, Price, Ruffin	5/20/2008	0.88	The northwest piedmont of North Carolina was in an unstable air mass ahead of a cold front during the afternoon of May 20th. This allowed a few thunderstorms to develop into severe cells. These storms produced hail up to quarter size and wind damage.
Bethany	5/31/2008	0.88	An area of low pressure was over the North Carolina piedmont during the afternoon of May 31st. With a somewhat unstable air mass in place, thunderstorms were able to develop. Only one, however, became severe. This occurred in Rockingham County where hail up to the size of nickels fell.
Madison	6/1/2008	0.88	A cold front moving into the southeast enhanced thunderstorms developing ahead of it. Some of these storms became severe, producing damaging winds and large hail on June 1.
Monroeton	6/22/2008	0.88	An upper level area of low pressure moved across the region ahead of a weak upstream cold front. These features combined with an unstable air mass to produce widespread strong to severe thunderstorms that produced not only large hail but also included some wind damage on June 22.
Eden	8/14/2008	0.75	Hail covered the ground.
Foushee	9/30/2008	0.75	Hail fell on Candy Creek Road.
Eden	5/29/2009	0.75	A cold front moved through the area late in the afternoon into the early evening on May 29th. Thunderstorms developed along the Blue Ridge and moved eastward into the Piedmont. Some of these storms became severe producing penny size hail.
Monroeton	3/28/2010	1.75	Severe thunderstorms brought Ping Pong to golf ball size hail near Monroeton.
Reidsville	4/5/2010	1	Thunderstorms moving southeast out of Virginia became severe over parts of the North Carolina piedmont in the early evening of April 5th, with some strong wind gusts the main feature.
Reidsville	4/5/2010	1	Thunderstorms moving southeast out of Virginia became severe over parts of the North Carolina piedmont in the early evening of April 5th, with some strong wind gusts the main feature.
Price	6/3/2010	0.88	A weak cold front moving across the area combined with increasing low-level moisture allowed for a broken line of strong to severe thunderstorms to move across areas east of the Blue Ridge into the foothills of North Carolina.
Reidsville	10/27/2010	1	A strong low-pressure system over Minnesota pushed a front across our area. Very strong winds aloft set the stage for damaging wind gusts and tornadoes. Enough instability was

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
			present ahead of this front to enhance the severe threat. An area of severe thunderstorms and embedded supercells moved into the Piedmont and foothills of North Carolina late in the evening of the 26th into early on the 27th. These storms produced areas of wind damage, one downburst, and one tornado. The front stalled over the area during the day of the 27th. Another piece of upper level energy moving along the front sparked more thunderstorms and embedded supercells late in the day on the 27th. These storms produced more wind damage, one more downburst, and one additional tornado.
Wentworth	3/23/2011	1	As a cold front moved across the region, numerous showers and thunderstorms developed along it. Some of the storms increased to severe levels and produced damaging winds and hail.
Ayersville	4/27/2011	1	Widespread severe weather impacted the area. A strong upper level trough approaching from the west provided strong winds aloft, and a weak upper level low pressure system moved across during the afternoon hours setting off scattered thunderstorms. These storms quickly became severe. In total, there were 4 tornadoes with numerous reports of damaging winds and large hail. Heavy rainfall from these storms also caused scattered flash flooding.
Mayodan	4/27/2011	1	Widespread severe weather impacted the area. A strong upper level trough approaching from the west provided strong winds aloft, and a weak upper level low pressure system moved across during the afternoon hours setting off scattered thunderstorms. These storms quickly became severe. In total, there were 4 tornadoes with numerous reports of damaging winds and large hail. Heavy rainfall from these storms also caused scattered flash flooding.
Reidsville	6/9/2011	1	In addition to one-inch diameter hail, thunderstorm wind gusts were estimated to be 55 mph.
Intelligence	6/21/2011	1	During the afternoon of the 21st, a thunderstorm complex headed south through eastern Kentucky. Convection along the eastern edge of this system helped to prompt additional development farther east. This process repeated itself through the evening hours leading to multiple thunderstorms moving through the region, with many of the storms producing damaging wind or large hail.
Stoneville	6/21/2011	1.5	Quarter to ping pong ball size hail fell in the vicinity of the Rockingham County NC, Shiloh Airport.
Happy Home	3/20/2012	1	With an amplified upper ridge over the eastern U.S. scattered strong to severe storms developed along a slow-moving boundary. Instability and lapse-rates were sufficient to produce large hail over Rockingham County.
Draper	7/1/2012	1	An amplified ridge over the central U.S. set the stage for scattered to numerous severe storms during the day as several short-wave disturbances dropped southeast across the southern Appalachians while surface conditions became remained very warm and unstable under the intense early July sun. Surface temperatures approached 100F over the piedmont during the afternoon creating steep lapse rates as well.
New Leaksville	6/12/2013	1	Quarter size hail fell along Redbud Road.
Wentworth	6/12/2013	0.88	Hail as large as nickels fell along Butter Road.
Spray	6/24/2013	1	Quarter size hail fell along Round House Road.
Eden	6/26/2013	1	Quarter size hail fell on Stadium Drive.
Eden	6/11/2014	1	Quarter size hail fell along Valley Drive along the golf course.
Reidsville	6/19/2014	0.75	Penny size hail covered the ground.
Ellisboro	9/16/2014	1	An upper level disturbance passing across the mid-Atlantic region triggered showers and a few thunderstorms during late afternoon and early evening. While instability was modest, one storm intensified to severe levels and produced quarter-size hail.
Monroeton	4/20/2015	1	Quarter size hail fell for three minutes.
Spray	4/20/2015	1	Hail up to quarter size fell for seven minutes.
Harrisons	5/11/2015	0.75	The public observed penny-sized hail.



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Location	Date	Size	Description
Ellisboro	4/28/2016	1	Quarter size hail fell near Belews Lake.
Midway	4/28/2016	1.25	Showers and thunderstorms developed in advance of an approaching cold front. Some of these storms produced hail ranging from quarter size to golf ball size.
Reidsville	6/29/2016	1.25	A stationary front was located across central North Carolina on the 29th, with a wave of low pressure developing along this boundary. In addition, an upper level storm system moved over the area, enhancing storm development across the North Carolina Piedmont, where storms produced damaging winds.
Bethany, Mayfield	9/28/2016	1	A quasi-stationary frontal boundary continued to produce bands of deep convection early in the morning on September 28th, as a strong upper low continued to deepen in parts of the Ohio Valley. Widespread severe weather began to occur in the midafternoon hours, mainly in the form of large hail and isolated wind damage across mainly the northern piedmont counties of North Carolina, as the storms moved off of the Blue Ridge Plateau.
Eden, Oregon Hill	5/11/2017	1	A stalled frontal boundary settled across the region on May 11th, providing enough differential heating and lift for scattered Thunderstorms to develop. The strongest storms produced isolated wind damage, especially near the Virginia state border.
Mayodan, Reidsville	5/31/2017	0.75	An upper level storm system rotating around a broad area of low pressure anchored across the Great Lakes pushed through the area on May 31st, spurring several thunderstorms across the northern Piedmont of North Carolina. These storms produced fairly extensive wind damage, toppling trees and power-lines resulting in thousands without power.
Oregon Hill	6/13/2017	0.88	High pressure centered to the south of the region provided ample moisture and warmer than normal temperatures for mid-June. A pronounced upper-level storm system to the west of the region would be the trigger to induce afternoon thunderstorms through much of the region. Some of the storms became severe producing damaging winds and large hail.
Stoneville	6/15/2017	1	For several days, high pressure to the east had pushed warm and humid air into the region. As an upper level storm system moved across the mountains from the Ohio Valley, scattered severe thunderstorms developed across the area.
Monroeton, Reidsville	7/18/2017	0.75	Instability associated with the combination of a nearby upper level low pressure system and strong daytime heating triggered scattered thunderstorms that would intensify quickly in a weakly-capped atmosphere. Downdraft CAPE values were in the range of 800 to 1100 J/Kg across the region. These conditions allowed for the development of severe thunderstorms that produced large hail and damaging winds.
Reidsville	3/17/2018	1	As high pressure started to depart the area, moisture levels started to rise across the area and a warm front was approaching from the south. A storm developed head of this front over Rockingham County and progressed into Caswell County. Along its course it produced 30 to 50 mph wind gusts and hail ranging from pea to quarter size.
Ellisboro, Intelligence	4/8/2019	1.25	A potent area of low pressure and its associated frontal boundaries crossed the region during the afternoon. A few of these storms grew in size enough to produce large hail and damaging winds.
Harrisons	5/31/2019	1	Hail up to the size of quarters fell near the intersection of Route 14 and Berrymore Road. The spotter also measured a wind gust of 36 MPH.
Wentworth	5/31/2019	1	Hail up to the size of quarters fell in Wentworth.
<b>Stokes County</b>			
Lawsonville	6/2/2000	1	Thunderstorms during the evening of the 2nd produced hail up to 1 inch in diameter.
King	6/15/2000	0.75	Thunderstorms during the evening of the 15th produced damaging winds and hail up to dime size. Thunderstorm winds downed trees and snapped utility poles in Courtney, downed trees in Wentworth, trees in Level Cross, trees and power lines in Eden, and downed large trees across Oregon Hill Rd in Mayfield.
Walnut Cove	6/26/2000	1	Thunderstorms on the evening of the 26th produced hail up to 1 inch in diameter.

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Location	Date	Size	Description
Danbury, King, Sandy Ridge	6/1/2002	1.5	Thunderstorms during the afternoon of the 1st produced damaging winds and hail up to tennis ball size. Thunderstorm winds downed trees 7 miles west of Yanceyville, Walnut Cove, 7 miles north of Jefferson, and downed trees and power lines in Mayodan.
Danbury	6/6/2002	0.88	Thunderstorms during the afternoon of the 6th produced damaging winds and hail up to nickel size. Thunderstorm winds downed trees 5 miles east of Danbury, onto Route 135, 3 miles southeast of Stoneville, and trees and power lines 1 mile west of Eden,
Danbury	7/4/2002	1	Thunderstorms during the afternoon of the 4th produced damaging winds and hail up to one inch in diameter. Thunderstorm winds downed trees in Elkin, southwestern Yadkin county, and across Ashe County. Thunderstorm winds also downed trees 4 miles west of Dobson, including onto two residences, causing damage to the roofs.
Danbury, Meadows	8/15/2002	0.75	Thunderstorms during the afternoon of the 15th produced hail up to dime size.
Dillard	7/19/2003	1.75	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
King	8/5/2003	1.75	Thunderstorms during the afternoon of the 5th produced hail up to golf ball size and flash flooding. A thunderstorm produced nickel to golf ball sized hail in King during a ten-minute period. A thunderstorm produced ping pong ball sized hail 2 miles northeast of Camp Springs, destroying a tobacco crop. Heavy thunderstorm rains caused several roads in southwestern Caswell County to flood and be closed.
Lawsonville	5/23/2004	0.75	Severe thunderstorms downed a large tree and produced hail from penny to nickel size.
King	6/7/2005	0.75	A severe thunderstorm during the afternoon of the 7th produced hail up to quarter sized in Stokes county.
Pinnacle	6/7/2005	1	A severe thunderstorm during the afternoon of the 7th produced hail up to quarter sized in Stokes county.
Collinstown	8/4/2005	0.75	
Francisco	9/20/2005	0.75	Thunderstorms during the afternoon of the 20th produced hail up to penny size in Francisco.
Danbury	5/14/2006	0.75	Numerous thunderstorms formed late in the morning on the 14th, across the mountains of North Carolina, and spread east through the piedmont during the early afternoon. The severe thunderstorms produced mainly large hail, generally less than 1 inch in diameter, with golf ball sized hail falling in Reidsville. The only wind damage occurred in Rockingham County, 5 miles southeast of Reidsville, with one tree downed.
Danbury, Germanton, Walnut Cove	6/11/2006	1	A severe thunderstorm produced hail up to quarter sized and downed tree limbs which created power outages.
Quaker Gap	7/13/2006	0.75	In advance of an approaching cold front, thunderstorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100-year-old, 50-foot-tall, with a 3 foot diameter trunk oak tree and a 40 foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
Walnut Cove	6/11/2007	1	Quarter size hail fell along highway 89 in Walnut Cove.

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Location	Date	Size	Description
Danbury	6/16/2007	1.75	Golf ball hail covered the ground along Moores Spring Road near Hanging Rock State Park.
Walnut Cove	8/22/2007	0.75	Hail up to the size of pennies fell 2 miles south of Walnut Cove.
Sandy Ridge	4/26/2008	0.75	A cold front moved through the area bringing with it showers and thunderstorms. One of the storms produced large hail.
Francisco	5/8/2008	1	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
Dillard, Volunteer	5/11/2008	0.88	A closed upper low moved across the Ohio Valley, and a strong jet stream was in place to trigger isolated severe thunderstorms across portions of northwest North Carolina, during the afternoon of May 11th. These storms produced wind damage and hail up to the size of nickels.
Sandy Ridge	6/3/2008	0.75	Low level boundaries, an unstable airmass, and an upper level disturbance provided the trigger for a thunderstorm to become severe over Stokes County, NC, during the afternoon of June 3. This storm brought penny sized hail and damaging winds.
Pine Hall	6/26/2008	0.75	An unstable atmosphere set the stage for afternoon development of showers and thunderstorms on June 26. Some of these storms reached severe levels and generated large hail and damaging downburst winds.
Lawsonville	8/2/2008	0.75	A cold front moving into the central and southern Appalachians provided the focus for severe thunderstorm development during the afternoon of August 2nd. Damaging winds, and hail up to the size of quarters occurred.
Dillard	8/14/2008	0.75	Penny sized hail fell for five minutes.
Dillard	8/14/2008	0.88	Penny to nickel sized hail fell for 10 minutes.
Danbury	5/28/2010	1.25	Half dollar size hail fell at the 911 center.
Moores Springs	2/28/2011	0.88	A cold front brought an abrupt end to record-setting temperatures in parts of the area and triggered some strong to severe storms across several counties. Most of the storms produced only penny-size hail but a few produced wind damage or severe hail.
Danbury	4/27/2011	1	Widespread severe weather impacted the area. A strong upper level trough approaching from the west provided strong winds aloft, and a weak upper level low pressure system moved across during the afternoon hours setting off scattered thunderstorms. These storms quickly became severe. In total, there were 4 tornadoes with numerous reports of damaging winds and large hail. Heavy rainfall from these storms also caused scattered flash flooding.
Germanton	5/24/2011	1	Quarter-size hail covered the ground on Boles Road.
Poplar Springs	5/24/2011	1	Up to quarter size hail along Musket Drive.
King	7/4/2011	1.75	A strong upper level wave moved across the area during the afternoon. The lift created by this wave combined with moderate to strong instability over the region produced widespread showers and thunderstorms. Enough dry air was present in the low and mid levels to allow for strong downbursts of winds to occur with many of these storms. A few storms also produced large hail.
King	8/14/2011	1.75	Thunderstorms developed along a cold front and a trough of low pressure east of the mountains in the afternoon. The storms produced large hail and damaging winds.
Volunteer	5/1/2012	1.75	Golfball size hail was reported near the intersection of Mitchell Road and Wilson Road.
Volunteer	5/1/2012	0.75	Penny size hail was reported along Oscar Frye Road.
Volunteer	5/1/2012	1	Quarter size hail was reported on McDaniel Road, just south of Westfield.

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Location	Date	Size	Description
Walnut Cove	5/1/2012	1.75	The day started off with a decaying high-pressure wedge situated across the piedmonts of Virginia and North Carolina, while a warm front was making its way northward across Kentucky into the mountains of Virginia and North Carolina. A strong upper level disturbance moved eastward along the warm front from Kentucky into the mountains during the early part of the afternoon. Several strong to severe thunderstorms developed by midafternoon as the disturbance moved east of the Blue Ridge Mountains, interacting with unstable air due to strong daytime heating.
Pine Hall	6/30/2012	0.88	A passing upper level disturbance interacted with a very unstable atmosphere near the surface to generate isolated, large hail producing thunderstorms. Some of these were accompanied by damaging winds.
King	7/1/2012	1	An amplified ridge over the central U.S. set the stage for scattered to numerous severe storms during the day as several short-wave disturbances dropped southeast across the southern Appalachians while surface conditions became remained very warm and unstable under the intense early July sun. Surface temperatures approached 100F over the piedmont during the afternoon creating steep lapse rates as well.
Francisco	8/1/2012	1	The public observed quarter-sized hail falling for approximately 15 minutes.
Meadows	5/6/2013	1	A deep upper level low pressure system was pinwheeling across Tennessee, while high pressure was wedged against the eastern face of the Appalachians. Breaks in the cloud cover across northern North Carolina added to the surface-based instability, which allowed thunderstorms across the area to intensify to severe levels during the evening.
King	6/13/2013	1.5	A cold front moved across the region in the form of a squall line of storms. Winds of 60 to 70 mph accompanied this squall line, resulting a widespread wind damage. Large hail also accompanied some of the stronger storms.
King	7/24/2014	1	The severe thunderstorm in Stokes County was associated with an upper level disturbance crossing the mountains and a cold front pushing into a typical July warm and humid air mass.
Dillard	9/4/2015	1	A backdoor cold front made its way southward across the Piedmont during the evening, supported aloft by an upper level disturbance passing across the central Appalachians in the otherwise upper level ridging environment covering much of the southeast and mid-Atlantic states. The cold front and disturbance provided increased instability, allowing strong to severe thunderstorms to develop in the very warm moist air south of the cold front.
Campbell	4/28/2016	1.75	Showers and thunderstorms developed in advance of an approaching cold front. Some of these storms produced hail ranging from quarter size to golf ball size.
Capella	4/28/2016	1.75	Showers and thunderstorms developed in advance of an approaching cold front. Some of these storms produced hail ranging from quarter size to golf ball size.
Capella	5/2/2016	0.88	A cold front situated across the Ohio Valley and extending into New England early on May 2nd began sagging south into an unstable air-mass during the afternoon and early evening. Scattered severe storms formed along this boundary, impacting a large portion of the Mid-Atlantic region, producing large hail and damaging winds.
Danbury	5/2/2016	1	A cold front situated across the Ohio Valley and extending into New England early on May 2nd began sagging south into an unstable air-mass during the afternoon and early evening. Scattered severe storms formed along this boundary, impacting a large portion of the Mid-Atlantic region, producing large hail and damaging winds.
Flat Shoals	5/2/2016	1.25	A cold front situated across the Ohio Valley and extending into New England early on May 2nd began sagging south into an unstable air-mass during the afternoon and early evening. Scattered severe storms formed along this boundary, impacting a large portion of the Mid-Atlantic region, producing large hail and damaging winds.
Meadows	7/8/2016	0.88	A strong upper level disturbance pushed across the central Appalachians, triggering an organized line of severe thunderstorms. Strong daytime heating ahead of an approaching cold front supported afternoon temperature in the upper 80s and the low 90s. CAPE values approached 2500 J/Kg, while mid-level winds were observed in the 30 to 40 knot range.

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Location	Date	Size	Description
Capella	9/28/2016	1	A quasi-stationary frontal boundary continued to produce bands of deep convection early in the morning on September 28th, as a strong upper low continued to deepen in parts of the Ohio Valley. Widespread severe weather began to occur in the midafternoon hours, mainly in the form of large hail and isolated wind damage across mainly the northern piedmont counties of North Carolina, as the storms moved off of the Blue Ridge Plateau.
Meadows	9/29/2016	1	A strong upper low situated across the Ohio River Valley continued its journey south, where it settled just to the west of the Appalachian Mountains. This low aided in the initiation of strong to severe thunderstorms during the afternoon hours of September 29th, which produced large hail and isolated wind damage across the higher elevations of northwest North Carolina before pushing just east of the Blue Ridge divide.
Danbury	9/30/2016	1.75	Showers and thunderstorms formed along a leading edge of a strong, nearly stationary low-pressure system centered over Kentucky during the evening hours of September 30th. showers and thunderstorms initiated as a result of a very moist fall atmosphere with dew points in the 70's. Thunderstorm wind damage and large hail were recorded in parts of northwest North Carolina.
Walnut Cove	5/10/2018	1	A cold front approaching from the west would prompt isolated convection in the mountains. As the front pushed the storms east of the Blue Ridge where higher instabilities existed, the storms became more organized producing damaging winds and large hail.
Dodgetown	5/31/2019	1.25	Hail from the size of quarters to half dollar coins fell near the intersection of Troy Joyce Road and Highway 772.
Dodgetown	5/31/2019	1	Hail up to the size of quarters fell near the intersection of Ernas Drive and Highway 772.
Hartman	5/31/2019	1	Hail up to the size of quarters fell near the intersection of Pitzer Road and Stanley Mabe Road.
Lawsonville	5/31/2019	0.88	An approaching cold front combined with a hot and humid air mass triggered scattered severe thunderstorm across the North Carolina Piedmont. These storms produced hail up to the size of golf balls and damaging winds that blew down numerous trees and power lines. Some of the trees fell on to homes. The winds also blew the roof off a picnic shelter and threw it to the ground in Caswell County.
<b>Surry County</b>	<b>1</b>		
Dobson	4/17/2000	1	Thunderstorms on the afternoon of the 17th produced hail up to one inch in diameter and damaging winds.  Thunderstorm winds downed trees and power lines in Dobson.
Level Cross	5/13/2000	1.75	Thunderstorms during the afternoon of the 13th produced damaging winds and hail up to golf ball size.  Thunderstorm winds downed several trees in Wentworth, downed trees 7 miles southwest of Lawsonville, and downed trees 1 1/2 miles northwest of Pilot Mtn.
Elkin	5/28/2000	1.75	Thunderstorms on the afternoon of the 28th produced hail up to golf ball size and damaging winds.  Thunderstorm winds downed trees and power lines in southwestern Rockingham County.
Toast	4/30/2003	0.75	Thunderstorms during the afternoon and early evening hours on the 30th produced hail up to quarter size.

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Location	Date	Size	Description
			Up to quarter size hail covered the ground to a depth of one inch in Reidsville.
Dobson	5/2/2003	0.75	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Elkin, Mt Airy	5/3/2003	1.25	Thunderstorms during the afternoon an early evening hour on the 3rd produced hail up to golf ball size. Up to golf ball size hail covered the ground in Elkin and up to quarter size hail covered the ground in Mt. Airy.
Pilot Mtn	7/19/2003	0.75	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Salem	8/5/2003	0.88	Thunderstorms during the afternoon of the 5th produced hail up to golf ball size and flash flooding. A thunderstorm produced nickel to golf ball sized hail in King during a ten-minute period. A thunderstorm produced ping pong ball sized hail 2 miles northeast of Camp Springs, destroying a tobacco crop. Heavy thunderstorm rains caused several roads in southwestern Caswell County to flood and be closed.
Dobson	7/18/2004	0.88	Thunderstorms during the evening of the 18th produced penny sized hail in Ennice. Thunderstorms downed trees and produced nickel size hail near Dobson.
Elkin	3/23/2005	0.88	Thunderstorms during the afternoon of 23rd produced hail up to quarter sized across northern North Carolina.
Elkin	3/23/2005	1	Thunderstorms during the afternoon of 23rd produced hail up to quarter sized across northern North Carolina.
Low Gap	7/1/2005	0.88	
Mt Airy	9/20/2005	0.75	Thunderstorms during the afternoon of the 20th produced hail up to penny size and downed trees in the Mount Airy area.
Toast	4/3/2006	0.75	A cold front moved through the area on April 2nd into April 3rd. Some of the storms in the line of storms associated with the front became severe...and produced penny to nickel size hail, and some trees were downed by 70 mph winds.
Dobson	5/14/2006	0.75	Hail covered the ground.
Mt Airy	6/11/2006	0.88	
Mt Airy	6/11/2006	0.88	Nickel sized hail covered the ground.
White Plains	7/4/2006	0.75	
Mountain Park	10/5/2006	1	A backdoor cold front progressed south through the region on the afternoon and evening of October 5th. This front helped prompt showers and thunderstorms across the region with some of the storms reaching severe limits. Severe hail ranging from penny size to quarter size occurred.
Mt Airy	4/15/2007	1	Two severe thunderstorms produced large hail over parts of northwest North Carolina.
Siloam	6/11/2007	0.75	Severe thunderstorms produced wind damage and hail up to quarter size in northwest North Carolina.
State Rd	6/28/2007	1	Severe thunderstorms resulted in wind damage and hail up to the size of quarters.
Dobson	5/8/2008	0.88	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at

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Location	Date	Size	Description
			the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
Level Cross	5/8/2008	1	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
Mt Airy	5/8/2008	1.75	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
State Rd	5/8/2008	1	A strong storm system across the Ohio Valley during the afternoon of Thursday, May 8th, pushed east toward the mountains Thursday evening. A boundary was trailing from the low across southern Virginia. This put the region in a high shear environment, meaning, winds at the surface were blowing from the southeast, while a few thousand feet above the surface, the winds were blowing out of the southwest at 40 to 50 mph. Supercells formed in the foothills and piedmont of North Carolina, ahead of a strong but broken line of thunderstorms that formed just west of the mountains and became more organized by the time it reached the Blue Ridge. These severe thunderstorms brought damaging winds, large hail and flash flooding to portions of Northwest North Carolina.
Dobson	6/22/2008	0.88	Hail fell at Red Brush Road.
Low Gap	7/7/2008	0.88	An uncharacteristic area of relatively cool low pressure moved southeast out of Canada into the region. Daytime heating due to sunshine combined with the relatively cooler low overhead and helped to result in a very unstable atmosphere. The result was the formation of thunderstorms with numerous reports of severe hail and damaging winds.
Pine Ridge	7/7/2008	1.75	The hail ranged from quarter size to golf ball size.
Pine Ridge	7/7/2008	0.88	An uncharacteristic area of relatively cool low pressure moved southeast out of Canada into the region. Daytime heating due to sunshine combined with the relatively cooler low overhead and helped to result in a very unstable atmosphere. The result was the formation of thunderstorms with numerous reports of severe hail and damaging winds.
Pine Ridge	7/7/2008	0.75	An uncharacteristic area of relatively cool low pressure moved southeast out of Canada into the region. Daytime heating due to sunshine combined with the relatively cooler low overhead and helped to result in a very unstable atmosphere. The result was the formation of thunderstorms with numerous reports of severe hail and damaging winds.
Elkin	8/2/2008	1	A cold front moving into the central and southern Appalachians provided the focus for severe thunderstorm development during the afternoon of August 2nd. Damaging winds, and hail up to the size of quarters occurred.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Pilot Mtn	8/2/2008	1	A cold front moving into the central and southern Appalachians provided the focus for severe thunderstorm development during the afternoon of August 2nd. Damaging winds, and hail up to the size of quarters occurred.
Flat Rock	9/30/2008	0.88	Hail covered the ground near Slate Mountain.
Flat Rock	9/30/2008	1.75	Hail covered the ground.
Mt Airy	9/30/2008	1.75	Hail covered the ground and also destroyed a pickup truck.
Dobson	8/20/2009	0.88	A severe thunderstorm affected portions of Surry County during the evening of August 20th.
Dobson	5/15/2010	0.75	Penny size hail fell at the intersection of Old and New Route 601.
Mountain Park	5/15/2010	1	A thunderstorm produced quarter size hail that covered the ground on Union Hill Road.
Mountain Park	5/15/2010	1	Thunderstorms developed with the passage of a cold front. Enough instability existed for some of these storms to reach severe limits and produce large hail.
Dobson	5/28/2010	0.75	A backdoor cold front pushed south into the region and stalled along the crest of the Blue Ridge along a north to south orientation. During the afternoon and early evening, numerous thunderstorms developed along and near the front. Some of these produced damaging wind and hail along with flash flooding.
Bottom	7/18/2010	1	A Bermuda high pressure area ushered in warm and humid air to the mid-Atlantic region and the Carolinas. Diurnally driven thunderstorms developed, with a few of storms turning severe in northwest North Carolina.
Pine Ridge	7/18/2010	0.75	A Bermuda high pressure area ushered in warm and humid air to the mid-Atlantic region and the Carolinas. Diurnally driven thunderstorms developed, with a few of storms turning severe in northwest North Carolina.
Low Gap	7/26/2010	1.75	A frontal boundary across western North Carolina interacted with high instability to produce isolated severe thunderstorms. One of the storms interacted with the front to produce large hail and a brief EFO tornado in near Low Gap.
Ararat	2/28/2011	0.88	A cold front brought an abrupt end to record-setting temperatures in parts of the area and triggered some strong to severe storms across several counties. Most of the storms produced only penny-size hail but a few produced wind damage or severe hail.
Dobson	2/28/2011	1	Quarter-size hail covered the ground on Trade Lane.
Pilot Mtn	2/28/2011	0.88	A cold front brought an abrupt end to record-setting temperatures in parts of the area and triggered some strong to severe storms across several counties. Most of the storms produced only penny-size hail but a few produced wind damage or severe hail.
Ararat	4/9/2011	1	A high pressure centered over New England pushed a back door cold front into portions of Northwest North Carolina. This front, combined with an upper level low pressure system, triggered a few severe thunderstorms.
Ararat	4/9/2011	0.75	A high pressure centered over New England pushed a back door cold front to northwest North Carolina. At the same time a strong upper level low pressure system approached from the west during the afternoon of the 9th. This resulted in the development of severe thunderstorms which produced large hail.
Salem	4/9/2011	0.75	A high pressure centered over New England pushed a back door cold front to northwest North Carolina. At the same time a strong upper level low pressure system approached from the west during the afternoon of the 9th. This resulted in the development of severe thunderstorms which produced large hail.
White Plains	4/9/2011	0.88	A high pressure centered over New England pushed a back door cold front into portions of Northwest North Carolina. This front, combined with an upper level low pressure system, triggered a few severe thunderstorms.
Bottom	4/26/2011	1	Southerly winds out ahead of a deep trough over the southern plains ushered in warm and humid air into the region. The resulting instability, combined with moderate winds aloft, combined to produce an environment marginally favorable for severe weather.



**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
			Thunderstorms formed mainly along and east of the Blur Ridge during the afternoon, and several of these storms became severe with large hail and strong winds.
Mountain Park	5/23/2011	1	Hail fell for about 3 minutes in the Mountain Park area.
State Rd	5/23/2011	0.88	A large supercell brought numerous reports of severe weather mainly to parts of Wilkes County but also into western Surry County.
Fairview	5/24/2011	1.5	Two distinct upper level storm systems passed through the area, one in the late morning, the second during the late afternoon and early evening. Each brought a round of active severe weather to the region. Enough time passed after the exit of the first for afternoon heating to play a factor just prior to the arrival of the second. The earlier storms were primarily hail, while the second round consisted of strong damaging winds. Precipitation was also heavy with radar estimated rainfall from eastern Watauga county through northern Wilkes county ranging from 1 to 3.5 inches in several hours with flooding reported near Millers Creek.
Mountain Park	5/24/2011	1.25	Two distinct upper level storm systems passed through the area, one in the late morning, the second during the late afternoon and early evening. Each brought a round of active severe weather to the region. Enough time passed after the exit of the first for afternoon heating to play a factor just prior to the arrival of the second. The earlier storms were primarily hail, while the second round consisted of strong damaging winds. Precipitation was also heavy with radar estimated rainfall from eastern Watauga county through northern Wilkes county ranging from 1 to 3.5 inches in several hours with flooding reported near Millers Creek.
Siloam	5/24/2011	1	Hail occurred on Atkinson Road.
State Rd	5/24/2011	1.5	Two distinct upper level storm systems passed through the area, one in the late morning, the second during the late afternoon and early evening. Each brought a round of active severe weather to the region. Enough time passed after the exit of the first for afternoon heating to play a factor just prior to the arrival of the second. The earlier storms were primarily hail, while the second round consisted of strong damaging winds. Precipitation was also heavy with radar estimated rainfall from eastern Watauga county through northern Wilkes county ranging from 1 to 3.5 inches in several hours with flooding reported near Millers Creek.
State Rd	6/11/2011	1	Quarter size hail fell along Mountain Park Road.
Low Gap	8/18/2011	0.88	An approaching upper level storm system embedded in the northwest flow aloft, along with low level moisture convergence and daytime heating, triggered thunderstorm development in the early afternoon. A few of these storms brought hail up to quarter size and damaging winds. A slow-moving storm dropped intense rainfall over Sparta, NC causing small streams to flood.
Low Gap	8/18/2011	1	An approaching upper level storm system embedded in the northwest flow aloft, along with low level moisture convergence and daytime heating, triggered thunderstorm development in the early afternoon. A few of these storms brought hail up to quarter size and damaging winds. A slow-moving storm dropped intense rainfall over Sparta, NC causing small streams to flood.
Pilot Mtn	9/2/2011	1	Energy associated with the approach of an upper storm system arrived during the peak heating of the day. This combined with plenty of low-level moisture across the region helped to generate numerous showers and storms. Some of these storms reached severe levels and produced damaging winds and large hail. Heavy rain from one of the storms prompted flash flooding.
Woodville	3/24/2012	1.75	A car had a windshield broken out while driving on East Pine Street.
Fairview	5/1/2012	1	A few quarter size hailstones were mixed together with dime to nickel size hail.
State Rd	5/1/2012	0.75	Penny size hail was reported covering the ground along State Road.
Mt Airy	5/15/2012	0.88	Nickel size hail was observed on Hickory Street.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Woodville	6/24/2012	1	Quarter size hail fell on Slate Mountain Road.
Low Gap	6/30/2012	1.25	Half dollar size hail fell on Ramey Creek Road.
Woodville	7/3/2012	1	A broad upper ridge to over the central U.S. continued to allow periodic upper level storm systems to drop toward the region. Despite a fairly disorganized surface pattern the intense heat and high humidity helped to generate a few severe thunderstorms in the afternoon.
Elkin	7/5/2012	1	Several upper level storm systems rotating around an upper high centered over the mid-Mississippi Valley helped to generate severe thunderstorms across the mountains. The convective activity was initiated out of the remains of a nocturnal Mesoscale Convective System (MCS) over the Ohio Valley that encountered increasing shear and instability as it moved into the southern Appalachians.
Fairview	7/5/2012	1	Several upper level storm systems rotating around an upper high centered over the mid-Mississippi Valley helped to generate severe thunderstorms across the mountains. The convective activity was initiated out of the remains of a nocturnal Mesoscale Convective System (MCS) over the Ohio Valley that encountered increasing shear and instability as it moved into the southern Appalachians.
Woodville	8/7/2012	0.75	The public observed penny-sized hail on Minervia Way approximately five miles north of Francisco.
Pilot Mtn	8/8/2012	1	The public observed quarter-sized hail. Hail up to the size of quarters fell in the area for up to 20 minutes.
Shoal	8/8/2012	1	A series of upper level disturbances were moving through a broad, slightly negatively tilted upper trough located across the Great Lakes. With a warm, very moist air mass present across the region, scattered to numerous showers and thunderstorms developed during the early afternoon across northwest North Carolina along a weak surface trough. Several of these storms reached severe limits producing quarter to half-dollar-sized hail and isolated damaging wind reports.
Low Gap	5/6/2013	1	A deep upper level low pressure system was pinwheeling across Tennessee, while high pressure was wedged against the eastern face of the Appalachians. Breaks in the cloud cover across northern North Carolina added to the surface-based instability, which allowed thunderstorms across the area to intensify to severe levels during the evening.
Mt Airy	6/17/2014	0.88	Nickel size hail fell at the Mayberry Mall.
Zephyr	6/19/2014	1	Hail fell that ranged from nickel to quarter size.
Zephyr	6/19/2014	1	A strong upper level disturbance passed along an approaching cold front. Numerous showers and thunderstorms developed across the region. Some of these thunderstorms increased to severe levels and produced damaging winds and large hail.
Toast	2/24/2016	1.75	A strong surface low was located over Western Tennessee in the morning. A wedge was in place over the region and expected to be eroded by a strong low-level jet. Bulk shear of 60 knots and Storm-Relative Helicity in the 400-600 m <sup>2</sup> /s <sup>2</sup> range provided the dynamics for this severe event. With this in place, thunderstorms developed mainly east of the Blue Ridge in the Piedmont. Reports of Thunderstorm wind damage and large hail came in from multiple counties across North Carolina.
White Plains	2/24/2016	1	A strong surface low was located over Western Tennessee in the morning. A wedge was in place over the region and expected to be eroded by a strong low-level jet. Bulk shear of 60 knots and Storm-Relative Helicity in the 400-600 m <sup>2</sup> /s <sup>2</sup> range provided the dynamics for this severe event. With this in place, thunderstorms developed mainly east of the Blue Ridge in the Piedmont. Reports of Thunderstorm wind damage and large hail came in from multiple counties across North Carolina.
Mountain Park	5/2/2016	1	A cold front situated across the Ohio Valley and extending into New England early on May 2nd began sagging south into an unstable air-mass during the afternoon and early evening. Scattered severe storms formed along this boundary, impacting a large portion of the Mid-Atlantic region, producing large hail and damaging winds.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Pilot Mtn	9/29/2016	1	A strong upper low situated across the Ohio River Valley continued its journey south, where it settled just to the west of the Appalachian Mountains. This low aided in the initiation of strong to severe thunderstorms during the afternoon hours of September 29th, which produced large hail and isolated wind damage across the higher elevations of northwest North Carolina before pushing just east of the Blue Ridge divide.
Toast	9/29/2016	1.75	A strong upper low situated across the Ohio River Valley continued its journey south, where it settled just to the west of the Appalachian Mountains. This low aided in the initiation of strong to severe thunderstorms during the afternoon hours of September 29th, which produced large hail and isolated wind damage across the higher elevations of northwest North Carolina before pushing just east of the Blue Ridge divide.
Mt Airy	3/27/2017	0.88	A few thunderstorms developed ahead of a strong cold front during the afternoon and evening of the March 27th, a few of which intensified and became severe for short periods of time.
Mt Airy	3/27/2017	1	A few thunderstorms developed ahead of a strong cold front during the afternoon and evening of the March 27th, a few of which intensified and became severe for short periods of time.
White Plains	3/27/2017	1	A few thunderstorms developed ahead of a strong cold front during the afternoon and evening of the March 27th, a few of which intensified and became severe for short periods of time.
Bottom	4/15/2018	1.25	Hail varying from the size of quarters to half dollar coins fell for several minutes and covered the ground.
Pine Ridge	4/15/2018	1.75	Hail up to the size of golf balls fell at Pine Ridge.
Westfield	5/10/2018	1	A cold front approaching from the west would prompt isolated convection in the mountains. As the front pushed the storms east of the Blue Ridge where higher instabilities existed, the storms became more organized producing damaging winds and large hail.
Bottom	4/19/2019	0.75	A strong area of low pressure moved from the Mississippi Valley into the Tennessee Valley. The atmosphere in advance of this system was ripe for the development of strong thunderstorms with damaging winds. Some of these storms did produce damaging winds over parts of the Foothill and Piedmont regions of northwest North Carolina.
Elkin	5/31/2019	1	Hail from the size of nickels to quarters fell near the intersection of Johnson Ridge Road and Claremont Drive near Elkin.
Fairview	7/31/2019	1.75	An upper level storm system and a weak surface boundary interacted with a moist and unstable air mass to form a few severe thunderstorms across northwest North Carolina. These storms brought down trees dropped large hail up to the size of golf balls.
<b>Yadkin County</b>			
Jonesville	5/13/2000	0.75	Thunderstorms during the afternoon of the 13th produced damaging winds and hail up to golf ball size. Thunderstorm winds downed several trees in Wentworth, downed trees 7 miles southwest of Lawsonville, and downed trees 1 1/2 miles northwest of Pilot Mtn.
Marler	5/27/2000	0.75	Thunderstorms during the afternoon of the 27th produced hail up to dime size and damaging winds. Thunderstorm winds downed numerous trees 5 miles south of Wilkesboro.
East Bend	6/3/2000	0.75	Thunderstorms during the afternoon of the 3rd produced damaging winds and hail up to golf ball size. Thunderstorm winds downed trees across eastern Wilkes County and large tree limbs 2 miles north of Mt Airy.
Enon	6/15/2000	0.75	Thunderstorms during the evening of the 15th produced damaging winds and hail up to dime size. Thunderstorm winds downed trees and snapped utility poles in Courtney, downed trees in Wentworth, trees in Level Cross, trees and power lines in Eden, and downed large trees across Oregon Hill Rd in Mayfield.
East Bend	6/1/2002	0.88	Thunderstorms during the afternoon of the 1st produced damaging winds and hail up to tennis ball size. Thunderstorm winds downed trees 7 miles west of Yanceyville, Walnut Cove, 7 miles north of Jefferson, and downed trees and power lines in Mayodan.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Enon	4/30/2003	0.75	Thunderstorms during the afternoon and early evening hours on the 30th produced hail up to quarter size. Up to quarter size hail covered the ground to a depth of one inch in Reidsville.
East Bend	5/2/2003	0.75	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
East Bend	5/2/2003	0.75	Thunderstorms during the afternoon and evening hours on the 2nd produced hail up to half dollar size. Hail up to three quarters of an inch in diameter covered the ground in Dobson, East Bend, and 2 miles northeast of Reidsville.
Boonville	5/3/2003	1.75	Thunderstorms during the afternoon and early evening hour on the 3rd produced hail up to golf ball size. Up to golf ball size hail covered the ground in Elkin and up to quarter size hail covered the ground in Mt. Airy.
Boonville, Courtney	7/19/2003	0.75	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Yadkinville	7/10/2004	0.88	During the afternoon of the 10th, severe thunderstorms produced large hail and damaging winds across portions of Northwest North Carolina. Trees were blown over along Highway 89E, 2 miles east of Mt. Airy.
East Bend	3/23/2005	0.75	Thunderstorms during the afternoon of 23rd produced hail up to quarter sized across northern North Carolina.
Jonesville	3/23/2005	1	Thunderstorms during the afternoon of 23rd produced hail up to quarter sized across northern North Carolina.
Brooks	5/26/2006	0.75	Occurred along Interstate 77.
Yadkinville	6/11/2006	0.75	A severe thunderstorm produced hail up to penny sized and wind gusts up to 60 mph during the afternoon of the 11th. Trees were downed at the Intersection of Highway 601 and 421 in Yadkinville city limits and the Forbush Community. Several trees downed by a thunderstorm blocked Route 268 along Pilot Mountain in Surry county.
Huntsville	7/22/2006	0.75	Scattered thunderstorms formed in front of a cold front which was starting to move through the area. A couple of these strengthened to severe levels, producing penny to nickel size hail.
Yadkinville	7/22/2006	0.88	Scattered thunderstorms formed in front of a cold front which was starting to move through the area. A couple of these strengthened to severe levels, producing penny to nickel size hail.
Boonville	4/15/2007	0.75	Two severe thunderstorms produced large hail over parts of northwest North Carolina.
Boonville	4/15/2007	1	Two severe thunderstorms produced large hail over parts of northwest North Carolina.
East Bend	6/11/2007	0.88	Severe thunderstorms produced wind damage and hail up to quarter size in northwest North Carolina.
Yadkinville	6/29/2007	0.75	A severe thunderstorm produced penny sized hail.
Yadkinville	7/27/2007	0.88	A severe thunderstorm produced nickel size hail in Yadkin County.
Huntsville	8/22/2007	1.75	Golf ball hail was reported along Highway 421.
Yadkinville	8/22/2007	1	Quarter size hail covered the ground.
Marler	5/29/2009	0.75	A cold front moved through the area late in the afternoon into the early evening on May 29th. Thunderstorms developed along the Blue Ridge and moved eastward into the Piedmont. Some of these storms became severe producing penny size hail.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Lone Hickory	6/3/2009	0.75	A moderately unstable air mass and seasonably strong mid-level shear helped to produce multicellular storms on the afternoon of June 3rd which produced scattered pockets of damaging winds and some penny or larger size hail in the mountains and foothills.
Shacktown	7/27/2009	0.75	A thunderstorm produced penny size hail in Yadkin County.
Marler	3/28/2010	1	Severe thunderstorms brought quarter size hail near the intersection of Interstate 77 and U.S. Highway 421.
Flint Hill	4/9/2011	1	A high pressure centered over New England pushed a back door cold front into portions of Northwest North Carolina. This front, combined with an upper level low pressure system, triggered a few severe thunderstorms.
Huntsville	5/13/2011	0.88	An upper level storm system approaching from the west helped to trigger numerous showers and thunderstorms mainly over the mountainous terrain of northwest North Carolina. The storms developed along a slow-moving frontal boundary and with abundant moisture in place some of the storms produced heavy rainfall with flash flooding along with hail and strong winds.
Brooks	5/26/2011	1.25	The atmosphere quickly became unstable during the afternoon of May 26th resulting in the development of severe thunderstorms in northwest North Carolina. The first storms were primarily hail producers, but in the evening, a line of storms started forming in Western NC. From this point on, the main threat became damaging straight-line winds. In addition, training of cells over the mountains lead to isolated flash flooding. The storms finally moved east of the Blue Ridge in the late evening, where a bow echo type squall line developed and raced across Stokes County producing a wide swath of wind damage.
Wagoner	7/6/2011	1.75	A weak trough over the east coast, combined with a boundary in our vicinity, provided a focus for scattered shower and thunderstorm development. Instability was moderate, but winds aloft were weak, and thus most storms remained under severe limits, however a few strengthened enough to produce strong winds. These storms did produce brief heavy rainfall, with a few areas experiencing mainly minor flash flooding. A stronger cold front pushed through on the 8th bringing a pattern change to the region.
Boonville	8/13/2011	0.75	A line of storms affected northern Stokes County in the late afternoon and produced some wind damage. Later in the evening more storms affected Yadkin County with strong winds and heavy rain. One slow-moving thunderstorm dropped 3 to 5 inches of rain in several hours mainly over southeastern Yadkin County. Some flash flooding was reported along Forbush Creek west of Enon.
Forbush	3/24/2012	0.88	A large upper level low over the central U.S. began shifting east on the 23rd bringing several rounds of heavy rainfall and numerous severe thunderstorms. Rainfall was estimated at 2 to 2.5 inches in several hours across portions of western Surry County causing the flash flooding.
Swanecreek	3/24/2012	1	A large upper level low over the central U.S. began shifting east on the 23rd bringing several rounds of heavy rainfall and numerous severe thunderstorms. Rainfall was estimated at 2 to 2.5 inches in several hours across portions of western Surry County causing the flash flooding.
Courtney	5/1/2012	1	An employee at Courtney Elementary School reported quarter size hail at the school.
East Bend	8/8/2012	1.25	The public observed half-dollar-sized hail on Lime Rock Road. Penny-sized hail was also observed by the public on Holly Springs Road between Linda Lane and Siloam Road. Hail of penny-sized fell in the area for up to 30 minutes.
Hamptonville	5/6/2013	1	One-inch hail was observed along Cranfill Road.
Wagoner	5/6/2013	1	One-inch hail was observed along Route 21.
Yadkinville	6/13/2013	1.5	A broad region of large hail fell in association with thunderstorms along a squall line. Quarter to ping pong ball size hail fell over a generous portion of Yadkinville, and some cars were damaged. Damage values are estimated.
Windsors Xrds	7/28/2013	0.88	Storms associated with a cold front erupted during the afternoon mainly over the piedmont. A few of the storms became severe with large hail and severe level winds.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	Size	Description
Lone Hickory	6/16/2014	1.25	Half dollar size hail fell on Bethel Church Road. The hail fell continuously for 10 minutes.
Flint Hill	6/19/2014	1	Quarter size hail fell on Hennings Road.
Buck Shoals	4/9/2015	0.75	Numerous showers and some storms developed within the interaction of a stationary front over the region and upper level disturbances moving along this boundary. A number of the storms produced hail less than an inch in diameter with an isolated report of one-inch diameter hail. Damaging winds were produced by one thunderstorm in Yadkin County.
Yadkinville	4/9/2015	0.88	Hail ranged from penny to nickel size.
East Bend	5/21/2016	1	A weak upper low tracked southeast out of the Ohio Valley into Virginia during the morning hours of May 21st, spurring numerous showers and storms across the foothills of Northwest North Carolina. One of these storms became severe, producing large hail.
Boonville	9/28/2016	1	A quasi-stationary frontal boundary continued to produce bands of deep convection early in the morning on September 28th, as a strong upper low continued to deepen in parts of the Ohio Valley. Widespread severe weather began to occur in the midafternoon hours, mainly in the form of large hail and isolated wind damage across mainly the northern piedmont counties of North Carolina, as the storms moved off of the Blue Ridge Plateau.
Branon	5/19/2017	1	Above normal temperatures and abundant moisture triggered afternoon thunderstorms across portions of North Carolina ahead of a cold front. These scattered thunderstorms pulsed up periodically, producing isolated large hail and wind damage, especially for those located along and East of the Blue Ridge Mountains.
Brooks	5/19/2017	1	Above normal temperatures and abundant moisture triggered afternoon thunderstorms across portions of North Carolina ahead of a cold front. These scattered thunderstorms pulsed up periodically, producing isolated large hail and wind damage, especially for those located along and East of the Blue Ridge Mountains.
Arlington	5/31/2019	1.75	Hail up to the size of golf balls fell on Raccoon Crossing Lane about three miles east of Arlington.
Boonville	5/31/2019	1	An approaching cold front combined with a hot and humid air mass triggered scattered severe thunderstorm across the North Carolina Piedmont. These storms produced hail up to the size of golf balls and damaging winds that blew down numerous trees and power lines. Some of the trees fell on to homes. The winds also blew the roof off a picnic shelter and threw it to the ground in Caswell County.

**TABLE H.6: HEAVY RAIN EVENTS (2000-2019)**

Location	Date	Description
<b>Caswell County</b>		
Estelle	7/21/2012	Emergency manager measured close to 6 inches of rain for this event which is fairly close to radar estimated amounts. The heaviest rains fell between Hamer and Semora. He confirmed that no flooding was observed despite the very heavy rainfall.
Semora	8/19/2018	The CoCoRaHS observer at Hyco (NC-CS-1) measured 3.00 inches in 24-hours ending at 730 AM local time.
Yanceyville	11/12/2018	The Yanceyville COOP station (YAVN7) measured 3.16 inches for the 24-hours ending at 700 AM local time on the 13th. This daily amount was the highest on record for November (old mark 2.34 inches on 11/12/2009). Records at this site began in late 1996.
<b>Davie County</b>		
Mocksville	8/12/2004	Heavy rainfall resulted in flooding of some low spots and poor drainage areas.
<b>Forsyth County</b>		
Dennis	6/2/2010	Two inches of rain was reported to have fallen within 30 minutes time.
<b>Rockingham County</b>		
Eden	7/24/2018	A CoCoRaHS station at Eden 2.3 ENE measured 3.84 inches for the 24-hours ending 7 AM on July 25th.
Eden	7/24/2018	Eden COOP (EDEN7) had 2.10 inches for the wettest July 25th on record with rainfall data back to 1950.
Eden	8/2/2018	Eden COOP station (EDEN7) measured 2.30 inches for the 24-hour period ending at 700 AM EDT on the 3rd. This was the highest ever for the date with continuous station data back to 1950.
Reidsville	8/2/2018	Reidsville 2 NW COOP station (RDVN7) measured 2.67 inches for the 24-hour period ending at 700 AM EDT on the 3rd. This was the highest ever for this date and the 8th highest August daily rainfall amount, with data back to 1962.
Eden	10/11/2018	The COOP observer at Eden (EDEN7) measured 6.08 inches for the 24-hour period ending 700 AM local time, October 12. This was the 2nd highest 24-hour all-time rainfall at this station, behind the 7.92 inches on August 31, 1996. Nearly complete records date back to 1950 at this station. This value falls into the 90 percent confidence interval (5.73-6.68 inches) for a 25-year average recurrence interval (.04 annual exceedance probability) per NOAA Atlas 2. Most of the rain actually fell in a much shorter time period, between 3 and 6 hours.
Reidsville	10/11/2018	The COOP observer at Reidsville 2 NW (RDVN7) measured 4.65 inches for the 24-hour period ending 700 AM local time, October 12. This was the highest 24-hour rainfall in the month of October at this station, ahead of October 9, 1975 at 4.10 inches and the 5th highest all-time daily rainfall. Nearly complete records date back to 1962 at this station. Most of the rain actually fell in a much shorter time period, between 3 and 6 hours.
Eden	11/12/2018	The COOP observer at Eden (EDEN7) reported 2.30 inches for the 24-hours ending at 700 AM local time on the 13th. This was a record for the date, November 13th (old record 1.16 inches in 1992) and 5th highest in the month of November. Precipitation records at this site date back to 1950.
Reidsville	11/12/2018	The Reidsville 2 NW COOP station (RDVN7) reported 2.56 inches for the 24-hours ending at 700 AM local time on the 13th. This daily amount was a record for November 13th (the previous record was 1.58 inches in 2004) and the 3rd highest in the month of November (monthly record is 3.00 inches on November 12, 2009). Records at this site date back to 1962.
<b>Stokes County</b>		
King	5/18/2018	The COOP observer at King (KIGN7) recorded 2.70 inches for the 24-hour period ending 700 AM EST on the 19th. This is the highest daily May rainfall at this station, with data back to 1999. The previous May record was 2.17 inches set May 9, 2012.
<b>Surry County</b>		
Toast	2/10/2018	The COOP observer at Mt. Airy had a 24-hour total of 2.67 inches for the 24-hour period ending at 7 AM on the 11th. This was the 2nd highest daily rainfall total during the month of February at this location since records began in 1893.

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Elkin	5/18/2018	The COOP observer at Elkin (EKNN7) recorded 3.00 inches for the 24-hour period ending 700 AM EST on the 19th. This is the 4th highest daily May rainfall at this station, with continuous data back to 1934.
Mt Airy	5/18/2018	The COOP observer at Mt. Airy 2W (MTAN7) recorded 3.50 inches for the 24-hour period ending 700 AM EST on the 19th. This is the highest daily May rainfall at this long-term station, with data back to 1893. The previous May record was 3.02 inches set May 15, 2012.
Elkin	10/10/2018	The COOP observer at Elkin (EKNN7) measured 5.50 inches for the 48-hour period ending 700 AM local time, October 12. This was the 3rd highest 48-hour rainfall in the month of October at this station. Rainfall was 2.20 inches ending at 700 AM on the 11th and 3.30 inches ending at 700 AM on the 12th. Nearly complete records date back to 1913 at this station.
Elkin	12/28/2018	The COOP station at Elkin (EKNN7) reported 1.95 inches for the 24-hours ending at 700 AM local time, which was the second highest on record for December 29th. The record is 2.31 inches in 1915. Continuous climate records at this station exist since 1913.
Elkin	6/17/2019	Elkin COOP (EKNN7) had 1.90 for the 24-hours ending at 700 AM EDT on the 18th, which was a record for the date. The old record was 1.35 inches set in 1972. Nearly continuous rainfall records have been kept at this site since 1913.
Mt Airy	6/17/2019	Mt. Airy 2 W COOP (MTAN7) had 1.69 inches for the 24-hours ending at 700 AM EDT, which was a record for the date. The old record was 1.48 inches set in 1945. This one of the longest continuous running climate stations in the region with data back to 1893.
Mt Airy	6/17/2019	Mt. Airy 4.3W CoCoRaHS had 2.74 of rain in the 24 hours ending 700 AM EDT on the 18th.
<b>Yadkin County</b>		
Yadkinville	6/16/2014	A total of 1.33 inches fell in 35 minutes.
Yadkinville	8/1/2018	CoCoRaHS observer measured 5.10 inches for 24-hours ending at 7 AM EDT. This is roughly a 10-year event (0.1 annual exceedance probability).
Yadkinville	8/1/2018	The Yadkinville 6 E COOP station (YKNN7) measured 2.93 for the 24-hours ending at 700 AM EDT on August 1st, the highest recorded on this date at this site since records began there in 1940 (with a break in data from 1952-1957).
Yadkinville	10/11/2018	The COOP observer at Yadkinville 6 E (YKNN7) measured 4.11 inches for the 24-hour period ending 700 AM local time, October 12. This was the 2nd highest 24-hour rainfall in the month of October at this station, behind October 11, 1990 at 4.50 inches and the 11th highest all-time daily rainfall. Nearly complete records date back to 1940 at this station. Most of the rain actually fell in a much shorter time period, between 3 and 6 hours.



**TABLE H.7: HEAVY SNOW EVENTS (2000-2019)**

Date	Description
<b>Caswell County</b>	
1/2/2002	Snow developed during the evening of the 2nd and accumulated 5 to 8 inches before ending midday on the 3rd.
1/25/2004	A winter storm dumped 4 to 8 inches of snow across the northwestern North Carolina mountains, foothills, and piedmont during the day of the 25th. Some of the higher amounts fell in southern sections of the piedmont counties.
2/15/2004	An upper level disturbance moved across North Carolina during the 15th, exiting the east coast early in the morning of the 16th. This system brought several hours of moderate to heavy snow to parts of northwest North Carolina. Basically 4 to 7 inches fell across the northwest piedmont, with 4 to 6 inches falling across Watauga County in the mountains.
2/26/2004	During the 26th, an upper level low pressure system moved from the Gulf Coast States east into South Carolina. This helped develop a surface low along the coast. This low spread Atlantic moisture into a cold air mass, and produced a couple of bands of heavy snow. One band brought 4 to as much as 10 inches to the northwest foothills and mountains of North Carolina during the afternoon and evening of the 26th. The highest totals fell in a swath from Boone in Watauga County east to East Bend, in Yadkin County. Another band of snow developed late in the evening on the 26th and brought heavy snow to the northwest piedmont of North Carolina, which lasted into the early morning of the 27th. 5 to 9 inches of snow fell in this area, with the highest totals occurring across southern Caswell County.
3/1/2009	Snow and mixed precipitation up to 5 inches in parts of the county caused travel difficulties in some areas.
12/18/2009	Snowfall ranged from 5 to 6 inches across the county, with the highest totals in the northwest. Travel remained very difficult throughout the storm.
1/29/2010	Snowfall amounts across the county totaled 12.0 inches at Yanceyville and 8.0 inches at Camp Springs.
12/25/2010	Snow amounts from across the county ranged from 4.5 inches at Camp Springs to 5.7 inches at Yanceyville. Damage values are estimated.
3/12/2018	Snowfall amounts across the county include 2.0 inches three miles east-southeast of Blanch, 3.5 inches three miles northwest of Prospect Hill, 4.0 inches one mile south-southwest of Semora, 4.6 inches one mile east-northeast of Topnot, 4.8 inches four miles east-southeast of Quick, and 5.5 inches two miles north-northeast of Camp Springs.
<b>Davie County</b>	
1/18/2000	Low pressure moved east across Tennessee and weakened as it ran into a surface high pressure ridge along the East Coast. Nevertheless, enough moisture was available to cause heavy snow to fall from Avery county, east across the northern foothills and northwest piedmont. Precipitation began as light rain in the mid-evening hours on the 17th, but quickly turned to snow as the atmosphere cooled to below freezing. Snowfall ranged between 3 and 6 inches across the area by noon on the 18th, with a narrow band of 1 to 3-inch accumulation of snow and sleet to the immediate south.
1/20/2000	A cold front crossed the mountains overnight, and low pressure formed along the front in the foothills by morning. Cold air was already in place across the region, so precipitation fell in the form of snow. By noon on the 20th, 3 to 6 inches of snow had fallen from Madison to Avery counties. Elsewhere across the central mountains, northern foothills and northwest piedmont, 1 to 3 inches of snow fell. There were isolated reports of 4 inches from the highest peaks in Swain and Haywood counties. The combination of snow and wind in the wake of the front caused some trees to fall, especially in Caldwell county. One tree fell across a mobile home and caused \$24K in damage. Several other trees fell across roads.
1/22/2000	A cold dome of arctic high pressure centered over the Mid-Atlantic States provided very cold and dry air to western North Carolina. Meanwhile, weak low pressure moved east along a frontal boundary stalled across the Gulf Coast States to the Georgia coast. Abundant moisture flowed north into the sub-freezing air over western North Carolina, resulting in light snow as early as the afternoon on the 22nd. Snow became heavy by mid-afternoon across the mountains and by evening across the foothills and piedmont. A general 4 to 7-inch snowfall occurred in the mountains with as much as 10 inches reported in Jackson county. Generally, 4 to 6 inches of snow fell across the foothills and piedmont, with a local maximum of 7 inches in western Lincoln county. Rowan county failed to meet heavy snow criteria with accumulations of up to 3 inches. Freezing rain and sleet mixed with the snow for a short time before the precipitation ended, and for the most part, caused little additional problems. The one exception

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	was across southern Union county where freezing rain lasted all night and through much of the morning on the 23rd. Ice accumulations reached damaging levels there around 3 am, causing a large number of trees and power lines to fall throughout the morning. This in turn, resulted in widespread power outages.
1/24/2000	Low pressure rapidly deepened near the Carolina coast, wrapping abundant moisture back across the piedmont of the Carolinas. Snow fell all day and into the night, heavy at times south and east of Interstate 85. By the time snow ended, accumulations ranged from a trace to 4 inches to the immediate north and west of Interstate 85, to 4 to 8 inches from eastern Rowan county to Charlotte and Gastonia, and 10 to 14 inches across southeastern Mecklenburg county and all of Union county. Utility damage in Union county alone was above \$4 million, with damage in Monroe at more than \$1 million. This storm followed no more than 36 hours after the area received several inches of snow and ice from a previous storm over the weekend.
11/19/2000	Light to moderate snow started in the mountains and spread southeast, lasting through the day. Generally, 1 to 3 inches of snow fell, but some higher elevations of the central and southern mountains reported more than 4 inches.
12/19/2000	The latest in a sprightly succession of Arctic cold fronts crossed the region on the 18th and 19th. Abundant low-level moisture and an upper level disturbance riding over the new surge of cold air provided the ingredients for the latest round of snow. The heaviest snow accumulations, in general, were north and west of Asheville, especially near the Tennessee border. The northern half of Mitchell County recorded 5 to 6 inches of new snow...as did the higher-terrain Highlands/Cashiers area of southern Jackson and Transylvania counties in the southern mountains. Buncombe, Transylvania and Macon counties each reported numerous 4-inch accumulations, with most other mountain locations reporting between 1 and 3 inches. Foothill locations, especially those closest to the mountains, racked up some impressive totals as well, with Marion and Morganton each reporting 2 to 3 inches. Farther east, in the northwest piedmont, accumulations were limited to less than 2 inches. More than 200 traffic accidents were reported from the region due to the wintry weather.
1/3/2002	Flurries and light snow began in the early evening and became moderate to heavy by late evening on the 2nd. Heavy snowfall accumulations were reached across this portion of the foothills and piedmont overnight on the 3rd, with 4 to 6 inches observed by noon.
12/4/2002	Snow began during the early afternoon across the North Carolina foothills and northwest piedmont, and had accumulated to 3 to 5 inches by late evening. A transition to sleet and then freezing rain occurred during the late evening, and ice accumulated to between 1/4 and 1/2 inch. The result was widespread power outages, which lasted for a week or more in some areas.
1/23/2003	Snow began at around midnight across the mountains of North Carolina, and intensified as it spread into the foothills and the western piedmont. The hardest hit area was the foothills, where 8 to 12 inches of snow had fallen by mid-morning. Otherwise, snow accumulations were generally in the 3 to 6-inch range.
1/25/2004	Light snow developed early in the morning across the mountains, foothills, and northern piedmont of North Carolina. The snow intensified throughout the morning and afternoon, and by early evening 3 to 5 inches had accumulated across much of the area. Accumulations as high as 8 inches occurred in mountainous areas along the Tennessee border.
2/26/2004	Heavy snow developed during the late afternoon of the 26th across portions of the northern foothills and northwest piedmont, and continued through the early morning hours of the 27th. Total snow accumulation of 3-5 inches occurred. However, isolated thunderstorms contributed to locally heavier amounts as high as a foot, particularly in the Mocksville area.
3/1/2009	Rain changed to snow during the early evening across portions of the foothills and the western Piedmont of North Carolina. Snow became heavy at times throughout the evening, and up to 4 inches had accumulated across the area by 10 pm. Snow, heavy at times and accompanied by occasional lightning, continued into the late evening and early overnight hours. By the time the snow tapered off, accumulations of 3-6 inches were common across the area. However, localized amounts of up to 9 inches were reported, especially along a corridor extending from Shelby to Hickory. The heavy wet snow caused quite a few trees and power lines to fall, resulting in numerous power outages. Some structures received minor to moderate roof damage due to the weight of the snow. Some customers were without power for several days. A tree fell on the library in Belmont, NC, causing damage to the roof. Numerous traffic accidents also occurred.
1/29/2010	Low pressure tracked across southern Georgia during the night of the 29th, and then off the southeast coast on the 30th. Snow became heavy at times during the late evening, resulting in quick accumulation of snow. The snow

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	gradually changed over to sleet overnight, before ending as freezing rain. Where precipitation fell mainly as snow, generally along and north of I-40, snow accumulation of 6-8 inches occurred. More sleet fell south near the I-85 corridor, with accumulations of 2 to 4 inches of sleet and snow being common. Light ice accumulation also occurred near the I-85 corridor. A 45-year-old man died in a single-vehicle accident near Cleveland in Rowan County (indirect).    Also, nighttime refreezing of snow and ice resulted in several days of high traffic accident incidents. Another traffic fatality occurred near Cleveland on the morning of February 2, when a 26-year-old man died after hitting a patch of ice and colliding with another vehicle.
12/25/2010	A developing coastal storm system brought light to moderate snow to the foothills and northwest piedmont of North Carolina starting late on Christmas morning. By mid-afternoon, most locations enjoyed a rare white Christmas, with 1 to 4 inches of snow reported. Snow, heavy at times, continued until around midnight. Snow was mixed with rain at times over the southern foothills and northwest piedmont. By the time snow tapered off to flurries and light snow showers early on the 26th, snowfall totals ranged from 5 to 9 inches across the northern foothills, with 4 to 7 inches over the southern foothills and northwest piedmont.
1/6/2017	As an area of surface low pressure moved northeast along the Gulf and Southeast coasts, moisture overspread western North Carolina throughout the 6th. While precipitation initially fell as rain and sleet across the foothills and Piedmont, it changed to snow fairly quickly. The snow was light at first, and even ended briefly before beginning again late in the evening. Snow, heavy at times continued across the area through the overnight. By the time the heavier snowfall rates tapered off shortly after sunrise, total accumulations ranged from 3 to 5 inches in the valleys of the far southwest mountains, to 6 to 8 inches across the remainder of the area. Locally higher amounts of 9 inches or more were reported, mainly in the high elevations, and in the far northern foothills and Piedmont.
1/17/2018	As a strengthening upper level disturbance and associated cold front approached the region from the Tennessee Valley, light precipitation developed across portions of the Piedmont and foothills of North Carolina during the early morning hours. While the precipitation started as rain or a rain/snow mix in most areas, a transition to snow had occurred in most locations by sunrise. As the snow band moved east throughout the morning, snowfall rates increased, with heavy snowfall accumulations reported by early afternoon. By the time the snow tapered off to flurries, total accumulation ranged from 3 to 6 inches across much of the area.
12/8/2018	Snow developed across northwest North Carolina around midnight the morning of the 9th, and began accumulating quickly. Moderate to heavy snow continued through the morning of the 9th before tapering off during the early afternoon. Storm total accumulations were generally in the 10 to 15-inch range, with slightly lower amounts south of I-40, and locally higher amounts across the mountains, particularly the high peaks along the Blue Ridge, where more than two feet fell. Travel was paralyzed across this area for a couple of days.
<b>Forsyth County</b>	
11/19/2000	An early season snowfall affected portions of central North Carolina on Sunday, November 19. It was the second earliest date that snow has been measured at Raleigh-Durham Airport and at the Piedmont Triad Airport. Rain began to fall in the late morning hours, then changed to a mixture of rain, sleet, and snow before ending in the evening. The snowfall was heavy at times in some locations, and up to three inches was recorded. Most locations in central North Carolina received around 2 inches of snow on grassy surfaces. The snow and ice created hazardous driving conditions, leading to numerous accidents.
<b>Rockingham County</b>	
1/18/2000	Snow developed during the early morning of the 18th and accumulated 5 to 10 inches, with isolated 12-inch amounts reported, before ending around mid-morning.
1/2/2002	Snow developed during the evening of the 2nd and accumulated 5 to 8 inches before ending midday on the 3rd.
1/25/2004	A winter storm dumped 4 to 8 inches of snow across the northwestern North Carolina mountains, foothills, and piedmont during the day of the 25th. Some of the higher amounts fell in southern sections of the piedmont counties.
2/15/2004	An upper level disturbance moved across North Carolina during the 15th, exiting the east coast early in the morning of the 16th. This system brought several hours of moderate to heavy snow to parts of northwest North Carolina. Basically 4 to 7 inches fell across the northwest piedmont, with 4 to 6 inches falling across Watauga County in the mountains.
2/26/2004	During the 26th, an upper level low pressure system moved from the Gulf Coast States east into South Carolina. This helped develop a surface low along the coast. This low spread Atlantic moisture into a cold air mass, and produced a couple of bands of heavy snow. One band brought 4 to as much as 10 inches to the northwest foothills

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	and mountains of North Carolina during the afternoon and evening of the 26th. The highest totals fell in a swath from Boone in Watauga County east to East Bend, in Yadkin County. Another band of snow developed late in the evening on the 26th and brought heavy snow to the northwest piedmont of North Carolina, which lasted into the early morning of the 27th. 5 to 9 inches of snow fell in this area, with the highest totals occurring across southern Caswell County.
3/1/2009	Snow and mixed precipitation up to 6 inches in parts of the county caused travel difficulties in some areas.
12/18/2009	Snowfall ranged from 5 to 7 inches across the county. Difficult winter travel conditions prevailed throughout the storm.
1/29/2010	Snowfall amounts across the county totaled 8.5 inches at Reidsville, 7.0 inches at Mayodan, 6.0 inches at Wentworth, and 5.5 inches at Eden.
3/2/2010	Four to Five inches of snow fell across Rockingham County.
12/25/2010	Storm totals from across the county ranged from 4.0 inches at Mayodan to 6.2 inches at Reidsville. Damage values are estimated.
1/17/2013	Storm total snowfall amounts across Rockingham County ranged from 5.5 inches at Wentworth to a half inch at Eden. Reidsville observed 3.5 inches of snow.
12/8/2017	Snowfall totals ranged from around four inches near Monroeton to around seven inches near Ruffin.
3/12/2018	Snowfall amounts from across the county include 3.0 inches two miles west-southwest of Eden, 3.4 inches at Madison, 3.5 inches at Ruffin, 4.0 inches two miles west-southwest of Bethany, four miles south of Eden, and three miles south-southwest of Lawsonville, and 5.7 inches three miles north-northwest of Reidsville.
<b>Stokes County</b>	
1/18/2000	Snow developed during the early morning of the 18th and accumulated 5 to 10 inches, with isolated 12-inch amounts reported, before ending around mid-morning.
1/2/2002	Snow developed during the evening of the 2nd and accumulated 5 to 8 inches before ending midday on the 3rd.
1/25/2004	A winter storm dumped 4 to 8 inches of snow across the northwestern North Carolina mountains, foothills, and piedmont during the day of the 25th. Some of the higher amounts fell in southern sections of the piedmont counties.
2/15/2004	
3/1/2009	Snow and mixed precipitation up to 6 inches in parts of the county caused travel difficulties in some areas.
12/18/2009	Snowfall ranged from 6 to 8 inches across the county, with the highest totals in the northwest. Travel remained very difficult throughout the storm.
1/29/2010	Snowfall amounts across the county totaled 8.0 inches at King and Pine Hall.
12/25/2010	Snow amounts from across the county ranged from 3.7 inches at Walnut Cove to 6.0 inches at King. Damage values are estimated.
2/12/2014	Snowfall totals ranged from around 6 inches across the southeast part of the county to close to around 14 inches across the northwest part of the county.
12/8/2017	Snowfall totals ranged from around five inches near Danbury to around eight inches near King.
<b>Surry County</b>	
1/18/2000	Snow developed during the early morning of the 18th and accumulated 5 to 10 inches, with isolated 12-inch amounts reported, before ending around mid-morning.
1/19/2000	Snow developed in the evening of the 19th and accumulated 5 to 6 inches, with up to 10 inches in the higher elevations, before ending during the morning of the 20th.
1/22/2003	Snow late during the night of the 22nd through early in the morning of the 23rd accumulated 5 to 9 inches in the North Carolina northern mountains, with 4 to 6 inches in Wilkes, Surry, and Stokes counties.
2/6/2003	Snow during the afternoon of the 6th through the morning of the 7th accumulated 4 to 7 inches.
1/25/2004	A winter storm dumped 4 to 8 inches of snow across the northwestern North Carolina mountains, foothills, and piedmont during the day of the 25th. Some of the higher amounts fell in southern sections of the piedmont counties.
2/28/2005	A winter storm moved across the southeastern U.S., then up the east coast during the 27th and 28th of February. Heavy snow fell across the foothills and mountains of northwest North Carolina during the evening of the 27th and through the 28th. Snowfall amounts ranged from 3 to 6 inches in the foothills, and 7 to 12 inches across the mountains.

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3/1/2009	Snow and mixed precipitation up to 5 inches in parts of the county caused power outages to over 1100 customers and travel problems across the county.
12/18/2009	Snowfall ranged from just under 8 inches in the far east to 14 inches in the far northwest. Winter impacts were widespread across the county.
1/29/2010	Snowfall amounts across the county totaled 10.0 inches at Elkin, 8.0 inches at Dobson, and 7.0 inches at Mount Airy.
3/2/2010	Four to six inches of snow fell across Surry County.
12/25/2010	Snow amounts across the county ranged from 5.0 inches at Mount Airy to 7.0 inches near Dobson. Damage values are estimated.
2/12/2014	Snowfall totals ranged from around 12 inches across the southeast part of the county to around 21 inches across the northeast part. Much of the I-77 corridor received 16 to 18 inches of snow.
12/8/2017	Snowfall totals ranged from around five inches near Pine Ridge to around seven inches near Siloam.
<b>Yadkin County</b>	
1/18/2000	Snow developed during the early morning of the 18th and accumulated 5 to 10 inches, with isolated 12-inch amounts reported, before ending around mid-morning.
1/2/2002	Snow developed during the evening of the 2nd and accumulated 5 to 8 inches before ending midday on the 3rd.
1/22/2003	Snow late during the night of the 22nd through early in the morning of the 23rd accumulated 5 to 9 inches in the North Carolina northern mountains, with 4 to 6 inches in Wilkes, Surry, and Stokes counties.
2/6/2003	Snow during the afternoon of the 6th through the morning of the 7th accumulated 4 to 7 inches.
1/25/2004	A winter storm dumped 4 to 8 inches of snow across the northwestern North Carolina mountains, foothills, and piedmont during the day of the 25th. Some of the higher amounts fell in southern sections of the piedmont counties.
2/26/2004	During the 26th, an upper level low pressure system moved from the Gulf Coast States east into South Carolina. This helped develop a surface low along the coast. This low spread Atlantic moisture into a cold air mass, and produced a couple of bands of heavy snow. One band brought 4 to as much as 10 inches to the northwest foothills and mountains of North Carolina during the afternoon and evening of the 26th. The highest totals fell in a swath from Boone in Watauga County east to East Bend, in Yadkin County. Another band of snow developed late in the evening on the 26th and brought heavy snow to the northwest piedmont of North Carolina, which lasted into the early morning of the 27th. 5 to 9 inches of snow fell in this area, with the highest totals occurring across southern Caswell County.
3/1/2009	Snow and mixed precipitation up to about 6 inches in parts of the county caused travel difficulties.
12/18/2009	Snowfall ranged from 8 to 12 inches across the county, with the highest in the west and lowest in the east. Travel conditions were extremely difficult throughout the storm.
1/29/2010	Snowfall totals across the county ranged from 8.0 inches at Jonesville and 7.0 inches at Yadkinville.
12/25/2010	Snow amounts across the county ranged from 3.0 inches at Huntsville to 9.0 inches at Jonesville. Damage values are estimated.
2/12/2014	Snowfall amounts ranged from 12 inches across the eastern part of the county to around 19 inches in the west, along the I-77 corridor.
12/8/2017	Snowfall amounts ranged from around four inches near Courtney to around five inches at both Yadkinville and Boonville.

**TABLE H.8: HIGH WIND EVENTS (2000-2019)**

Date	MPH	Description
<b>Caswell County</b>		
2/22/2003	60	High winds during the evening of the 22nd through the 23rd downed numerous trees and power lines. Boone in Watauga County measured a wind gust of 77 miles an hour. A tree fell onto two cars near Boone, otherwise no reports of damage to private property were received.
3/7/2004	65	High winds downed trees and power lines across Caswell county.
4/16/2007	52	Trees were down countywide, with the greatest number in the southeast.
2/10/2008	52	A few trees were downed throughout the county.
12/9/2009	50	A roof was torn off a small building by the strong winds.
2/10/2010	50	Strong northwest winds on the backside of a deepening coastal low brought down numerous trees and power lines across the county. It was approximated that around 25 trees came down due to the winds.
3/12/2014	55	Numerous trees and power lines were down throughout the county.
3/2/2018	52	Numerous trees and power lines were blown down around the county. One tree fell on a home in Yanceyville. Damage values are estimated.
<b>Davie County</b>		
2/4/2002	50	High winds, mostly in the form of gusts rather than sustained winds, blew down a number of trees and some power lines during the afternoon and early evening. A number of brush fires were reported around the Charlotte metro area. Some trees blocked roads and some fell on structures. In Statesville, a limb fell on a power line, which in turn caused a house fire. In Cleveland, a sign was blown out of a fast food restaurant. In Rowan, a roof was blown off of an abandoned mobile home.
3/7/2004	65	As the cold front moved into the piedmont, wind damage continued and became more severe. Numerous trees and power lines were blown down, while roofs were torn off of some buildings. Some outbuildings and barns were damaged or destroyed. In Mecklenburg County, an 81-year-old man was killed in Huntersville, when a tree fell across the deck on which he was standing.
4/16/2007	60	After an intense, but relatively brief high wind event affected the mountains and foothills on the evening of the 15th, another widespread damaging high wind event developed during the day of the 16th. However, this particular event included much of the piedmont. Thousands of trees fell across the area, resulting in widespread power outages. Numerous trees fell on roads, homes, and vehicles. The Blue Ridge mountains and the foothills received the brunt of the strongest winds.
2/10/2008	55	As the polar vortex dropped into New England, an unusually tight gradient developed over western North Carolina. This gradient, combined with daytime heating, helped to mix down areas of strong winds during the afternoon hours. Numerous trees were reported down across the foothills and western Piedmont, some across roads and on homes. The gusty winds combined with ongoing drought conditions to produce numerous brush fires across the area during the afternoon.
<b>Forsyth County</b>		
3/7/2004	50	High winds just behind a fast-moving cold front produced extensive damage across central North Carolina. In addition to trees and powerlines being blown down, numerous structures sustained damage. A small airplane was blown over at RDU airport, and a portion of Terminal A was damaged. Trailers were turned over and roofs were blown off many buildings. Measured wind gusts were as high as 74 mph. Over 50,000 power outages were reported.
2/10/2010	50	Numerous trees were blown down countywide blocking many roads and highways. Widespread power outages were caused by the falling trees along with some minor property damage to roofs and small buildings.
<b>Rockingham County</b>		
1/13/2000		High winds during the afternoon of the 13th downed large trees, tree limbs, and power lines.
12/12/2000		High winds during the morning of the 12th downed and uprooted trees across Rockingham County and knocked down trees in Boone in Watauga County.

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Date	MPH	Description
3/6/2001		In Reidsville in Rockingham County, trees were downed onto power lines resulting in power outages. One tree was downed onto a house, causing serious damage to the roof.
12/20/2002		High winds during the early morning of the 20th downed a tree onto a home in Eden.
2/22/2003	60	High winds during the evening of the 22nd through the 23rd downed numerous trees and power lines. Boone in Watauga County measured a wind gust of 77 miles an hour. A tree fell onto two cars near Boone, otherwise no reports of damage to private property were received.
3/7/2004	60	High winds not associated with thunderstorms downed trees and power lines across Rockingham county. Also, non-thunderstorm winds in Rockingham county damaged a greenhouse 2 southwest of Wentworth, two stores had roofs blown off in Madison, and Ace hardware suffered structural damage in Mayodan.
1/14/2006	50	A cold front passed across North Carolina in the early morning hours of the 14th. After sunrise, winds increased and very strong gusts during the day resulted in numerous reports of trees down, many power lines down, and power outages. In Blowing Rock, NC (Watauga Co.) the canopy over gas pumps at a convenience store blew over and was damaged.
4/16/2007	52	Large trees were blown down countywide, with a tree on a home in both Mayodan and Ruffin. At one point, 6000 electric customers were without power.
2/10/2008	52	Trees and power lines were downed throughout the county.
2/10/2010	50	Strong northwest winds on the backside of a deepening coastal low brought down trees across the county, and caused scattered power outages.
3/12/2014	55	Numerous trees and power lines were reported down around the county.
2/14/2015	50	The Rockingham County Emergency Management Director reported that two trees were down in Reidsville, one at Crescent and Cortland Roads and another at 1500 Cortland Road.
3/2/2018	52	Winds downed numerous trees and power lines across the county. Some roads were blocked. Damage values are estimated.
<b>Stokes County</b>		
2/22/2003	60	High winds during the evening of the 22 <sup>nd</sup> through the 23 <sup>rd</sup> downed numerous trees and power lines. Boone in Watauga County measured a wind gust of 77 miles an hour. A tree fell onto two cars near Boone, otherwise no reports of damage to private property were received.
3/7/2004	60	High winds not associated with thunderstorms downed trees and power lines across the region.
4/16/2007	52	Around 200 trees were blown down county wide. Powerlines also were either blown down or came down as a result of trees falling on them. At one point, 12,000 electric customers were without power.
2/10/2008	52	Trees and power lines were downed throughout the county.
2/10/2010	50	Strong northwest winds on the backside of a deepening coastal low brought down about 75 trees across the county, and caused scattered power outages.
10/29/2012	55	High winds brought seventeen trees down and four power lines across the county in the areas of Dillard, Mountain View, Dalton, Pinnacle, Volunteer, Vade Mecum, Mount Olive, Dan River Shores, Meadows, Francisco, Capella, Quaker Gap, Danbury, Prestonville, Hartman, Sandy Ridge, King, and Stokesburg. Damage values are estimated.
3/12/2014	55	Numerous trees and power lines were down throughout the county.
3/2/2018	52	Winds blew two dozen trees down, one of which came to rest upon a vehicle. Three power lines also came down during the event. Damage values are estimated.
2/24/2019	55	A few trees were blown down across the county, with a couple falling onto power lines.
<b>Surry County</b>		
3/20/2001		High winds In Surry County during the night of the 20th and the morning of the 21st downed trees and power lines. Several trees were downed onto cars.

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Date	MPH	Description
2/22/2003	60	High winds during the evening of the 22nd through the 23rd downed numerous trees and power lines. Boone in Watauga County measured a wind gust of 77 miles an hour. A tree fell onto two cars near Boone, otherwise no reports of damage to private property were received.
10/14/2003	55	High winds during the evening of the 14th downed trees in the northwest North Carolina foothills and mountains.
9/18/2004	50	High winds on the backside of the remnants of Hurricane Ivan brought down trees and powerlines across Surry County during the early morning of the 18th.
9/18/2004	55	Damaging gradient winds in the early morning hours of 18 Nov 2004 behind the exiting remnants of hurricane Ivan downed numerous trees and power lines.
4/3/2005	50	
1/14/2006	50	A cold front passed across North Carolina in the early morning hours of the 14th. After sunrise, winds increased and very strong gusts during the day resulted in numerous reports of trees down, many power lines down, and power outages.
3/2/2007	52	High winds downed several trees in Pilot Mountain.
4/16/2007	52	Trees were blown down countywide, and also some power lines were down. At one point, 12,000 electric customers were without power. In Elkin, a tree fell on a car, and winds blew a panel off a business, and the panel broke the taillight of a car.
2/10/2008	56	A roof was blown off a house in Low Gap.
5/12/2008	52	Several trees were blown down in the Mount Airy and Low Gap areas.
2/10/2010	50	Strong northwest winds on the backside of a deepening coastal low picked up and threw an aluminum garage into the street. A roof was also blown off a mobile home, and numerous trees and power lines were down across the county. There were also transformer explosions and electrical fires reported. A mobile home received heavy damage when a large tree fell on it, however all occupants escaped injury. In all, as many as 200 reports of downed trees were reported. Five fairly significant incidences of damage to structures, as well as many instances of trees falling on vehicles were reported.
2/26/2010	50	A tree was blown down on Park Drive near Mount Airy, on Possum Trout Valley Lane near Mountain Park, and on Pepper Gap near Cana.
12/27/2010	55	High winds down several trees in Mount Airy around 0430 EST with additional trees being blown down throughout the county until 1300 EST. Damage values are estimated.
2/25/2011	50	There were several trees and power lines blown down from high winds across the county and a few grass fires were started.
2/11/2012	55	High winds blew 14 trees down in the county. The greatest concentration of these was in the vicinity of Mount Airy and occurred around 11:00 PM EDT. Damage values are estimated.
10/29/2012	55	High winds blew an oak tree down in the immediate path of a motorist in the 1400 block of Prison Camp Road near New Hope. There was not time for the driver to react and stop, an accident occurred, and the driver died. The winds also brought down two trees across Cross Creek Drive near Salem. Damage values are estimated.
12/22/2012	50	The Surry County 911 Center reported that several trees were down throughout the Low Gap area. Later, an additional tree was down near the intersection of Old Westfield Road and Precinct Road in the Hills Grove area.
12/26/2012	55	The Surry County 911 Center reported that numerous trees and power lines were down throughout the county.
3/12/2014	55	Numerous trees and power lines were down throughout the county.
3/30/2014	50	Several trees were down due to high winds near Low Gap.
4/2/2016	55	Numerous trees were blown down across the county. Damage value are estimated.
3/2/2018	52	Damaging winds downed at least 200 trees and nearly 100 power lines across the county. Much of the county was left without power. Two homes and one outbuilding sustained damage from downed trees. Multiple grass fires erupted due to the downed power lines. Damage values are estimated.



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Date	MPH	Description
2/24/2019	55	Approximately a dozen trees were blown down across the county.
4/26/2019	50	Damaging winds across Surry County prompted 97 calls to emergency officials about downed trees, 36 calls about power outages, four calls about fires (presumably due to power lines arcing), one call of a tree fallen onto a house, one call of a tree fallen onto a car, and two reports of debris in a roadway. Damage values are estimated.
<b>Yadkin County</b>		
1/13/2000		High winds during the afternoon of the 13th downed large trees, tree limbs, and power lines.
2/22/2003	60	High winds during the evening of the 22nd through the 23rd downed numerous trees and power lines. Boone in Watauga County measured a wind gust of 77 miles an hour. A tree fell onto two cars near Boone, otherwise no reports of damage to private property were received.
3/7/2004	60	High winds downed trees and power lines across Yadkin county.
4/16/2007	52	Numerous trees and some power lines were blown down during the day with fewer during the evening hours. At one point, 500 electric customers were without power.
2/10/2008	52	Trees were downed throughout the county.
2/10/2010	50	Strong northwest winds on the backside of a deepening coastal low brought down trees and power lines across the county.
3/12/2014	55	Numerous trees and power lines were reported down around the county.
3/1/2018	52	Winds downed approximately 50 trees around the county, and there were numerous power outages. Damage values are estimated.
2/24/2019	55	Several trees were blown down, with a couple of those falling on power lines.

**TABLE H.9: ICE STORM EVENTS (2000-2019)**

Date	Description
<b>Caswell County</b>	
12/15/2005	An ice storm produced a 1/4 to 1/2-inch coating of ice across Northern North Carolina starting on the morning of the 15th in the west and continuing into the evening. Downed trees, limbs and power lines created power outages across much of the region. Emergency managers estimated that 12,000 people lost power during the storm. Surry county reported 300 trees downed across the county with 8,000 people losing power in the Dobson, Mount Airy and Westfield areas.
<b>Davie County</b>	
12/4/2002	Snow began during the early afternoon across the North Carolina foothills and northwest piedmont, and had accumulated to 3 to 5 inches by late evening. A transition to sleet and then freezing rain occurred during the late evening, and ice accumulated to between 1/4 and 1/2 inch. The result was widespread power outages, which lasted for a week or more in some areas.
2/27/2003	Freezing rain developed during the early morning hours across Davie County, and by sunrise, ice accumulations began to result in damage to trees and power lines. Total ice accumulations of one quarter to one half inch were observed by afternoon.
12/15/2005	Ice accretion began to cause damage in the northwest piedmont of North Carolina by late morning. Quite a few trees fell and power outages numbered in the tens of thousands. Several trees and large limbs fell on and damaged homes and vehicles. A 58 yr-old male was killed when a tree fell through the roof of his home south of Kannapolis. Total ice accumulation ranged from a half inch or more near and west of Interstate 77 to around an eighth of an inch further east toward the Triad. Fortunately, traffic problems were few, as the temperature hovered right around freezing through the event, causing only a few slick spots.
<b>Forsyth County</b>	
3/6/2014	One quarter of an inch of ice from freezing rain resulted in widespread downed trees and power-lines. Additionally, snowfall of 3 to 5 inches fell across northern portions of the county.
<b>Rockingham County</b>	
1/30/2005	A low-pressure system tracking along the east coast brought a wintry mix of precipitation to the region. Ice accretion was one quarter of an inch in most locations with a few isolated locations in Rockingham Co. receiving one third inch accretion. Snowfall was a secondary element with 3 to 4 inches being the norm. The exception was Ashe Co. where snowfall amounts ranged from 4 to 5 inches.
12/15/2005	An ice storm produced a 1/4 to 1/2-inch coating of ice across Northern North Carolina starting on the morning of the 15th in the west and continuing into the evening. Downed trees, limbs and power lines created power outages across much of the region. Emergency managers estimated that 12,000 people lost power during the storm. Surry county reported 300 trees downed across the county with 8,000 people losing power in the Dobson, Mount Airy and Westfield areas.
<b>Stokes County</b>	
1/30/2005	A low-pressure system tracking along the east coast brought a wintry mix of precipitation to the region. Ice accretion was one quarter of an inch in most locations with a few isolated locations in Rockingham Co. receiving one third inch accretion. Snowfall was a secondary element with 3 to 4 inches being the norm. The exception was Ashe Co. where snowfall amounts ranged from 4 to 5 inches.
12/15/2005	An ice storm produced a 1/4 to 1/2-inch coating of ice across Northern North Carolina starting on the morning of the 15th in the west and continuing into the evening. Downed trees, limbs and power lines created power outages across much of the region. Emergency managers estimated that 12,000 people lost power during the storm. Surry county reported 300 trees downed across the county with 8,000 people losing power in the Dobson, Mount Airy and Westfield areas.
<b>Surry County</b>	
12/15/2005	An ice storm produced a 1/4 to 1/2-inch coating of ice across Northern North Carolina starting on the morning of the 15th in the west and continuing into the evening. Downed trees, limbs and power lines created power outages across much of the region. Emergency managers estimated that 12,000 people lost power during the storm. Surry county reported 300 trees downed across the county with 8,000 people losing power in the Dobson, Mount Airy and Westfield areas.

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1/21/2007	There was 0.25-inch ice reported near Low Gap on trees and grassy surfaces.
12/25/2009	One-quarter inch of ice was on trees with some limbs brought down.
2/26/2013	A total of one-quarter inch of ice developed on surfaces across primarily the portion of the county along and near the crest of the Blue Ridge, including the community of Low Gap.
12/8/2013	The North Carolina Department of Highways reported up to 1/4-inch ice accumulation in the Dobson area. Two trees were also down near Dobson.
<b>Yadkin County</b>	
1/30/2005	A low-pressure system tracking along the east coast brought a wintry mix of precipitation to the region. Ice accretion was one quarter of an inch in most locations with a few isolated locations in Rockingham Co. receiving one third inch accretion. Snowfall was a secondary element with 3 to 4 inches being the norm. The exception was Ashe Co. where snowfall amounts ranged from 4 to 5 inches.
12/15/2005	An ice storm produced a 1/4 to 1/2-inch coating of ice across Northern North Carolina starting on the morning of the 15th in the west and continuing into the evening. Downed trees, limbs and power lines created power outages across much of the region. Emergency managers estimated that 12,000 people lost power during the storm. Surry county reported 300 trees downed across the county with 8,000 people losing power in the Dobson, Mount Airy and Westfield areas.

**TABLE H.10: LIGHTNING EVENTS (2000-2019)**

Location	Date	Description
<b>Caswell County</b>		
Jericho	7/13/2010	Fire, caused by a lightning strike, caused the total loss of a building.
Camp Springs	6/27/2011	Lightning started a structure fire. Damage values are estimated.
Quick	6/10/2014	Lightning struck and damaged portions of a house along Highway 150 about 0.7 miles east of the intersection with Turner Road. Damage values are estimated.
Pelham	6/20/2014	Lightning struck a house and damaged multiple electronic device. Damage values are estimated.
<b>Davie County</b>		
Mocksville	8/11/2001	One person was struck by lightning. No other details known.
Advance	7/20/2019	Spotter reported a house fire due to a lightning strike.
<b>Forsyth County</b>		
Lewisville	4/30/2003	Lightning struck a house, starting a fire.
Kernersville	6/11/2007	A two-story home in the Tredegar subdivision sustained heavy damage when it was hit by lightning and caught on fire. The entire second floor was damaged.
Kernersville	6/10/2009	Lightning caused an apartment fire last night when it struck an air conditioning unit in the attic of McConnell Apartments. The fire was confined to the attic.
<b>Rockingham County</b>		
Wentworth	6/2/2006	A lightning strike on Friday afternoon derailed the Rockingham County 911 Center and caused \$500,000 worth of damage. The strike damaged phones, computers, switchboards and other circuits.
Stoneville	6/19/2014	Lightning struck a bradford pear tree and took it down. Damage values are estimated.
<b>Stokes County</b>		
Sandy Ridge	4/17/2002	Thunderstorms during the afternoon and evening of the 17th produced hail up to nickel size and dangerous lightning. Hail in Roaring Gap accumulated up to 6 inches. Lightning struck a tree 1 miles southeast of Sandy Ridge. The lightning then jumped from the tree to an outhouse where a man was standing, striking him. He was taken to the hospital.
King	7/13/2015	A tree was brought down by a lightning strike in King, NC. Damage values are estimated.
Walnut Cove	4/8/2019	A lightning strike caused a structural fire on Martin Luther King Jr. Road near Walnut Cove. Damage values are estimated.
<b>Surry County</b>		
Mt Airy	6/24/2001	A twelve-year-old boy was struck and injured by lightning at a ball field 2 miles northwest of Mount Airy. The boy was in the hospital for two weeks before being released.
Pilot Mtn	4/22/2006	A cold front moved through the region during the morning hours on the 22nd. Some of the storms associated with the front reached severe limits producing wind gusts around 70 mph. These damaging winds downed several trees in both Stokes and Rockingham Counties. In Surry County, lightning from another storm brought down a tree onto a home, causing extensive damage to the sunroom portion of the house.
Ararat	6/11/2006	Lightning caused three fires in Surry county on the morning of the 11th. The first fire was a utility building. The owner lost his tractor as well as other equipment and a four-wheeler. The second fire was a two-story old white farm house. A 40 to 50-foot oak tree which was hit by lightning during the morning, sparked during the morning and became fully involved by afternoon.
White Plains	6/11/2006	Lightning caused three fires in Surry county on the morning of the 11th. The first fire was a utility building. The owner lost his tractor as well as other equipment and a four-wheeler. The second fire was a two-story old white farm house. A 40 to 50-foot oak tree which was hit by lightning during the morning, sparked during the morning and became fully involved by afternoon.
Pine Ridge	9/8/2008	Lightning struck a house causing damage to the electrical equipment.
Ararat	8/20/2009	An Ararat female volunteer firefighter was helping fight a house fire when a bolt of lightning struck her helmet Thursday night. She was transported to a nearby hospital but had only minor injuries.

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White Plains	8/20/2009	One male firefighter was part of a water shuttle operation at a house fire in an area with no hydrants. As the firefighter worked near a pond he was struck. He didn't suffer any long-term effects from the strike.
Mt Airy	5/16/2010	A lightning strike downed a power line. Damage values are estimated.
Mt Airy	7/19/2011	Lightning struck the Mount Airy Museum of Regional History. The strike damaged the alarm system and internet system, as well as the elevator.
Bottom	4/29/2014	WXII Channel 12 Television of Winston-Salem, North Carolina reported that lightning struck and set on fire the detached carport of a home on Haystack Road in rural north central Surry county. A vehicle inside the carport was also damaged. There were no injuries or fatalities to report with the incident. However, it took nearly two hours to contain the fire.
Pilot Mtn	6/1/2019	One lightning strike struck the roof of a church at 9:53 pm EDT, causing it to catch fire. Soon afterward, a second lightning strike hit the same church, knocking the steeple off the roof.
<b>Yadkin County</b>		
Shacktown	4/9/2015	Lightning struck three homes in the Forbush area near the Forsyth County line. The lightning was conducted through the electrical wiring of the homes with one of the homes catching fire. Damage values are estimated.
Boonville	8/8/2018	Lightning struck a power transformer in Boonville.

**TABLE H.11: SLEET EVENTS (2000-2019)**

Date	Description
2/22/2001	Cold, dry air plunged south over western North Carolina following the passage of a cold front the day before. Moisture return began almost immediately thereafter, ahead of an advancing storm system from the Gulf Coast region, and as an upper level disturbance approached the area, precipitation became widespread. Air was cold enough in the mountains to support mostly snow, while in the foothills and piedmont, the dry air in the lower levels of the atmosphere created ideal conditions for a sleet/snow mixture. In the mountains, thundersnow occurred. Snow accumulations ranged from 4 to 6 inches in a narrow swath from Newland to Bakersville, to Mount Mitchell, and southward to the high elevation foothill towns of Little Switzerland and Jonas Ridge. Elsewhere, accumulations ranged from 1 to 3 inches of snow and sleet, although as mentioned previously, snow was the predominant precipitation type across the higher terrain, with numerous traffic accidents reported. In the lower elevation foothill and piedmont, sleet was predominant, although most locations that received any wintry precipitation at all reported a sleet/snow mixture. Salisbury, Hickory and Mocksville each reported around an inch of sleet, and numerous icy roads, in addition to a light blanket of snow. This made for a horrific morning rush hour, with numerous accidents and school closures. The wintry precipitation tapered off from the west during the day.
2/16/2003	A light freezing rain developed over the piedmont and foothills of North Carolina during the early morning hours. By mid-morning, the precipitation began to intensify, and a transition to sleet occurred. The sleet accumulated rapidly to a depth of 1 inch in most locations, while periods of afternoon, evening, and overnight sleet increased total accumulations to around 2 inches in most areas. Numerous traffic accidents and road closures resulted.
1/25/2004	During the early afternoon, snow began to mix with sleet across the foothills and northern piedmont, before becoming all sleet later in the evening. In the southern piedmont, precipitation fell almost exclusively as sleet. Total sleet accumulations were generally between 1 and 2 inches across the area. A light freezing rain developed during the evening, which resulted in a thin glaze of ice on top of the layer of sleet. Very slick roads were responsible for hundreds of traffic accidents, some of which involved injuries and fatalities. Numerous injuries also occurred due to falls.

**TABLE H.12: TORNADO EVENTS (2000-2019)**

Location	Date	Scale	Description
<b>Caswell County</b>			
Jericho	3/4/2008	EF0	An EF-0 tornado touched down in Alamance county North Carolina, moving north into southern Caswell county. Winds were estimated to be between 70 and 75 mph. This tornado was on the ground sporadically for one half mile crossing Vinson Road south of Anderson before lifting. This tornado caused damage to a barn near Vinson Road and downed several trees. It downed a large tree on a home along Vinson Road, blew a detached garage off its foundation and downed several large trees before lifting about one mile south of Anderson.
Anderson	4/16/2011	EF1	The tornado crossed the Caswell County line from Alamance County as an EF0 tornado. It then strengthened to an EF1 with winds up to 90 MPH as it crossed Vinson Road. It lifted as an EF0 as it crossed Highway 119 near Baynes. In total, 18 barns and 1 shed were damaged. Ten homes were also damaged, 7 of which received severe damage.
Pelham	4/15/2018	EF1	A tornado touched down in Caswell County west of Pelham near Dusty Lane at 4:51 PM EST. It snapped numerous trees and damaged several outbuildings. By 4:53 PM EST, the tornado exited Caswell County and continued northward into Pittsylvania County of Virginia. It would later cross through the independent city of Danville and back into Pittsylvania County before lifting about two miles southwest of Dry Fork by 5:10 PM EST.
<b>Davie County</b>			
Farmington	5/27/2003	F0	This weak tornado blew down a number of pine trees and mangled the tops of a few large oak trees near the end of its path. The tornado also destroyed a tin-covered barn and blew 1/4 of the shingles off of a house before lifting.
Mocksville	3/4/2008	EF0	NWS survey found a small tornado path in the Cornatzer community just east of Mocksville. A mobile home and surrounding outbuildings were damaged and there were several trees blown down in the area.
Advance	5/8/2008	EF2	NWS survey found a tornado track that began just north of the Advance community and tracked for one mile before moving into extreme southwest Forsyth County. A frame house was heavily damaged by the tornado.
Cooleemee	4/16/2011	EF0	What was likely the continuation of the path of tornado damage that began in Rowan County north of Salisbury was found along Point Rd in extreme southeast Davie County. Numerous trees were blown down in this area.
Cana	5/24/2017	EF0	NWS storm survey found the path of a strong tornado that touched down just south of the intersection of highways 601 and 801. Damage was initially limited to downed trees. However, the tornado intensified as it moved north/northeast, especially from Four Corners Rd to the Yadkin County line. A mobile home was flipped and completely destroyed in this area. An occupant was thrown approximately 30 feet, but survived. Another home had much of its roof blown off and a storage building also destroyed in this area. Numerous trees were also blown down. The tornado crossed into Yadkin County near Chinquapin Creek. The tornado was the strongest in Davie County since 2008, and was only the second official significant tornado (E/F2 or stronger) in the county's history.
<b>Forsyth County</b>			
Lewisville	7/7/2005	F0	A weak tornado touched down near Lewisville, blowing several trees onto homes there and in Pfafftown as well. The tornado touched down repeatedly as it traveled northeast, finally lifting at Rural Hall. Mostly tree damage was reported along the path, at Highway 52 and Westinghouse Road, Boiling Springs Road, Ridge Road, and along NC Highway 67.
Clemmons	9/14/2007	EF0	A weak brief tornado touched down damaging several homes along Peace Haven Street. The tornado ripped the siding off several homes and also knocked down several trees.
Clemmons	5/8/2008	EF2	An EF-2 tornado tracked northeast out of Davie County and crossed the Yadkin River into Forsyth County. After crossing the Yadkin River, the tornado touched down near the Old Clemmons Water Treatment Plant along Idols Dam Road. The tornado tracked northeast

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Location	Date	Scale	Description
			through a heavily wooded area for just over one quarter of a mile and then lifted off the ground. The parent supercell thunderstorm went on to produce another tornado approximately one-mile northeast of the first tornado's ending point. This second tornado went on to produce significant damage to the Clemmons community in Forsyth County.
Clemmons	5/8/2008	EF3	This tornado originated from the same parent supercell that produced the tornado in Davie County which lifted in Forsyth County just across the Yadkin River. This second tornado touched down just southwest of Hampton Road. Three metal barns sustained major damage around the 4800 block of Hampton Road with minor damage to two homes. The tornado continued northeast through wooded farmland before hitting the Bridgepoint Subdivision where the tornado strengthened to EF-3 intensity. Three homes were destroyed and approximately thirty homes sustained moderate damage. There were only two minor injuries in the subdivision. The tornado continued to track to the northeast across Frye Bridge Road and through a heavily wooded area. It then dissipated near the intersection of Cooper Road and Fraternity Church Road. A few homes suffered damage, primarily due to fallen trees. Hardwood tree damage in the area was consistent with EF-2 intensity as tree trunks were snapped in a 200 to 300-yard path. The overall path length of the tornado was around 3 miles with a maximum width of 300 yards.
<b>Rockingham County</b>			
Mayfield	8/12/2004	F1	A line of thunderstorms produced primarily straight-line wind damage as it progressed through Rockingham then Caswell Cos. Numerous trees were downed, homes and outbuildings were damaged, and three mobile homes were destroyed. At a separation in this line, an F1 tornado east of Mayfield was produced. This tornado descended through a yard downing and topping several trees and destroyed the roof, walls, and carport of a house. Very heavy rainfall from this line of storms prompted flooding in mainly western parts of the county. Water covered roads at the intersection of Route 220 and Route 65 due to ditches overflowing. A spotter in Stoneville measured 3.8 inches during the event.
Ellisboro	9/17/2004	F1	A severe thunderstorm produced a weak tornado during the morning of the 17th. The Rockingham County tornado originated in Guilford County (see Storm Data for North Carolina, Central), and crossed into Rockingham County at 1012 EST, just east of Ellisboro Road. The tornado then crossed Ellisboro Road and caused damage to several structures. The hardest hit of these was a doublewide trailer home that was completely destroyed. The tornado zigzagged several times as it moved north to its termination point 0.5 miles east of Madison at 1025 EST. Path width varied from 25 to 50 yards.
Mayodan	5/3/2009	EF0	An EF-0 tornado was intermittently on the ground 1.3 miles  from near Manuel road, east to near the intersection of Brewer road and Ledbetter road. Several trees were snapped or uprooted and three structures were damaged.
Eden	5/5/2017	EF0	A thunderstorm produced an EF1 Tornado on the east side of Eden. The tornado was on the ground for approximately six minutes producing damage to trees, at least 25 residential structures, and a minimum of nine commercial structures. The tornado lifted just shy of the North Carolina and Virginia state boundary. Estimated wind speeds peaked around 110 miles per hour.
Benaja	4/15/2018	EF1	A tornado touched down southeast of Greensboro in Guilford County shortly after 4:00 PM EST. This tornado later entered Rockingham County about one mile southeast of Haw River near Chrismon Road at 4:25 PM EST. The tornado damaged numerous buildings, outbuildings, and barns. At least twenty homes and farms suffered damage, while one house and two mobile homes were completely destroyed. The Oak Haven Event Center in downtown Ruffin also sustained damage. Countless trees were snapped or uprooted. Estimated maximum wind speeds were 110 MPH. Seven people were injured, including a father and a seven-year-old son who were critically injured in their moving car when it struck a double-wide mobile home that was lifted on to the 1300 block of Grooms Road.



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Location	Date	Scale	Description
			The tornado finally lifted at 4:46 PM EST about four miles north-northeast of Ruffin between Dibrell Road and Bradley Road.
<b>Stokes County</b>			
Dillard	7/19/2003	F1	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Quaker Gap	10/26/2010	EF1	The tornado touched down on Mountain View Church Road. It then tracked northeast increasing in strength and reaching its maximum strength and width at Flat Shoals Road. As the tornado continued to move northeast it dissipated as it passed Sizemore Road. The tornado produced a wide swath of tree damage, with the tops of many pine trees snapped off. There was some minor structural damage as well, with the roofs of a few barns blown off and thrown a couple hundred feet. A car port also collapsed crushing a car. Damage amounts are estimated.
King	10/27/2010	EF1	The tornado touched down near Kennsington Avenue and then tracked northeast to Spainhour Road. In all 62 homes were damaged. Most of the damage was in the Forest Oaks, Forest Hills, Forest Glen, Arlington, and Chelsea Ridge neighborhoods. Several large oak trees were uprooted, roofs were partially torn off, and a few garage doors were blown in. Near Spainhour Road a large wooden shed was flipped onto its roof, and several trees were snapped off at their base. Damage amounts are estimated.
King	9/21/2013	EF1	A tornado touched down just south of Newsome Road, crossed Highway 52 and lifted near Campbell Drive. Along the storm's path, the sun room on a home was destroyed. One barn was destroyed and one outbuilding was destroyed. Several trees were snapped and uprooted.
King	5/24/2017	EF2	A thunderstorm dropped a tornado that impacted portions of western Stokes County. This tornado, which produced a continuous path length of 16.1 miles, touched down just north of the Forsyth and Stokes County Line causing large tree limbs to snap and numerous trees to become uprooted along and near Spainhour Mill Road. The tornado continued to the northeast, producing damage as it crossed US-52, Old Highway 52, and other minor roadways. The tornado reached its maximum strength and width as it impacted areas near and within YMCA Camp Hanes at the base of Sauratown Mountain, where numerous outbuildings, mobile homes, and cabins were damaged. The tornado at this point reached a maximum path width of just under 0.5 miles with a maximum wind speed estimate of 125 MPH. The tornado continued to the northeast for several more miles before coming to an end just north of Highway 89 and just south of North Stokes High School.
<b>Surry County</b>			
Low Gap	7/26/2010	EF0	An EF0 tornado touched down just north of the intersection of Susan Lane and Highway 89. The tornado tracked south, lifting just north of the Raven Knob Boy Scout Camp. The track was 1.8 miles long and at reach a width of 100 yards. Winds were estimated to be 80 MPH. The tornado downed numerous trees, and caused minor damage to two structures.
Ararat	4/5/2011	EF1	Around 35 to 40 homes were damaged along with numerous large trees down by a tornado with winds estimated up to 100 MPH. The damage included: huge trees down on homes and barns, roofs lifted off and shingles blown off of houses and barns, carports collapsed on vehicles, and the windows blown out at Longhill Community Building.
<b>Yadkin County</b>			

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Location	Date	Scale	Description
Lone Hickory	7/7/2005	F1	The remnants of Tropical Storm Cindy spawned some tornadoes. The tornadoes in Yadkin County NC caused numerous trees, some large oaks, to be felled or snapped off. Structural damage included roofs of some buildings being damaged or completely blown off and an outbuilding being blown off its foundation.
Yadkinville	7/7/2005	F1	The remnants of Tropical Storm Cindy spawned some tornadoes. The tornadoes in Yadkin County NC caused numerous trees, some large oaks, to be felled or snapped off. Structural damage included roofs of some buildings being damaged or completely blown off and an outbuilding being blown off its foundation.
Yadkinville	7/7/2005	F1	The remnants of Tropical Storm Cindy spawned some tornadoes. The tornadoes in Yadkin County NC caused numerous trees, some large oaks, to be felled or snapped off. Structural damage included roofs of some buildings being damaged or completely blown off and an outbuilding being blown off its foundation.
Courtney	5/24/2017	EF2	A thunderstorm dropped a tornado near the intersection of Highways 601 and 801 in Davie County (see Storm Data for North Carolina, Northwest, Northcentral, for more information on the beginning portion of this Tornado). It then progressed north and east into Yadkin County where it produced a continuous path of 4.1 miles where it produced an injury just southwest of Baity Road when a tree limb was blown into a mobile home that was occupied at the time. The tornado continued to move northeast at around 40 mph for the next 4.1 miles, lifting and dissipating just northeast of Watkins Road. Approximately 45 homes and other buildings were at least partially damaged along the tornado path. The tornado reached peak intensity and produced EF2 level damage, associated with winds of approximately 125 mph, as it moved over Courtney-Huntsville Road causing extensive damage to the local elementary school gymnasium.

**TABLE H.13: THUNDERSTORM WIND EVENTS (2000-2019)**

Location	Date	MPH	Description
<b>Caswell County</b>			
Yanceyville	3/11/2000		Thunderstorm winds during the evening of the 11th picked up a tractor shed and tore the roof off of a barn in Yanceyville.
Countywide	8/9/2000		Thunderstorms during the late evening of the 9th and early morning of the 10th produced damaging winds. Thunderstorm winds downed trees across Rockingham, Stokes, Caswell, and Surry Counties. In all locations there were numerous reports of other minor property damage.
Yanceyville	8/27/2000		Thunderstorms during the afternoon and evening of the 27th produced damaging winds. Thunderstorm winds downed trees 2 miles south of Yanceyville, 5 miles east of Reidsville, in Danbury, and in Shoal.
Yanceyville	6/1/2002		Thunderstorms during the afternoon of the 1st produced damaging winds and hail up to tennis ball size. Thunderstorm winds downed trees 7 miles west of Yanceyville, Walnut Cove, 7 miles north of Jefferson, and downed trees and power lines in Mayodan.
Milton	5/25/2003	65	Thunderstorms during the evening hours on the 25th produced hail up to half dollar size and damaging winds. Thunderstorm winds knocked down large trees in Milton.
Hamer	6/8/2003	65	Thunderstorms during the 8th produced flash flooding and damaging winds, Heavy thunderstorm rains caused a partial washout of State Route 1514 near Aho and U.S. Route 321 at Aho Road. Heavy rains also flooded Dry Creek in Draper with water 6 inches deep running across the road. 5 miles east of Eden a creek flooded across Wolf Island Road. Thunderstorm winds downed trees in Millers Creek, Roaring River, 10 miles northeast of Wilkesboro, western Yadkin County, Ayersville, 5 miles northwest of Wentworth, across Route 62 in Hamer, and also tore the roof off of a tobacco barn in Hamer.
Allison	7/9/2003	60	Thunderstorms during the afternoon of the 9th produced hail up to nickel size and damaging winds. Thunderstorm winds downed trees in Allison and 11 miles west of Yanceyville.
Yanceyville	7/9/2003	60	Thunderstorms during the afternoon of the 9th produced hail up to nickel size and damaging winds. Thunderstorm winds downed trees in Allison and 11 miles west of Yanceyville.
Yanceyville	7/13/2003	60	Thunderstorms on the evening of the 13th produced damaging winds. Thunderstorm winds downed trees 2 miles north of Yanceyville.
Pelham	8/12/2004	80	A line of thunderstorms produced primarily straight-line wind damage as it progressed through Rockingham then Caswell Cos. Numerous trees were downed, homes and outbuildings were damaged, and three mobile homes were destroyed. At a separation in this line, an F1 tornado east of Mayfield was produced. This tornado descended through a yard downing and topping several trees and destroyed the roof, walls, and carport of a house. Very heavy rainfall from this line of storms prompted flooding in mainly western parts of the county. Water covered roads at the intersection of Route 220 and Route 65 due to ditches overflowing. A spotter in Stoneville measured 3.8 inches during the event.
Prospect Hill	11/29/2005	61	
Camp Springs	4/3/2006	60	Severe thunderstorms formed in the unstable air in advance of an approaching cold front on the afternoon of the 3rd. Hail up to the size of golf balls was reported, and damaging wind gusts downed a couple of trees.
Jericho	6/23/2006	57	
Yanceyville	7/13/2006	55	In advance of an approaching cold front, thunderstorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
			ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100-year-old, 50-foot-tall, with a 3 foot diameter trunk oak tree and a 40 foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
Yanceyville	7/19/2006	55	Thunderstorms began developing during the afternoon hours of the 19th due primarily to daytime heating in an already unstable atmosphere. Some of these increased to severe levels, producing damaging wind gusts. As evening arrived, severe storms continued to be a treat thanks to the approach and then arrival of a dying meso-scale convective complex that moved out of the Ohio Valley and into our region. Again, damaging wind gusts, and large hail resulted from these severe storms.
Prospect Hill	7/20/2006	50	Scattered showers developed during the afternoon with a couple of them becoming severe. Wind gusts of 60 to 70 mph from two of the storms downed a few trees.
Yanceyville	7/28/2006	60	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Hamer	9/28/2006	55	Tree down near Longs Mill Road.
Pelham	7/16/2007	50	Thunderstorm winds downed some trees. Damage values are estimated.
Milton	10/24/2007	55	Thunderstorm winds blew two trees down across a road. Damage values are estimates.
Baynes	3/4/2008	61	A roof was blown off a residence on Baynes Road due to straight line winds. One minor injury occurred as a roof collapsed.
Milton	4/12/2008	60	Thunderstorm winds blew a tree down on Mountain Hill Road.
Pelham	4/12/2008	60	Thunderstorm winds blew down trees onto houses. Damage costs are estimates.
Milton	5/20/2008	55	One tree blown down in Milton.
Park Spring	7/8/2008	55	Two trees were blown down. Damage values are estimated.
Pelham	7/9/2008	55	Trees were blown down on Chandlers Mill Road. Damage values are estimated.
Pelham	7/9/2008	55	Trees were blown down on Old Highway 29. Damage values are estimated.
Pelham	7/9/2008	55	Trees were blown down on Old U.S. Highway 29. Damage values are estimated.
Yanceyville	7/22/2008	50	A large tree was blown down. Damage values are estimated.
Leasburg	7/23/2008	50	A tree was blown down at the intersection of Highways 158 and 119. Damage values are estimated.
Fitch	7/31/2008	50	A tree was blown down onto Badgett Sisters Parkway. Damage values are estimated.
Jericho	7/31/2008	55	Trees were blown down onto Highway 62. Damage values are estimated.
Osmond	7/31/2008	50	A tree was blown down along Stephentown Road. Damage values are estimated.
Providence	7/31/2008	55	Two trees were blown over onto power lines near the intersection of Park Springs Road and Highway 86.
Purley	7/31/2008	50	A tree was blown down along Purley Church Road. Damage values are estimated.
Yanceyville	8/2/2008	55	Trees were blown down along Highway 62 South.
Camp Springs	8/10/2008	55	Trees were blown down across Parkdale Road.
Osmond	5/28/2009	55	One tree was blown down along Soloman Lea Road.
Camp Springs	6/3/2009	50	One tree was blown down by thunderstorm winds on Shaw Rd.
Camp Springs	6/3/2009	50	One tree was blown down on Pinnix Rd.

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Location	Date	MPH	Description
Providence	6/9/2009	50	Thunderstorm winds knocked a tree down on a road.
Yanceyville	6/9/2009	50	Thunderstorm winds blew down a tree on a road.
Yanceyville	6/9/2009	50	Thunderstorm winds toppled a tree on a road.
Hamer	7/12/2009	50	Thunderstorm winds blew down a tree at the intersection of Highway 62 and Longs Mill Road. Damage values are estimated.
Estelle	8/5/2009	50	A tree was blown down along Longs Mill Road.
Camp Springs	9/28/2009	50	Four trees were brought down by high winds on David Moore Road near the county line.
Quick	3/28/2010	55	Thunderstorm winds blew down two trees on Quick Road.
Camp Springs	4/8/2010	50	A tree was blown down and blocked a road.
Milesville	6/23/2010	50	Thunderstorm winds caused a large tree limb to fall on to power line on Stadler Road. Damage amounts are estimated.
Yanceyville	7/8/2010	50	A tree was blown down just outside of Yanceyville.
Anderson	7/20/2010	50	One tree was blown down on Kerrs Chapel Road.
Fitch	7/20/2010	50	One tree was blown down by thunderstorm winds on Burton Chapel Road.
Park Spring	7/20/2010	50	One tree was blown down by thunderstorm winds on Park Springs Road.
Topnot	7/20/2010	50	One tree was blown down on Wilbur Webster Road.
Pelham	8/5/2010	50	A tree fell on a car near Pelham.
Quick	8/5/2010	50	Several large trees were down in Ruffin and damaged some house gutters.
Yanceyville	8/5/2010	50	A tree was down on Court Square.
Yanceyville Arpt	8/5/2010	50	A tree was blown onto a trailer on Hodges Dairy Road.
Yarbro	8/5/2010	50	Trees were brought down on Gaddy Road.
Jericho	10/27/2010	70	A thunderstorm microburst with estimated winds up to 80 MPH occurred along Oakview Loop and Fitch Road. The path was about 2 miles long with a width up to 200 yards. Numerous sheds, outbuildings, and barns were damaged by the winds. Numerous large trees and limbs were also downed, with some trees completely uprooted. Damage amounts are estimated.
Leasburg	10/27/2010	50	Trees were blown down on Ridgeville Road by thunderstorm winds.
Providence	10/27/2010	70	A microburst with winds estimated up to 80 MPH caused damage along Compton and Bertha Wilson Roads. Numerous large trees and limbs were downed with extensive damage to several outbuildings. Two residences also sustained minor roof damage from the winds. Damage amounts are estimated.
Baynes	3/23/2011	55	Thunderstorm winds blew a tree down at the intersection of Gun Poole Road and Highway 119. Damage values are estimated.
Prospect Hill	3/23/2011	50	Thunderstorm winds blew a tree down on Dave Smith Road.
Quick	4/5/2011	63	Numerous trees were blown down across the area. Several of them were on Badgett Sisters Parkway, one on Oak View Loop Road and another one on Boy Scout Camp Road. A roof was also blown off a house on Marshall Graves Road. The RAWS site at Caswell Gamelands measured a wind gust to 72 MPH.
Providence	4/16/2011	50	At least two trees were blown down as a line of severe thunderstorms moved through.
Ashland	4/28/2011	50	A three-foot diameter tree and a telephone pole were blown down by thunderstorm winds.
Park Spring	5/24/2011	50	Numerous large tree limbs were reported down.

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Location	Date	MPH	Description
Estelle	6/21/2011	55	Thunderstorm winds blew trees down along Highway 62. Damage values are estimated.
Milesville	6/21/2011	55	Thunderstorm winds blew trees down on Cherry Grove Road. Damage values are estimated.
Park Spring	6/21/2011	55	Thunderstorm winds blew trees down on Allison Road. Damage values are estimated.
Corbett	6/27/2011	50	Thunderstorm winds downed a tree along Corbett Ridge Road. Damage values are estimated.
Topnot	6/27/2011	50	Thunderstorm winds blew down two trees along Burton Chapel Road. Damage values are estimated.
Pelham	7/19/2011	50	A tree was blown down by thunderstorm winds near the intersection of Old Highway 29 and Holland Road.
Bethel	7/23/2011	50	Thunderstorm winds blew down a tree on Henderson Road.
Pelham	7/23/2011	50	Thunderstorm winds blew down a tree on Old Highway 29.
Fitch	7/24/2011	50	Thunderstorm winds knocked down several trees in the area. One on Burton Chapel Road, one on Route 62, and another limb on Griers Church Road.
Gatewood	2/24/2012	50	Thunderstorm winds blew a roof off a shed, and downed trees near Providence. Damage values are estimated.
Gatewood	6/22/2012	50	Thunderstorm winds blew a tree down on Shady Grove Road. Damage values are estimated.
Pelham	6/29/2012	60	Thunderstorm wind down around 100 trees across the county along with many power lines down due to falling trees. In Yanceyville, trees fell on two vehicles. Damage values are estimated.
Camp Springs	7/2/2012	50	A tree was reported down on Apple Road.
Fitch	7/9/2012	50	A tree was reported down off Route 62.
Topnot	7/9/2012	50	A tree was blown down by thunderstorm winds off route 86.
Fitch	7/21/2012	50	County sheriff's office reported five trees blown down near the intersection of Highway 62 and Burton Chapel Road.
Jericho	7/21/2012	50	The sheriff's office reported a tree blown down along Highway 62 near the community of Jericho.
Leasburg	9/2/2012	50	One tree was blown down by thunderstorm winds on Highway 119.
Semora	9/2/2012	50	One tree and several large tree limbs were blown down on Snatchburg Road.
Yanceyville	9/2/2012	50	One tree was blown down by thunderstorm winds on Foster Road.
Pelham	4/12/2013	50	The Caswell County 911 Center reported that a tree was blown down along Highway 700 just northwest of Pelham or about five miles southwest of Danville, Virginia, and another tree was blown down across Highway 86 North. A truck that was traveling across the highway at the time struck the fallen tree.
Camp Springs	4/19/2013	50	The Caswell County 911 Center reported that a few trees were down around Cherry Grove or just east of Camp Springs.
Providence	4/19/2013	50	The Caswell County 911 Center reported that a few trees were down on Country Home Road just southeast of Providence and a few more trees were down on Blanch Road just east of Providence.
Quick	4/19/2013	50	A trained storm spotter reported that several large trees were down at the intersection of North Carolina Highways 150 and 158 and two more large trees were down approximately five miles west-southwest of Yanceyville.
Providence	6/13/2013	60	Damaging thunderstorm winds associated with a squall line downed hundreds of trees across the county with the extreme northern and extreme southern parts impacted the greatest. Highway 29 and Highway 86 were blocked by downed trees at

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Location	Date	MPH	Description
			many locations, stranding motorists in their vehicles. A roof and porch were blown off a home near Prospect Hill. Damage values are estimated.
Covington	6/28/2013	50	Thunderstorms winds downed trees from near Providence to near Yanceyville. Power lines were brought down by the trees along Blanch Road. Damage values are estimated.
Prospect Hill	7/21/2013	50	Thunderstorm winds blew a tree down on Bama Road.
Semora	7/21/2013	50	One tree was blown down on Murphy Road by thunderstorm winds.
Leasburg	8/1/2013	50	The Caswell County 911 Center reported that a tree was down on Roxboro Lake Road.
Prospect Hill	8/1/2013	50	The Caswell County 911 Center reported that a tree was down on Painter Road.
Prospect Hill	8/1/2013	50	The North Carolina Department of Highways reported that a tree was down on Wren Road.
Leasburg	8/12/2013	50	The public reported that one tree was blown down by thunderstorm winds near the intersection of U.S. Route 158 and North Carolina Route 119 just west of Leasburg.
Yanceyville	8/12/2013	50	The Caswell County 911 Center reported that a tree was blown down by thunderstorm winds along U.S. Highway 158 West.
Frogsboro	5/10/2014	50	One tree was blown down onto a power line by thunderstorm winds.
Semora	5/10/2014	50	One tree was blown down onto a power line by thunderstorm winds.
Allison	6/20/2014	55	Thunderstorm winds blew three trees down in the Allison Road vicinity of Quick. Damage values are estimated.
Quick	6/20/2014	55	Thunderstorm winds blew down between 10 and 15 trees in the vicinity of Quick. Most of the trees were blown down near the intersection of Allison Road and Highway 158. The remainder of the trees were along Highway 158 towards Casville. Damage values are estimated.
Hightowers	7/3/2014	50	Trees were reported down at the intersection of Route 119 and Highway 86 and also a few trees were down along Highway 150.
Milesville	7/9/2014	50	One tree was blown down by thunderstorm winds on Cherry Grove Road.
Semora	7/9/2014	50	Thunderstorm winds blew down one tree at the intersection of Route 57 and Hamlett Road.
Park Spring	10/10/2014	55	Thunderstorm winds blew three trees down, one in the 4200 block of Foster Road, two more down on Farmer Road. Damage values are estimated.
Milton	6/17/2015	55	Several trees were blown down across the community of Milton.
Topnot	6/20/2015	56	Six roughly 100-year-old oak trees were uprooted by thunderstorm winds.
Ashland	6/27/2015	50	A tree was blown down on N.C. Highway 150.
Quick	6/27/2015	50	Multiple tree limbs that were 4 inches in diameter or larger were blown down along Route 158 near the intersection with Bethesda Church Road.
Anderson	6/30/2015	50	A tree was blown down along Highway 62.
Frogsboro	6/30/2015	50	A tree was blown down onto a power line at the Hyco Creek Bridge on Griers Church Road.
Gatewood	7/5/2015	60	Thunderstorm winds blew down multiple trees along Gatewood Road. Time estimated from radar.
Gatewood	7/5/2015	60	Thunderstorm winds downed multiple trees along Arch Cook Road. Damage values are estimated.
Fitch	7/13/2015	50	Thunderstorm winds blew a tree down on Burton-Chapel Road in the Mebane area. Damage values are estimated.
Milesville	7/13/2015	50	Thunderstorm winds blew a eighteen inch diameter limb down on a driveway. Damage values are estimated.

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Location	Date	MPH	Description
Quick	7/13/2015	50	A power line was blown down along U.S. 158 in the Casville area. Damage values are estimated.
Milesville	8/11/2015	50	The Caswell County 911 Center reported that a large tree was down on Stoney Creek Road approximately five miles northeast of Camp Springs.
Yanceyville	8/11/2015	50	A National Weather Service COOP observer reported that one tree and several large tree branches were down as a result of strong thunderstorm wind gusts.
Yanceyville	8/11/2015	50	A SkyWarn spotter reported that four pine trees were down approximately four miles southeast of Yanceyville.
Milesville	2/24/2016	50	Thunderstorm winds knocked over three or four trees in the Cherry Grove area.
Milton	2/24/2016	55	Thunderstorm winds knocked over several trees in the Milton area.
Hightowers	5/12/2016	50	Thunderstorm winds resulted in a downed powerline.
Jericho	6/4/2016	50	Thunderstorm wind knocked down a tree near the Brush Arbor Church.
Purley	6/4/2016	50	A tree was reported knocked down by thunderstorm winds.
Quick	6/4/2016	50	Thunderstorm winds brought down a power line.
Yanceyville Arpt	6/4/2016	50	Thunderstorm winds brought down a tree along Hwy 150 near Yanceyville.
Blanch	6/5/2016	50	Thunderstorm winds knocked down one tree in Blanch.
Osmond	6/5/2016	50	Thunderstorm winds knocked down one tree in onto Highway 119 northbound.
Yanceyville	6/5/2016	50	Thunderstorm winds knocked down one tree in Yanceyville.
Leasburg	6/23/2016	55	Thunderstorm winds brought down numerous trees along State Route 158 in far eastern Caswell County.
Topnot	6/23/2016	50	Thunderstorm winds caused a 12-15-inch-wide pine tree to come down east of Yanceyville.
Milesville	6/29/2016	60	Thunderstorm winds created a swath of damage in southeast Caswell County. Three structures were damaged, with doors blown out of one home and the foundation damaged to another. One older home had a roof torn off by the thunderstorm winds.  Multiple trees were blown down and tobacco and corn crops were destroyed. All of this damaging occurred mainly in the vicinity of Kerrs Chapel and Pagetown Roads.
Gatewood	7/3/2016	50	A large tree was blown down near the intersection of Shady Grove Road and Seamster Road.
Blanch	7/8/2016	55	Multiple trees and a power lines were blown down by thunderstorm winds across portions of northern Caswell County. Trees were reported down on Lawrence Road, the intersection of Blanch and Culver Roads, and Old Satterfield Road.
Osmond	7/8/2016	50	A tree was blown down by thunderstorm winds along Stephentown Road.
Purley	7/8/2016	50	A tree and a power line were blown down by thunderstorm winds just north of the community of Yanceyville.
Quick	7/8/2016	50	A tree was blown down by thunderstorm winds along Quick Road.
Milton	7/19/2016	50	Thunderstorm wind blew down a tree which took down a power line.
Semora	7/19/2016	50	A large tree was blown down by thunderstorm winds along Snatchburg Road.
Yanceyville Arpt	7/27/2016	50	Several trees were blown down by thunderstorm winds along Highway 158.
Fitch	8/17/2016	50	Thunderstorm winds blew down one tree on Burton Chapel Road near Highway 62. Damage values are estimated.
Topnot	8/17/2016	50	Thunderstorm winds blew one tree down near the intersection of NC Highway 158 and 86. Damage values are estimated.
Pelham	9/27/2016	55	Thunderstorm wind gusts resulted in three trees down along Nunnely Road.



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Location	Date	MPH	Description
Gatewood	5/1/2017	54	Thunderstorm winds downed eight trees on private property northeast of the community of Pelham.
Camp Springs	5/31/2017	50	Thunderstorm winds resulted in a downed tree near the intersection of Boone Road and Underwood Road.
Jericho	5/31/2017	55	Thunderstorm winds downed a few trees along Stoney Creek Mountain Road.
Blanch	7/5/2017	50	One tree was blown down along Mountain Hill Road and another along Park Spring Road.
Milton	7/5/2017	50	A tree was blown down along Culver Road near the intersection with Highway 62.
Camp Springs	5/21/2018	50	Thunderstorm winds toppled three trees at an orchard on Rice Road.
Branch	7/11/2018	50	Thunderstorm winds blew a tree and several wrist-size tree limbs down on Blanch Road in Blanch, NC. Damage values are estimated.
Pelham	7/11/2018	50	Thunderstorm winds blew trees down near Chandler Mill Road. Damage reports are estimated.
Quick	7/22/2018	50	Thunderstorm winds blew a tree down along the Route 158 at the Rockingham, Caswell county line. Damage values are estimated.
Milton	8/8/2018	50	Thunderstorm winds blew down one large tree limb south of Milton.
Yanceyville	8/8/2018	50	Thunderstorm winds blew down a tree and a power line on Lee Street in Yanceyville.
Blackwell	10/11/2018	60	Roughly 60 trees were blown down across the northern portion of Caswell County as very heavy rainfall associated with thunderstorms which developed in Tropical Storm Michael allowed strong winds aloft to mix down to the surface.
Allison	4/8/2019	50	Thunderstorm winds blew a tree down on a power line on Hodges Dairy Road. Damage values are estimated.
Covington	4/8/2019	55	Thunderstorm winds blew four trees down, each falling on a power line. These trees fell along Old Highway 86, Files Road, and High Rock School Road. Damage values are estimated.
Milesville	4/8/2019	50	Thunderstorm winds blew a tree down on a power line at the intersection of Cherry Grove Road and Marshall Graves Road. Damage values are estimated.
Yanceyville	5/31/2019	60	Thunderstorm winds snapped dozens of pine trees on the east side of Farmer Lake about two miles south-southwest of Yanceyville. The winds also blew off the roof of a picnic shelter and threw it to the ground at the Farmer Lake Marina.
Gatewood	6/20/2019	65	Hundreds of trees were either uprooted or snapped all across Caswell County when a line of severe thunderstorms passed across the county and produced widespread damaging winds. Among other locations, trees were reported blown down along Route 62 and along Powell Lane. The storm also caused numerous power and telecommunication outages due to downed power lines and telephone poles. Several structures received generally minor damage.
Bethel	8/22/2019	50	One tree was blown down by severe thunderstorm winds along Gentlemens Ridge Road.
Milesville	10/31/2019	50	Thunderstorm winds blew down two trees about three miles east of Camp Springs at 5:52 PM EST and another two trees about three miles north-northwest of Jericho at 5:54 PM EST.
Milton	10/31/2019	50	Thunderstorm winds blew down two trees near the town of Milton.
Semora	10/31/2019	50	Thunderstorm winds blew down two trees about one mile north of Semora.
<b>Davie County</b>			
Advance	3/11/2000	50	A line of strong to severe thunderstorms crossed the western piedmont during the late afternoon. Damage that resulted from straight-line winds was mostly in the form of downed trees and power lines. In addition, awnings were blown off buildings in China Grove, a utility pole was blown over in Davidson, and a tree fell on an unoccupied vehicle in Charlotte. Damaging winds cut a 4-mile path through the

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Location	Date	MPH	Description
			Salisbury vicinity removing a roof from an abandoned residence, blowing a detached garage off a mobile home, and downing many trees.
Countywide	5/20/2000	60	Severe thunderstorms rumbled across the northern foothills and northwest piedmont during the late afternoon. With the exception of one dime size hail report, severe weather was in the form of damaging straight-line winds. Winds were estimated to be as high as 70 mph near the Hickory Airport, Granite Falls and across Davie county. Large trees were blown down in Glenwood. Vinyl siding from a mobile home was seen blown across US Hwy 321, southeast of Granite Falls. Trees and power lines were downed in Bethlehem, north of Morganton, near Hickory, along Hwy 90 northwest of Stony Point, Turnersburg, and all over Davie county. Festival tents and a railroad crossing sign were blown down north of Hickory. Some urban flooding developed in the city of Morganton when a quick 2 inches of rain fell.
Mocksville	6/15/2000	65	A supercell thunderstorm moved through the northwest piedmont producing significant wind damage in a 3 to 4-mile-wide path. In and around Harmony thousands of trees were downed, barns were destroyed, and a roof was blown off a frame house. Debris was blown up to 500 yards in some cases. Golf ball size hail was also reported in Harmony. The damage track continued into western Davie county where numerous trees were blown down and roofs were blown off several structures, including a mobile home. Numerous trees and power lines were downed in eastern Catawba county as well. Later in the evening a severe thunderstorm in southeast Union county blew a tree onto a recreational vehicle at the Cane Creek Campground. Lightning ignited an attic fire in a house in Belmont.
Mocksville	8/8/2000	50	Isolated severe thunderstorms produced damaging straight-line winds which downed trees and power lines along Hwy 158 in Davie county and blew down large limbs on power lines in Pineville.
Mocksville	8/10/2000	50	Trees were blown down along Hwy 64.
Mocksville	8/18/2000	50	Trees were blown down in multiple locations.
Mocksville	8/11/2001	50	Several trees blown down along U.S. 64 east of town. This damage was due to the same thunderstorm complex that was also affecting Rowan County at the same time.
Mocksville	8/11/2001	50	Trees brought down along highway 601 near William R. Davie Fire Station.
Mocksville	5/7/2002	50	A few large tree limbs were blown onto powerlines.
Mocksville	5/10/2002	60	Some sheds and outbuildings were blown down. Numerous trees and powerlines were also blown down.
Mocksville	5/13/2002	55	Several trees and powerlines were blown down.
Cooleemee	5/2/2003	50	Trees were blown down.
Mocksville	5/2/2003	50	Trees were blown down.
Sheffield	6/8/2003	50	
Mocksville	7/16/2003	50	A tree was blown onto a house.
Mocksville	7/18/2003	55	Numerous trees were blown down.
Mocksville	7/22/2003	50	Trees were blown down along I-40.
Sheffield	11/19/2003	50	Some trees and power lines were blown down.
Sheffield	3/7/2004	65	As the cold front moved across the northern foothills and northwest piedmont, thunderstorms accompanying the front intensified somewhat, producing occasional wind gusts that enhanced the strong gradient winds. The interaction of the thunderstorm gusts and strong gradient winds resulted in some significant damage. Numerous barns and outbuildings were damaged or destroyed. Trees, power poles, and billboards were blown down. Power outages were widespread. In Salisbury, a

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
			section of the roof of a building was blown into a mobile home sales lot, causing damage to several units.
Farmington	5/26/2004	50	Trees and power lines were blown down.
Mocksville	7/10/2004	50	Several trees were blown down near Smith Grove.
Mocksville	10/24/2004	50	Spotter and county officials report trees blown down in the county.
Mocksville	11/24/2004	50	Trees blown down across the county.
Mocksville	7/5/2005	55	Five-mile-long, one quarter mile wide damage swath from near the highway 601 and 801 intersection to just west of Farmington. The damage path was intermittent, with mainly trees, large limbs, and power lines blown down. A house near the end of the damage path received some minor roof damage.
Mocksville	7/28/2005	50	Trees down.
Mocksville	4/3/2006	50	Trees blown down on Yadkinville Rd.
Countywide	4/17/2006	50	Trees down in Mocksville, Advance, and Cooleemee.
Advance	4/22/2006	50	Trees and power lines blown down.
Mocksville	4/22/2006	50	Trees and power lines blown down.
Mocksville	4/25/2006	50	Several trees down across highway 601 south of Mocksville.
Mocksville	7/22/2006	50	Numerous trees down along Harper Rd near I-40 and other trees down along Rainbow Rd and Redland Rd.
Farmington	9/28/2006	50	Quarter size hail and a few trees down in the Farmington area. Also, penny size hail in the Advance area around the same time.
Mocksville	4/15/2007	50	A few trees were blown down in and around the Mocksville area.
Mocksville	6/24/2007	50	A tree was blown down in the city and another was blown down along highway 801 south of town.
Mocksville	8/21/2007	50	A few trees blown down.
Mocksville	3/4/2008	55	Spotter measured a 63-mph wind gust and reported several trees blown down in the area. Also, a tree was blown down, blocking Wilkesboro St in Mocksville.
Advance	7/22/2008	50	Trees were blown down in and around Advance.
Advance	7/27/2008	50	Two trees were blown down near the intersection of LaQuinta Dr and Beauchamp Rd.
Advance	6/9/2009	60	Several large trees and power poles were blown down in and near the Advance community. Also, a barn was destroyed and several homes sustained minor damage in this area.
Cooleemee	6/9/2009	55	Several trees were blown down.
Smiths Grove	6/10/2009	50	Three trees were blown down.
Cooleemee	6/11/2009	50	Large tree limbs were blown down.
Farmington	9/28/2009	50	Large tree limbs were blown down three miles northeast of Farmington.
Sheffield	9/28/2009	50	Trees were blown down on Liberty Church Road, a little more than 6 miles west of Farmington.
Mocksville	5/28/2010	50	Trees were blown down in and around Mocksville.
Advance	6/12/2010	55	Several trees were blown down near the intersection of Baltimore Rd and highway 158.
Advance	6/14/2010	50	Trees were blown down in the Advance area.
Mocksville	6/15/2010	50	Trees were blown down in the Mocksville area.
Advance	7/13/2010	50	Several large tree limbs were blown down near the intersection of highway 801 and I-40.

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Location	Date	MPH	Description
Cornatzer	8/6/2010	50	Multiple large tree limbs were blown down off highway 801.
Mocksville	11/16/2010	50	A power pole and lines were blown down, and a couple trees and some large limbs blown down in the Mocksville area.
Mocksville	3/23/2011	50	A tree was blown down on North Main St in Mocksville. Another tree was blown down on Kingsmill Dr near Advance.
Fork	4/5/2011	55	Numerous trees were blown down across the county. At least one tree fell on a house near Cooleemee.
Fork	5/13/2011	50	Trees were blown down on Ridge Rd in the southwest part of the county.
Mocksville	5/13/2011	50	Trees were blown down on County Home Rd, about 2 miles southwest of Mocksville.
Calahaln	5/26/2011	55	Numerous trees were reported to be blown down in the Sheffield community.
Cooleemee	5/27/2011	60	Multiple trees were blown down along Fairfield Rd to Deadmon Rd and Willboone Rd. Trees were also blown down near the intersection of highway 64 and highway 801. At least one tree fell on a vehicle. A large greenhouse was also heavily damaged in this area.
Mocksville	6/10/2011	55	Numerous trees were blown down in the Mocksville area.
Farmington	7/3/2011	50	Trees were blown down on Pineville Rd a little to the north of Farmington.
Mocksville	7/13/2011	50	Multiple power lines were blown down in the Mocksville area and a tree was blown down in Cooleemee.
Mocksville	7/31/2011	55	Numerous trees were blown down in and around Mocksville.
Fork	8/11/2011	50	A large tree and multiple large limbs were blown down on Davie Academy Rd.
Sheffield	6/12/2012	55	Trees were blown down with winds estimated to be 60 mph in the Sheffield community. The roof was blown off of a large barn and trees were downed on Edwards Rd in the same area.
Farmington	6/22/2012	55	Four trees were blown down and part of a church was damaged by strong winds.
Advance	7/10/2012	50	Multiple small trees were snapped off near highway 158 in the Oak Valley community.
Cana	9/2/2012	50	Multiple trees and power lines were blown down near the intersection of Liberty Church Rd and highway 601.
Mocksville	10/18/2012	50	Multiple trees were blown down along highway 64 near the Davidson County line.
Cooleemee	1/30/2013	50	Multiple trees were blown down on Junction Rd near Cooleemee.
Mocksville	6/13/2013	50	Multiple trees were blown down across the Mocksville area, with at least one tree on a house.
Advance	6/26/2013	50	Multiple trees and power lines were blown down on Markland Rd at highway 801 near Advance.
Cana	8/22/2013	50	Multiple trees were blown down from Cana Rd near Angell Rd to Main Church Rd near highway 158.
Calahaln	6/17/2014	50	FD reported two trees blown down west of Mocksville.
Cooleemee	6/19/2014	50	Public reported multiple large tree limbs blown down between Mocksville and Cooleemee.
Farmington	8/18/2014	50	Spotter reported a large oak tree uprooted in the Farmington area. FD reported a tree down across Farmington Rd (1 S).
Mocksville	6/2/2015	55	County comms and Emergency Manager reported numerous trees blown down in the area around downtown Mocksville, with a few trees down on homes. Damage became more sporadic, but continued northeast of the downtown area.
Mocksville	6/19/2015	50	County comms reported multiple trees blown down along Highway 64 near the Davidson County line. Media reported trees down on a recreational vehicle at Forest Lake in this same area.

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Location	Date	MPH	Description
Mocksville	6/26/2015	50	County comms reported trees blown down on power lines in the Bixby community.
Farmington	8/19/2015	50	County comms reported multiple trees blown down in the Farmington area, including one tree on Mallard Rd.
Bixby	2/24/2016	55	Spotter reported numerous trees and power lines, along with some power poles blown down from west of Mocksville to the Farmington area. One tree fell on a carport near Sheffield.
Cooleemee	4/28/2016	50	Public reported large limbs blown down.
Harmony	6/13/2017	50	Spotter reported a few trees blown down.
Sheffield	7/1/2017	50	Spotter reported around a half dozen trees trees blown down on power lines on Liberty Church Rd.
Mocksville	7/22/2017	50	Public reported a large tree blown down on Rainbow Road with several large limbs also down in the area.
Calahaln	10/23/2017	50	County comms reported a couple of trees blown down near County Line Rd and Highway 901.
Mocksville	10/23/2017	50	County comms reported a few trees blown down at Tadpole Trail and Highway 64.
Farmington	6/11/2018	50	County comms reported at least one tree blown down in the Farmington area, with multiple trees down around Mocksville.
Sheffield	9/1/2018	50	Spotter reported multiple trees and power lines blown down along Edwards Rd and Sheffield Road. A large limb fell on a house on Edwards Rd.
Mocksville	8/13/2019	50	County comms reported multiple power lines blown down in parts of Mocksville.
Sheffield	8/19/2019	50	Spotter reported at least two trees blown down in the Sheffield area.
Advance	10/31/2019	50	Spotter reported multiple trees blown down off Orrell Trail.
<b>Forsyth County</b>			
Winston Salem	3/11/2000	50	Roof damage to the Big Oak Restaurant.
Clemmons	5/20/2000	60	Trees reported down.
Winston Salem	5/20/2000	60	Trees blown down along Thomasville Road.
Walkertown	5/25/2000	70	A tree was blown down onto a mobile home, completely destroying it.
Countywide	6/15/2000	50	Trees reported down across the county.
Winston Salem	8/7/2000	50	About 50 trees were blown down, some on houses on the west side of Winston-Salem.
Rural Hall	8/10/2000	50	Several trees down.
Belews Creek	9/14/2000	50	Trees and power lines down.
Clemmons	6/28/2001	50	Trees were blown down.
Belews Creek	5/13/2002	50	Trees and power lines were blown down near Belews Creek.
Winston Salem	11/11/2002	50	Trees were blown down on Glenn High Road and Salem Chapel Road.
Lewisville	5/2/2003	60	About a dozen trees were blown down.
Winston Salem	5/2/2003	60	Trees were blown down near Highway 52 and Fishel Road.
Lewisville	6/8/2003	50	Several trees were blown down.
Pfafftown	6/8/2003	57	Trees were blown down on Reynolds Road.
Pfafftown	11/24/2004	50	Scattered trees were blown down.
Seward	1/14/2005	50	A couple of trees were blown down along Route 67 near Seward.

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Location	Date	MPH	Description
Winston Salem	6/6/2005	50	Three to four trees were blown down on Davis Road.
Winston Salem	6/7/2005	50	Trees were blown down and an outbuilding was damaged on Westview Drive.
Tobaccoville	7/7/2005	50	Trees were blown down.
Clemmons	4/3/2006	50	NUMEROUS TREES DOWN IN CLEMMONS AND GERMANTON.
Clemmons	4/17/2006	50	Several trees down near intersection of Hampton Road and Route 158.
Lewisville	4/17/2006	50	Large tree down across Dull Rd.
Kernersville	4/22/2006	50	TWO TREES DOWN ON BUSINESS INTERSTATE 40 NEAR MILE MARKER 11.
Winston Salem	4/22/2006	50	STOP LIGHTS BLOWN OFF WIRE NEAR WINSTON SALEM COLISEUM AND NUMEROUS TREE LIMBS DOWN AROUND THE AREA.
Winston Salem	6/23/2006	50	Three trees down near highway 109 and highway 311.
Kernersville	7/4/2006	50	Numerous trees down all throughout Kernersville. Barn destroyed on Piney Grove Road.
Walkertown	7/4/2006	50	Trees down in the Walkertown area.
Rural Hall	7/13/2006	50	Numerous trees down in the town of Rural Hall.
Rural Hall	7/13/2006	50	Several trees down near Cook Road and Tobaccoville Road.
Rural Hall	7/13/2006	50	Several trees down near NC HWY 65 and US HWY 52.
Winston Salem	7/19/2006	50	
Winston Salem	7/19/2006	50	Large tree limbs down...including one across the intersectin of Robinhood and Polo Roads.
Winston Salem	7/22/2006	50	Tree down blocking the road at 42 Brownboro Road.
Kernersville	7/28/2006	50	Traffic lights down.
Winston Salem	7/28/2006	50	A large tree fell across Yadkinville Road. A motorist ran into the downed tree but no injuries reported.
Countywide	9/28/2006	50	Trees reported down in the towns of Lewisville...Clemmons...Walkertown...and Kernersville.
Winston Salem	9/28/2006	50	Several reports of trees down across city.
Winston Salem	6/11/2007	50	Law enforcement reported numerous trees down in the area.
Winston Salem	6/11/2007	50	Several trees were reported down on Liberty Street and Highway 52.
Winston Salem	6/11/2007	50	Winds in excess of 60 mph winds blew down over a dozen trees throughout the Winston-Salem city limits.
Winston Salem	6/19/2007	50	Numerous trees were blown down on the north side of Winston-Salem on Highway 52 from Bethania-Rural Hall Road to the Murry Road exit.
Winston Salem	6/24/2007	50	Several trees were blown down in the Bay Creek Subdivision.
Walkertown	6/27/2007	50	A large tree was blown down near Belews Lake and Route 158.
Winston Salem	6/28/2007	50	Several trees were blown down blocking traffic at Hawthorn Road and Queen Miller Road near the hospital.
Winston Salem	8/21/2007	50	Numerous trees were blown down through the city. Power lines were also reported down.

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Location	Date	MPH	Description
Winston Salem	3/4/2008	52	A trained spotter estimated wind gust speeds up to 60 mph near the Forsyth Technical Community College.
Winston Salem	3/4/2008	50	County 911 center measured a 58-mph wind gust speed.
Lewisville	6/27/2008	50	A tree was reported blown onto a house on Grinnell Street in Lewisville. Numerous power lines were also reported blown down in Lewisville.
Walkertown	6/27/2008	50	Power lines were reported knocked down in Walkertown.
Lewisville	6/28/2008	50	Several trees were reported blown down near the intersection of Conrad Road and Grapevine Road. Power lines were also reported knocked down by trees on Thunderwood Farm Road.
Winston-Salem	7/6/2008	63	A wind sensor on top of the Fire Station, directly across the street from the Smith Reynolds Airport, measured a 72-mph thunderstorm wind gust.
Winston Salem	7/6/2008	54	The Winston Salem ASOS at Smith Reynolds Airport, measured a wind gust of 54 knots.
Bethania	7/9/2008	50	Several trees were blown down across Bethania Ridge Road near Doral Drive.
Clemmons	7/9/2008	50	Multiple trees were blown down on Highway 158 near Lewisville-Clemmons Road.
Donnaha	7/9/2008	50	Numerous trees and power-lines were blown down along Highway 67, including along Rolling View Drive. Trees were also reported blown down near the intersection of Bethania Ridge Road and Doral Drive.
Donnaha	7/9/2008	50	Several trees and power-lines down on Highway 67.
Winston Salem	7/22/2008	50	One tree was blown down at the Baptist Medical Center. Another tree was blown down at Route 52 and 421 in the downtown area.
Hanes	8/2/2008	50	Two 40 to 50-foot white pine trees were snapped off about a third of the way off the ground just west of Winston-Salem.
Lewisville	8/2/2008	50	A tree was knocked down onto Conrad Road.
Muddy Creek	8/2/2008	50	Straight line winds knocked down power lines on the 700 and 800 block of Somerset Drive.
Clemmons	6/9/2009	52	Numerous trees and power-lines were down in and Clemmons. Approximately 50 trees were downed on Tanglewood Golf Course.
Kernersville	6/10/2009	50	Trees were blown on Dewey and Paddision Streets in Kernersville.
Brookwood	7/20/2009	50	Several trees were blown down on East 25th Street and Patterson Avenue, knocking out power in the area.
Lewisville	9/28/2009	50	Several trees were reported down on Styers Ferry Road.
Lewisville	9/28/2009	50	Several trees were reported down on Williams Road.
Lewisville	9/28/2009	50	Trees were reported down in the intersection of Concord Church Road and Dull Road. One tree fell down onto an unoccupied house at 8570 Concord Church Road. The tree broke through the ceiling and damaged an upstairs bedroom.
Winston Jct	4/8/2010	50	Numerous trees were blown down in and around Winston-Salem.
Clemmons	5/28/2010	50	Several trees were reported down in the road at the intersection of Kinnamon Road and Bluebonnet Lane.
Lewisville	5/28/2010	50	Large tree limbs were reported downed and hanging on power lines near the intersection of Kinney Road and Kinway Court.
Lewisville	5/28/2010	50	Several trees were reported down at Marty Lane and Lewisville-Clemmons Road.
Pfafftown	5/28/2010	50	One tree was reported blown down onto a car near the intersection of Robinhood Road and Speaks Farm Road.
Lewisville	6/2/2010	50	Numerous Trees were blown down from Lewisville to Clemmons.
Winston Salem	6/2/2010	50	Severe thunderstorm wind resulted in trees being blown down from near downtown Winston-Salem in Walkertown.

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Location	Date	MPH	Description
Lewisville	6/14/2010	50	Several trees were reported blown down in Lewisville along with downed power lines.
Park Terrace	6/14/2010	50	Numerous trees were reported blown down across Forsyth County. At the height of the storm 6500 customers were without power across the county.
Stanleyville	7/13/2010	50	A couple of trees were blown down along a swath from near Stanleyville to near Walkertown.
Waughtown	7/13/2010	50	A tree was blown down near the intersection of Aureole Street and Urban Street.
Guthrie	7/27/2010	50	A couple of trees were blown down on Highway 158 between Gaither Road and Rickard Road.
Union Cross	8/5/2010	50	A tree was blown down on Watkins Ford Road.
Lewisville	10/26/2010	50	Several trees down between Shallow Ford Road and Lakeway Drive.
Dennis	11/16/2010	50	Several trees blown down along a swath extending from Stanleyville to near Kernersville.
Pfafftown	12/1/2010	50	Several trees were blown down along a swath extending from Winston Salem to Kernersville. Downed trees blocked traffic on Yadkinville Road and Bon Air Avenue.
Donnaha	5/13/2011	50	Four trees were blown down and blocked traffic at the intersection of River Bluff Farms Road near route 67.
Dosier	5/26/2011	50	Numerous trees and power-lines were blown down. Some trees fell onto homes on Reynolds Road and Joyce Norman Road. Monetary damage was estimated.
Rural Hall	5/26/2011	50	Numerous trees were blown down across western portions of Forsyth County.
Tobaccoville	5/26/2011	50	Several trees were blown down on Highway 52 near Tobaccoville.
Union Cross	5/27/2011	50	A roof was blown off of a lumber company building. Several trees were also blown down. One tree fell onto a automobile. Damages were estimated.
Hanes	6/18/2011	50	One tree fell onto a house and crashed through the roof at 4000 Country Club Road.  Monetary damages were estimated.
Walkertown	6/18/2011	50	Law Enforcement and public reported one tree and several large tree branches were blown down. One large limb damaged a power-line.
Clemmons	6/27/2011	50	A few trees were blown down along a swath from near Clemmons to near Winston-Salem.
Waughtown	6/28/2011	50	Multiple trees and some power-lines were blown down along the swath, with the concentration of damage at NC Highway 150 and Fishel Road.
Donnaha	7/4/2011	50	One tree was blown down on Spainhour Mill Road.
Vienna	7/4/2011	50	Multiple trees were blown down in Vienna. Power-lines were also blown down in Mount  Tabor.
Guthrie	7/8/2011	50	One tree was blown down in Sedge Garden.
Union Cross	7/8/2011	50	One tree was blown down near the intersection of Pine Meadow Drive and High Point Road.
Easton View	8/14/2011	50	Several trees were blown down on Thomasville Road.
Stanleyville	8/14/2011	50	One tree was blown down.
Walkertown	8/14/2011	50	An 18 inch in diameter tree was blown down on Davis Road near Creason Circle.
Tobaccoville	8/21/2011	50	Downed power lines were blocking the northbound lane of Doral Drive. Also, a tree limb, up to two feet in diameter, was blown down.
Tobaccoville	9/2/2011	50	Multiple trees and power lines were blown down along a swath from a couple of miles north of Tobaccoville to a couple of miles south of Tobaccoville.
Donnaha	2/24/2012	50	Numerous trees were blown down in Tobaccoville. One tree was also blown down at the intersection of 7154 Martin Ferry Road and Donnaha Road.
Lewisville	2/24/2012	50	Several trees were blown down at 6868 Styers Ferry Road.



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Location	Date	MPH	Description
Union Cross	2/24/2012	50	One tree was blown down at the intersection of Barney and High Point Road.
Winston Salem	2/24/2012	50	One tree was blown down on Interstate 40 Business.
Easton View	5/14/2012	50	One tree was reported down on Williams Drive.
Kernersville	5/14/2012	50	Multiple trees were reported down in Kernersville, North Carolina.
Lewisville	5/14/2012	50	One tree was reported down on Lagrande Place Blocking Road.
Walkertown	5/14/2012	50	One tree was reported down on Darrow Road.
Walkertown	5/14/2012	50	One tree was reported down on Williston Road.
Winston Jct	5/22/2012	50	One tree was reported down on Robinhood Road and one tree was reported down on Buena Vista Road.
Oldtown	6/1/2012	50	Broadcast media reported downed trees on Shattelon Drive. Trees were also reported down on Germanton Road. One tree fell onto a house. Damages where unknown.
Clemmons	6/22/2012	50	Trees and power-lines were blown down near the intersection of Lasater Road an Fair Oaks Drive, near the 400 block of Partridge Lane, and on East Mountain Street.
Kernersville	6/22/2012	50	Trees and power-lines were reported blown down on the 1600 Block of Brookford Road.
Stanleyville	6/22/2012	50	Trees and power-lines were blown down near the intersection of Germanton Road and Stanleyville Drive. Downed trees and power-lines were also reported on Westeba Road.
Dosier	7/2/2012	50	One tree was reported down across Reynolda Road near Carillon Drive.
Walkertown	7/2/2012	50	One tree was reported down across Old Belews Creek Road near United States Highway 158.
Lewisville	7/5/2012	50	Two trees were reported down in the Lewisville area.
Oldtown	7/27/2012	50	Numerous trees and power lines were blown down in and around the Pfafftown area. One tree, which was approximately 250 years old, fell on a house in Pfafftown. Monetary damage was unknown. Due all the downed trees and power lines, 5,000 power outages were reported.
Oldtown	7/27/2012	50	Trees and power lines were blown down near Pfafftown.
Oldtown	9/8/2012	50	Trees and power-lines were blown down along the wind swath.
Donnaha	1/30/2013	50	A couple of trees were blown down along a swath from near Donnaha to near Kernersville.
Alspaugh	4/12/2013	50	Several trees were blown down in and around the Stanleyville area.
Hanes	4/19/2013	50	A couple of trees were blown down in Winston-Salem.
Kernersville	6/10/2013	50	Trees and power lines were blown down across Highway 66 in Kernersville.
Bethania	6/13/2013	50	Widespread trees and power-lines were blown down throughout the county. Northwestern portions of the county were the hardest hit. Monetary damages were estimated.
Brookwood	6/13/2013	50	A 50 knot wind gust was measured at KINT ASOS.
Winston Salem	6/26/2013	50	Multiple trees were blown down in downtown Winston Salem.
Clemmons	7/27/2013	50	A couple of trees were reported down in the Clemmons area.
Clemmons	7/27/2013	50	Multiple trees were reported blown down in Clemmons, North Carolina, with several on vehicles.
Lewisville	3/12/2014	52	Multiple trees were blown down along a swath from near Lewisville to near Winston Salem. A trained storm spotter estimated a wind gust of 60 mph near Winston Salem.

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Location	Date	MPH	Description
Kernersville	6/10/2014	50	A few trees were blown down along a swath from near Sedge Garden to near Kernersville.
Kernersville	6/11/2014	50	Multiple trees were blown down along swath from near Kernersville to near Walkertown.
Lewisville	6/19/2014	50	Trees and power-lines were blown down in Lewisville.
Rural Hall	6/19/2014	50	Trees and power-lines were blown down in Rural Hall.
Lewisville	5/11/2015	50	A couple of trees were blown down around Lewisville.
Clemmons	6/2/2015	50	A tree was blown down on Puritan Lane a couple miles northeast of Clemmons.
Easton View	6/2/2015	50	Several trees were blown down on Fox Meadow Lane several miles southwest of Sedge Garden.
Clemmons	6/27/2015	50	Several trees were blown down in the Clemmons area.
Walkertown	7/13/2015	50	Numerous trees and power lines were reported down across the northern half of the county.
Stanleyville	8/6/2015	50	A few trees were blown down along a swath from Stanleyville to near Walkertown. One tree fell on a house and another one fell on a vehicle. Monetart damages were estimated.
Hanes	2/24/2016	50	Several trees were uprooted along a swath from 3 miles west-southwest of Winston-Salem to 4 miles south-southeast of Kernersville. One tree fell on a house near the intersection of South Bunker Hill Road and Sandy Ridge Road, damaging the roof.
Clemmons	5/3/2016	50	A tree was blown down onto a bus near Clemmons, resulting in an injury.
Cityview	5/12/2016	50	Numerous trees and power lines were blown down on the east side of Winston-Salem.
Clemmons	7/8/2016	50	Several trees were reported down in the area of Middlebrook Drive and Idols Road.
Kernersville	7/8/2016	50	One tree was reported down at Bethel Church Road and Durango Drive. Several other trees were reported down across the county as well.
Lewisville	7/19/2016	50	One tree was reported down on Scott Road.
Lewisville	7/19/2016	50	One tree was reported down on Shallowford Road at United States Highway 421.
Pfafftown	7/27/2016	50	A tree was reported down on power lines along Wessex Road.
Union Cross	4/6/2017	50	A tree was blown down on power lines near the intersection of Hillside Drive and Mowery Drive.
Guthrie	5/1/2017	50	Trees were reported down near the intersection of West Mountain Street an Doe Run Drive.
Kernersville	5/1/2017	50	One tree was reported down on power lines at Old Salem Road and I-40.
Kernersville	5/1/2017	50	One tree was reported down on power lines.
Kernersville	5/1/2017	50	Trees were reported down on power lines and across Cheviot Drive.
Kernersville	5/1/2017	50	Trees were reported down on power lines and across the road and Wilchester Lane near Cheviot Drive.
Union Cross	5/1/2017	50	Trees were reported down at Cedarwood Trail and Roberts Star Lane.
Alspaugh	5/19/2017	50	A couple of trees were blown down along a swath from Pfafftown to 5800 Regents Park Road near Sedge Garden. Both trees were blocking the roadway and one fell onto power lines.
Donnaha	5/24/2017	50	A few trees were blown down at the intersection of Meadowbrook and Pierson Roads.
Tobaccoville	5/24/2017	50	One tree was blown down on Stout Farm Road.
Tobaccoville	5/24/2017	50	One tree was blown down on Woody Lane.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Frontis	7/18/2017	50	Several clusters of trees were reported down across southern and southeastern portions of Winston-Salem, including on cars and power lines near Westdale Avenue.
Winston Salem	7/18/2017	50	A large tree was reported down on a home near Hawthorne Road.
Donnaha	7/22/2017	50	Two trees were reported down across Donnaha Road.
Donnaha	7/22/2017	50	Two trees were reported down across the road at 5000 Block of Spainhour Mill Road.
Guthrie	7/22/2017	50	A tree was reported down across Stanley Park Road and Reidsville Road.
Lewisville	7/22/2017	50	One tree was reported down at the intersection of Grape Wine Road and Sonata Road.
Lewisville	7/22/2017	50	One tree was reported down on a power line near Shallowford Road.
Tobaccoville	7/23/2017	50	Numerous trees were blown down along a swath from 4 miles west of Rural Hall to 3 miles east of Walkertown. One of the trees was blown down onto power lines, resulting in power outages. A second tree was blown down onto a home and another was blown down onto a vehicle.
Kernersville	10/23/2017	50	Two trees were blown down along a swath from Woodfield Drive in Kernersville to the intersection of Highway 65 and Goode Road in Belews Creek.
Lewisville	4/15/2018	50	A few trees were blown down along a swath from west-southwest to west-northwest of Lewisville.
Guthrie	5/20/2018	50	Several trees were blown down along a swath from the intersection of Highway 158 and Serene St to Old Hollow Road near Old Valley School Road. Trees fell onto residences on Sir Issac Drive, Beulah Lane, and on Reidsville Road, causing damage to the roof of the respective homes.
Lewisville	6/1/2018	50	A couple of trees were blown down along a swath from mile marker 247 on US-421 to the intersection of Ridge Gate Drive and Arbor Run Drive in Lewisville.
Lewisville	6/11/2018	50	Thunderstorm winds downed several trees along Route 421, just east of the Yadkin County border.
Lewisville	6/11/2018	50	Tree blown down onto a power-line on Shallowford Road at Williams Street.
Clemmons	6/25/2018	50	One large tree was reported down on Meeting House Lane, near Clemmons Road.
Lewisville	6/25/2018	50	One tree was reported down on Conrad Road near Shallowford Road.
Clemmons	7/6/2018	50	One tree was reported down along Westwood Village Drive.
Kernersville	7/6/2018	50	One tree was reported down across the road near the intersection of Lindsey Street and Salisbury Street.
Winston-Salem	7/22/2018	50	Trees were reported down on power lines near Highway 311.
Dennis	7/22/2018	50	One tree was reported down on Lake Woussicket Road.
Lewisville	7/22/2018	50	One tree was reported down on Concord Church Road at Williams Road.
Pfafftown	7/22/2018	50	One tree was reported down on Robbinhood Road.
Walkertown	7/22/2018	50	One tree was reported down on Darrow Road and Martin Street.
Walkertown	7/22/2018	50	One tree was reported down on Marie Court.
Bethania	8/2/2018	50	Multiple trees and power lines were blown down near the intersection of Shattalon Drive and Gracemont Drive, resulting in closure of the intersection.
Lewisville	8/2/2018	50	Numerous trees and power lines were blown down along a swath from Lewisville to Walkertown.
Bethania	8/7/2018	50	One tree was reported down on Reynolda Road and Bethania Road.
Rural Hall	8/8/2018	50	A power-line was blown down at 3151 Westinghouse Road.
Stanleyville	8/8/2018	50	Power-line was blown down at 1200 Shore Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Winston Jct	8/8/2018	50	One large tree was blown down near the intersection of Arbor and Kent Road.
Clemmons	4/19/2019	50	Thunderstorm winds downed numerous trees throughout the western portions of the county, including down power-lines near the intersection of Holder Road and Harper Springs Drive.
Oldtown	4/19/2019	50	Trees and power-line reported down at Thomas Jefferson Middle School.
Oldtown	5/29/2019	50	A large tree was reported down on a house on Oakland Drive.
Belews Creek	6/20/2019	50	Several trees were reported down and in the roadways across Winston-Salem area.
Oldtown	7/22/2019	50	Trees reported down on power-lines near the intersection of Reynolda and Valley roads.
Lewisville	8/13/2019	50	One tree and power lines were blown down near Lewisville.
Lewisville	8/17/2019	50	Power lines were reported down at the 5900 block of Robinhood Road and at the 400 block of Sunset Ridge Drive.
Lewisville	8/17/2019	50	Two trees were reported down at the 1000 block of Williams Road.
Lewisville	8/19/2019	50	Numerous trees were blown down in Lewisville.
Kernersville	8/21/2019	50	Several trees were reported down near Century Park Avenue.
Rural Hall	8/21/2019	50	Multiple trees were reported down in the Rural Hall area.
Clemmons	8/22/2019	50	One tree was reported down at the 4000 block of Hampton Road.
Dennis	8/22/2019	50	One tree was reported down at the 7000 Block of Walnut Cove Road.
Walkertown	8/22/2019	50	One tree was reported down at Darrow Road and Walkertown Guthrie Road.
Walkertown	8/22/2019	50	One tree was reported down at the 5800 block of Walnut Cove Road.
Grims	10/31/2019	50	One tree was reported down on Reidsville Road.
Vienna	10/31/2019	50	Trees were reported down at the intersection of Larkwood Drive and Yadkinville Road.
<b>Rockingham County</b>			
Reidsville	3/11/2000		Thunderstorm winds during the evening of the 11th downed numerous trees and ripped the roof off of a utility shed with the roof landing on a barn.
Wentworth	5/13/2000		Thunderstorms during the afternoon of the 13th produced damaging winds and hail up to golf ball size. Thunderstorm winds downed several trees in Wentworth, downed trees 7 miles southwest of Lawsonville, and downed trees 1 1/2 miles northwest of Pilot Mtn.
Southwest Portion	5/28/2000		Thunderstorms on the afternoon of the 28th produced hail up to golf ball size and damaging winds. Thunderstorm winds downed trees and power lines in southwestern Rockingham County.
Eden, Mayfield, Wentworth	6/15/2000		Thunderstorms during the evening of the 15th produced damaging winds and hail up to dime size. Thunderstorm winds downed trees and snapped utility poles in Courtney, downed trees in Wentworth, trees in Level Cross, trees and power lines in Eden, and downed large trees across Oregon Hill Rd in Mayfield.
Countywide	8/9/2000		Thunderstorms during the late evening of the 9th and early morning of the 10th produced damaging winds. Thunderstorm winds downed trees across Rockingham, Stokes, Caswell, and Surry Counties. In addition, a downed tree in Mount Airy damaged a house roof. In all locations there were numerous reports of other minor property damage.
Reidsville	8/27/2000		Thunderstorms during the afternoon and evening of the 27th produced damaging winds. Thunderstorm winds downed trees 2 miles south of Yanceyville, 5 miles east of Reidsville, in Danbury, and in Shoal.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Madison	9/14/2000		Thunderstorms during the evening of the 14th produced damaging winds. Thunderstorm winds downed trees in Madison and in Sandy Ridge. A second round of thunderstorms downed trees across Stokes County.
Eden, Wentworth	6/6/2001		Thunderstorm winds during the afternoon of the 6th downed trees in Wentworth and Eden.
Stoneville	6/26/2001		Thunderstorms during the afternoon of the 26th produced hail up to dime size and damaging winds. Thunderstorm winds downed a large tree 4 miles west of Stoneville.
Reidsville	5/13/2002		Thunderstorm winds during the afternoon of the 13th downed trees 5 miles south of Reidsville.
Mayodan	6/1/2002		Thunderstorms during the afternoon of the 1st produced damaging winds and hail up to tennis ball size. Thunderstorm winds downed trees 7 miles west of Yanceyville, Walnut Cove, 7 miles north of Jefferson, and downed trees and power lines in Mayodan.
Eden, Stoneville	6/6/2002		Thunderstorms during the afternoon of the 6th produced damaging winds and hail up to nickel size. Thunderstorm winds downed trees 5 miles east of Danbury, onto Route 135, 3 miles southeast of Stoneville, and trees and power lines 1 mile west of Eden,
Madison, Reidsville, Ruffin	6/27/2002		Thunderstorms during the afternoon of the 27th produced flash flooding and damaging winds. Thunderstorm winds downed trees and power lines in Walnut Cove, trees near Madison causing damage to a mobile home and the roof of a home, and power lines in Reidsville and Ruffin. Heavy thunderstorm rains caused a mudslide across Route 321, 2.5 miles southeast of Boone.
Intelligence	7/26/2002		Thunderstorms winds downed trees and power lines in Intelligence during the late afternoon of the 26th.
Monroeton	8/18/2002		Thunderstorm winds downed trees in Meadows, blocking several roads, and 3 miles southwest of Monroeton, blocking Route 158.
Reidsville	8/22/2002		Thunderstorm winds on the afternoon of the 22nd downed a large tree 2 miles northeast of Reidsville.
Stoneville	11/11/2002		Thunderstorms winds during the morning of the 11th downed trees in Stoneville.
Ayersville, Wentworth	6/8/2003	65	Thunderstorms during the 8th produced flash flooding and damaging winds, Heavy thunderstorm rains caused a partial washout of State Route 1514 near Aho and U.S. Route 321 at Aho Road. Heavy rains also flooded Dry Creek in Draper with water 6 inches deep running across the road. 5 miles east of Eden a creek flooded across Wolf Island Road. Thunderstorm winds downed trees in Millers Creek, Roaring River, 10 miles northeast of Wilkesboro, western Yadkin County, Ayersville, 5 miles northwest of Wentworth, across Route 62 in Hamer, and also tore the roof off of a tobacco barn in Hamer.
Countywide	6/12/2003	65	Thunderstorms winds on the 12th downed trees across Rockingham County.
Reidsville	7/6/2003	60	Thunderstorms during the afternoon and evening of the 6th produced flash flooding and damaging winds. Heavy thunderstorm rains flooded and closed secondary roads around McGrady. Thunderstorm winds downed trees 6 miles southeast of Reidsville.
Eden	7/16/2003	65	Thunderstorm winds on the afternoon of the 16th downed trees and power lines onto Garrett Road in Eden.
Wentworth	8/17/2003	60	Thunderstorms during the late afternoon and early evening of the 17th produced damaging winds and hail up to penny size. Thunderstorm winds downed trees in Wentworth and 1 mile west of Danbury.
Monroeton	8/22/2003	60	Thunderstorms during the afternoon of the 22nd produced damaging winds. Thunderstorm winds downed trees 2 miles west of Monroeton and trees and power lines 6 miles north of Elkin.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Eden	9/4/2003	70	Thunderstorms during the afternoon of the 4th produced flash flooding and damaging winds. Thunderstorm winds in Eden blew the doors off the Eden Mall then blew out 17 skylights. One of the skylights broke out the window of a truck in the parking lot.
Mayodan	6/23/2004	50	Severe thunderstorms produced large hail and damaging winds to the northwest piedmont of North Carolina during the afternoon of the 23rd. Large limbs were downed 4 miles east of Mayodan.
Bethany, Reidsville	8/12/2004	50	A line of thunderstorms produced primarily straight-line wind damage as it progressed through Rockingham then Caswell Cos. Numerous trees were downed, homes and outbuildings were damaged, and three mobile homes were destroyed. At a separation in this line, an F1 tornado east of Mayfield was produced. This tornado descended through a yard downing and topping several trees and destroyed the roof, walls, and carport of a house. Very heavy rainfall from this line of storms prompted flooding in mainly western parts of the county. Water covered roads at the intersection of Route 220 and Route 65 due to ditches overflowing. A spotter in Stoneville measured 3.8 inches during the event.
Wentworth	9/8/2004	55	A severe thunderstorm with damaging winds, from the remnants of Tropical Depression Frances, downed several trees during the morning of the 8th.
Mayodan	7/7/2005	55	In Stokes County the damage consisted of some trees down and a shed blown over. In Stokes County there were numerous trees down between Mayodan and Stoneville.
Eden, Wentworth	7/28/2005	60	Severe thunderstorms, some with bowing line segments, resulted in trees and some power lines down.
Eden	4/22/2006	65	A cold front moved through the region during the morning hours on the 22nd. Some of the storms associated with the front reached severe limits producing wind gusts around 70 mph. These damaging winds downed several trees in both Stokes and Rockingham Counties. In Surry County, lightning from another storm brought down a tree onto a home, causing extensive damage to the sunroom portion of the house.
Reidsville	5/14/2006	55	Tree down in Williamsburg.
Reidsville	5/26/2006	60	Two 8 to 10-inch diameter trees were blown down onto house near Williamsburg, along Highway 87 and County Line Road.
Wentworth	6/2/2006	60	A severe thunderstorm downed several trees on Route 65.
Eden, Ellisboro	6/11/2006	60	Downburst preceded by brief period of nickel sized hail and accompanied by damaging winds broke a home owners flag pole and downed numerous large tree limbs.
Madison	7/4/2006	55	
Eden	7/5/2006	35	In the advance of a strong cold front, a very tropical air mass was in place across the region. Heavy rain producing showers and storms the night of July 4th had resulted in a saturated or nearly saturated ground to start the day on the 5th. Additional heavy rain producing showers and storms during the night of the 5th is all that was needed for some flash flooding to occur in areas. Also, because of saturated root systems, 35 to 40 mph wind gusts were all that were needed to down some trees.
Countywide	7/13/2006	65	In advance of an approaching cold front, thunderstorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100 year old, 50 foot tall, with a 3 foot diameter trunk oak tree and a 40 foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Bethany	7/20/2006	50	Scattered showers developed during the afternoon with a couple of them becoming severe. Wind gusts of 60 to 70 mph from two of the storms downed a few trees.
Madison, Reidsville	7/28/2006	55	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Midway	8/30/2006	55	Tree down.
Reidsville	9/28/2006	55	Trees downed near highway 87 just northwest of Williamsburg.
Eden, Ruffin	6/19/2007	52	Tree down.
Stoneville	7/10/2007	50	Several four-inch diameter tree limbs were blown down. Damage amounts are estimates.
Madison, Mayfield, Stoneville	3/4/2008	52	A home on Alene Loop in Madison received minor structural damage when thunderstorm winds downed a large pine tree, power and cable lines on to the house.
Madison	4/12/2008	60	Thunderstorm winds downed trees on Macon Drive.
Ruffin	4/12/2008	60	Thunderstorm winds blew down trees on Webb Road. The road was blocked.
Draper	5/11/2008	50	Four to five-inch diameter limbs were blown down on a road.
Stoneville	5/20/2008	55	One tree was blown down in Stoneville.
Thompsonville	5/20/2008	55	One tree was blown down on High Rock Road, about 7 miles southeast of Reidsville.
Bakers	6/1/2008	55	A tree and power line were blown down along McCollum Road. Damage values are estimated.
Bakers	6/1/2008	55	A tree was blown down along Bakers Crossroad Road. Damage values are estimated.
Intelligence	6/1/2008	55	A tree was blown down along Gold Hill Road. Damage values are estimated.
Mayodan	6/14/2008	50	A tree was blown down near the intersection of NC Route 135 and Shakey Road. Damage values are estimated.
Eden	7/9/2008	55	A tree was blown down on Highway 700 in Eden. Damage values are estimated.
Oregon Hill	7/9/2008	55	A tree was blown down on Worsham Mill Road. Damage values are estimated.
Price	7/9/2008	55	A tree was blown down on Price Road. Damage values are estimated.
Price	7/9/2008	55	A tree was blown down on Smith Road. Damage values are estimated.
Stoneville	7/9/2008	55	A tree was blown down on Highway 770 in Stoneville. Damage values are estimated.
Wentworth	7/9/2008	55	A tree was blown down on Vernon Road. Damage values are estimated.
Eden	7/22/2008	60	Numerous trees were blown down. Damage values are estimated.
Ruffin	7/22/2008	55	Trees were blown down. Damage values are estimated.
Eden	8/14/2008	55	A tree was blown down along a road.
Ellisboro	8/14/2008	55	Trees were blown down along Forrest Drive.
Stoneville	8/14/2008	50	A tree branch was blown over onto a moving car, resulting in a broken windshield.
Ellisboro	9/30/2008	50	A tree was blown down in Ellisboro.
Gold Hill	9/30/2008	50	A tree was blown down along Angell Road.
Mayfield	5/3/2009	55	Trees were blown down along Williamson Creek Road.
Mayfield	6/9/2009	50	A tree was reported down on Chandler Mill Road.
Reidsville	6/10/2009	60	A number of large trees were down and power outages reported across Reidsville.
Reidsville	6/10/2009	50	One large tree down was blown down by thunderstorm winds.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Reidsville	6/10/2009	50	Thunderstorm winds brought a tree down on Flat Rock Road and US Route 29.
Reidsville	6/10/2009	50	Thunderstorm winds brought down a large tree.
Mayfield	8/5/2009	50	A tree was blown down on Berry Hill Bridge Road.
Mayfield	8/5/2009	50	A tree was blown down.
Bethany	9/28/2009	50	A large tree was brought down on Griffin Road.
Reidsville	4/5/2010	70	Trees were reported down in western Rockingham County.
Madison	4/8/2010	55	Two trees were knocked down on Ayersville Road between Mayodan and Madison.
Stoneville	4/8/2010	50	A tree was reported down on Price Grange Road and Barns Road.
Lawsonville	5/28/2010	55	Thunderstorm winds blew trees down along Highway 29. Damage values are estimated.
Ellisboro	6/2/2010	50	A tree was blown down near the intersection of goose road and Ellisboro road. Damage amounts are estimated.
Stoneville	6/3/2010	50	Several large limbs were blown down across the area. Damage amounts are estimated.
Bethany, Eillisboro, Mayodan, Reidsville, Wentworth	6/15/2010	55	Trees were blown down along Brown Road and Witty Road. A tree was blown down across Ellisboro Road. Numerous trees were blown down around Madison. Large trees were blown down on Church Street. Two trees were blown down on Sandy Cross Road.
Bakers, Harrisons, Lawsonville	6/16/2010	50	A tree was blown down between Settle Bridge and Dan River Road. Damage amounts are estimated.
Stoneville	6/23/2010	50	A tree was blown down on Snead Road. Damage amounts are estimated.
Wentworth	6/23/2010	50	Thunderstorm winds blew down A tree on a power line on Plantation Road. Damage amounts are estimated.
Gold Hill	6/24/2010	50	A tree was blown down on a trailer along NC Route 68. Damage amounts are estimated.
Lawsonville	7/20/2010	65	A microburst with winds estimated to be over 70 MPH, blew down 29 trees around the Narrow Gauge Road exit of Route 29.
Pennrington	7/20/2010	50	One Tree was blown down by thunderstorm winds on Oregon Hill Road.
Wentworth	7/20/2010	50	Thunderstorm winds blew a tree down on Route 87.
Boulevard	7/25/2010	50	One tree was blown down by thunderstorm winds on North Oakland Drive.
Spray	7/25/2010	50	Thunderstorm winds blew down a tree on a power line on Roosevelt Street.
Harrisons	8/5/2010	50	A tree was brought down on Harrisons Crossroads.
Mayodan	8/5/2010	50	A tree blown onto a power line started a house fire.
Price	8/12/2010	50	One tree was blown down near the intersection of Price Road and Lindy Road.
Price	8/12/2010	55	Several trees were blown down near the intersection of Garrett road and Center Meeting Home Road. Garrett Road was partially blocked.
Stoneville	8/12/2010	50	A tree was blown down along Snead Road.
Stoneville	8/12/2010	50	One tree was blown down along Settle Bridge Road.
Stoneville	8/12/2010	50	One tree was blown down by thunderstorm winds on Rakestraw Road.
Stoneville	8/12/2010	50	One tree was knocked over by high winds along Snead Road.
Wentworth	8/12/2010	50	One tree was blown down near the intersection of Highway 65 and Hancock Road.
Madison	9/22/2010	50	Thunderstorm winds blew a tree down at 100 Mineral Springs Road. Damage values are estimated.



**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Reidsville	9/22/2010	50	Thunderstorm winds blew a tree down at 120 Hardwood Road. Damage values are estimated.
Stoneville	9/22/2010	50	Thunderstorm winds blew a tree down at 105 North Glenn Street. Damage values are estimated.
Stoneville	9/22/2010	50	Thunderstorm winds blew a tree down on C. N. Smith Hill Road. Damage values are estimated.
Wentworth	9/22/2010	50	Thunderstorm winds blew a tree down at 410 Hancock Road. Damage values are estimated.
Ayersville	10/27/2010	50	A tree was blown down on Local Road by Thunderstorm winds.
Bethany	10/27/2010	50	A tree was blown down by strong winds on Brown Road.
Ellisboro	10/27/2010	50	Thunderstorm winds caused a tree to be blown down on Williams Road.
Gold Hill	10/27/2010	50	Thunderstorm winds blew down a tree on Carlton Road.
Intelligence	10/27/2010	50	A tree was blown down by strong winds on Bald Hill Loop Road.
Midway	10/27/2010	50	A tree was blown down on Church Street Extension by thunderstorm winds.
Monroeton	10/27/2010	50	A tree was blown down on Monroeton Road by thunderstorm winds.
Oregon Hill	10/27/2010	50	A tree was blown down by strong winds. The tree brought down a power line on Route 700. Damage amounts are estimated.
Oregon Hill	10/27/2010	50	A tree was blown down on Worsham Road.
Thompsonville	10/27/2010	50	Thunderstorm winds blew down a tree on NC Highway 150 near Williamsburg.
Eden	11/16/2010	50	A tree was blown down by thunderstorm winds on Quesinberry Road.
Mayfield	11/16/2010	50	One tree was blown over by thunderstorm winds along Happy Home School Road.
Mayodan	12/1/2010	50	Thunderstorm winds blew a tree down on Ayeville Road. Damage values are estimated.
Mayodan	12/1/2010	50	Thunderstorm winds blew a tree down on NC 704 and Sisk Mill Loop. Damage values are estimated.
Price	12/1/2010	50	Thunderstorm winds blew a tree down on Anglin Mill Road. Damage values are estimated.
Pennington	3/23/2011	70	Thunderstorm winds blew a radio tower down on power lines and a building near the intersection of Madison Street and Business U.S. 29. Damage values are estimated.
Stoneville	3/23/2011	55	Thunderstorm winds blew power lines down in the community of Stoneville. Damage values are estimated.
Madison	4/5/2011	55	Trees were blown down across the county.
Price	4/5/2011	50	A tree was blown down on US Route 220.
Monroeton	4/16/2011	50	A line of severe thunderstorms brought down a tree on a mobile home near Monroeton. The strong winds also brought a tree down on a power line on Richardson Drive near Reidsville, and caused siding and window damage to a church in the same general area.
Eden	5/24/2011	50	Several trees were blown over along Fieldcrest Road near Eden.
Ellisboro	5/24/2011	50	Several large trees were reported down on Brandy Trace Lane east of Belews Lake.
Foushee	5/24/2011	55	Strong outflow from thunderstorms brought down trees on Elm Grove Church Road and along Mizpah Church Road.
Spray	5/24/2011	50	Several trees reported down just north of Eden.
Spray	5/27/2011	50	Numerous trees were reported down in the town of Eden.
Draper	6/9/2011	50	A large tree was uprooted and ready to fall on Route 770 near the plastics plant. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Eden	6/10/2011	50	Thunderstorm winds blew a tree down along Harrington Highway. Damage values are estimated.
Madison	6/10/2011	55	Thunderstorm winds blew trees down along Highway 311. Damage values are estimated.
Stoneville	6/10/2011	55	Thunderstorm winds blew trees down near the intersection of Highway 135 and Leprechaun Lane. Damage values are estimated.
Stoneville	6/11/2011	60	Thunderstorm winds blew large trees down in the town of Stoneville. One tree fell across a power line. Damage values are estimated.
Wentworth	6/11/2011	50	Thunderstorm winds downed a tree which knocked down power lines. Damage values are estimated.
Ayersville	6/12/2011	50	Thunderstorm winds blew a tree down on Anglin Mill Road. Damage values are estimated.
Mayodan	6/12/2011	50	Thunderstorm winds blew a tree down along K Fork Road. Damage values are estimated.
Stoneville	6/12/2011	50	Thunderstorm winds blew one tree down. Damage values are estimated.
Bakers	6/21/2011	55	Thunderstorm winds blew trees down on Settle Bridge Road near River Road. Damage values are estimated.
Intelligence	6/21/2011	55	Thunderstorm winds blew trees down on Puckett Road near Highway 704. Damage values are estimated.
Leaksville	6/21/2011	55	Thunderstorm winds blew several large trees down. Damage values are estimated.
Leaksville	6/21/2011	55	Thunderstorm winds blew trees down on Price Road near Shady Grove Road. Damage values are estimated.
New Leaksville	6/21/2011	55	Thunderstorm winds blew trees down on Bethlehem Church Road near the Dan River. Damage values are estimated.
New Leaksville	6/21/2011	55	Thunderstorm winds blew trees down on Robin Road. Damage values are estimated.
Thompsonville	6/21/2011	50	Thunderstorm winds blew a tree down onto a power line. The power line then fell on a house causing a structural fire. Damage values are estimated.
Ellisboro	6/27/2011	50	Thunderstorm winds blew down a tree along Oak Level Church Road.
New Leaksville	6/27/2011	55	A thunderstorm tracked northeast across the community of Eden. Along the way, it downed several trees. Some were down on Trogden Steet, at the intersection of Reynolds Street and Harris Street, and along Friendly Road. In the 1000 block of Kyle Steet, a roof was blown off a maintenance garage. Damage values are estimated.
Reidsville	6/28/2011	55	Thunderstorm winds blew trees down. Damage values are estimated.
Bethany	7/4/2011	50	Thunderstorm winds blew down a tree on Glencoe Church Loop.
Foushee	7/4/2011	50	Thunderstorm winds blew down two trees near the intersection of Mizpah Church Road and Jones Lake Road.
Reidsville	7/4/2011	50	Trees were blown down on Upper Mountain Research Station.
New Leaksville	7/23/2011	50	Thunderstorm winds blew down a tree on Valley Drive, and another on Highway 87 between Eden and Wentworth.
Mayodan	8/14/2011	50	One tree was blown down on Ayersville Road near Squire Loop.
Happy Home	6/22/2012	50	Thunderstorm winds blew a tree down on Perkinson Road. Damage values are estimated.
Happy Home	6/22/2012	55	Thunderstorm winds blew several trees down on Berry Hill Road. Damage values are estimated.
Stoneville	6/24/2012	55	Thunderstorm winds blew trees down on Settlement Loop. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Price	6/29/2012	60	Thunderstorm winds blew a couple hundred of trees down across the county. Many of these fallen trees brought down power lines, and one tree fell on a house in Eden. Damage values are estimated.
Pennington	6/30/2012	50	Thunderstorm winds blew trees down on Narrow Gage Road. Damage values are estimated.
Ayersville	7/2/2012	50	Several trees were reported to be down in the northern part of the county.
Mayodan	7/2/2012	50	Trees were reported to be down on 2nd Avenue in Madison.
Midway	7/3/2012	50	A tree was reported down on Winged Elm Way and another on Woolen Stone Road.
Draper	7/5/2012	50	Thunderstorm winds blew down a tree on Route 770.
Intelligence	7/5/2012	50	Trees reported down on Planters Road.
Intelligence	7/5/2012	50	Two trees blown down on Bald Hill road.
Mayfield	7/5/2012	50	A tree was blown over on Goose Pond Road in Ruffin.
Foushee	7/21/2012	50	Two trees were brought down by high winds near Candy Creek Rd.
Reidsville	8/3/2012	50	A trained storm spotter reported that a couple of large tree limbs were down approximately two miles west of Reidsville.
Reidsville	8/8/2012	50	The Rockingham County 911 Center reported that a tree was blown down by thunderstorm winds on Barnes Street near the intersection of U.S. Highway 29.
Wentworth	8/8/2012	50	The Rockingham County 911 Center reported that a tree was blown down on and blocking Hancock Road just northeast of Wentworth.
Ayersville	8/11/2012	50	The public observed several large tree limbs down blown down approximately five miles west of Stoneville.
Madison	1/30/2013	55	Multiple Trees were blown down on Dahl Street.
Stoneville	4/12/2013	50	The Rockingham County 911 Center reported that a tree was blown down near the intersection of Stone Mountain Road and Ponderosa Road just south-southeast of Stoneville and a few trees and power lines were down along Highway 311 in Madison.
Eden	4/19/2013	50	Winston-Salem Broadcast Media reported that several trees were down in the Eden area, including one which fell on and caused damage to a trailer home.
Spray	6/13/2013	60	Damaging thunderstorm winds associated with a squall line downed over one hundred trees across the county with many of them falling on homes or power lines. Power was out at a time to 7400 customers. Damage values are estimated.
Leaksville	6/26/2013	55	Thunderstorm winds blew several trees down power lines down. One tree fell on three cars Rhodes Road, two of which were totaled. Damage values are estimated.
Ayersville	7/4/2013	50	A tree was reported down on Means Creek Road and another along NC Route 770.
Ruffin	7/9/2013	50	Thunderstorm winds blew down a tree and power line along Chandler Mill Road.
Monroeton	7/21/2013	50	Thunderstorm winds blew a tree down on a house along Longbow Road.
Intelligence	9/12/2013	55	Three trees were blown down on Highway 704, between Bald Hill Loop and Danbury Bridge Road.
Leaksville	9/12/2013	50	A tree was blown down on Bent Farm Road.
Madison	9/12/2013	50	A tree was blown down in front of a house on Hunter Street.
Mayodan	9/21/2013	50	Thunderstorm winds brought down two trees, including one at a golf course.
Spray	9/21/2013	50	Thunderstorm winds brought down a tree.
Stacy	9/21/2013	50	Thunderstorm winds blew a tree down on a car.
Stoneville	9/21/2013	50	Thunderstorm winds brought down a few trees.
Foushee	6/10/2014	50	Thunderstorm winds blew a tree down near the interchange of Highway 29 and Business Highway 29. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Mayodan	6/10/2014	50	Thunderstorm winds blew two trees down along North 7th Street including one near Roach Street and one near West Jackson Street. Damage values are estimated.
Harrisons	6/11/2014	55	Thunderstorm winds downed several trees within an area north of Reidsville. Specific locations include Wolf Island Road and Mount Carmel Church Road. Damage values are estimated.
Eden	6/17/2014	50	Thunderstorm winds blew down trees and large limbs. Damage values are estimated.
Ellisboro	6/19/2014	50	Thunderstorm winds blew trees down in the Ellisboro region. Specifically, a tree was blown down along Eden Church road, another along Sardis Church road, and the third along Ellisboro Road. Damage values are estimated.
Mayfield	7/15/2014	50	Thunderstorm winds knocked down two trees on Chandler Mill Road.
Wentworth	5/11/2015	61	The Rockingham County Emergency Management Director reported that from thirty to forty trees were snapped or uprooted by strong straight-line thunderstorm winds just north and northwest of Wentworth. On Crompton Road, a tree was down on a home and car resulting in nearly \$10,000 in monetary damage. Another tree was also reported down by the Rockingham County Sheriff's Office on Settlebridge Road in Stoneville.
Reidsville	6/21/2015	55	Three trees were blown down by strong thunderstorm winds in the community of Reidsville. One of these trees landed on a house.
Reidsville	7/1/2015	50	Thunderstorm winds blew one tree down on Lawndale Drive and another down at the intersection of Routes 29 and 87. Damage values are estimated.
Eden	7/13/2015	55	Thunderstorm winds blew down several trees along Highway 41 in Eden. Many of these trees fell on power poles. Highway 41 was closed for a time because of this. Damage values are estimated.
Spray	7/13/2015	60	Thunderstorm winds caused wind damage to structures and trees in and around Eden. Siding and gutters were blown off the Eden Rescue Squad's building. A tree fell onto a house causing intrusion. Another tree fell onto a house and caused roof damage. Damage values are estimated.
Ruffin	8/11/2015	55	Television Station WGHP reported that several trees were blown down by thunderstorm winds just north of Ruffin.
Boulevard	9/12/2015	50	A tree fell on a vehicle causing damage, and a second tree was blown down on Madison Street.
Mayodan	2/24/2016	50	Several trees were blown down by thunderstorm winds in the Mayodan area.
Mayodan	2/24/2016	50	Thunderstorm winds knocked down several trees in Madison.
Ruffin	2/24/2016	50	Thunderstorm winds knocked over three trees in the Ruffin area.
Stoneville	2/24/2016	50	Thunderstorm winds knocked down several trees and power lines in the Stoneville area.
Madison	4/28/2016	50	Thunderstorm winds blew a couple of trees down on power lines along Cassandra Road. The falling lines and trees also brought down power poles. Damage values are estimated.
Midway	5/12/2016	50	Thunderstorm winds blew a tree down at the intersection of Witty Road and Spring Creek Road.
Mayodan	6/4/2016	55	Trained spotters and the public reported multiple large branches and trees brought down by thunderstorm winds in Madison.
Thompsonville	6/4/2016	50	Thunderstorm winds blew a tree over which knocked down some power lines onto Route 87, subsequently causing a vehicular accident.
Pennington	6/5/2016	50	Thunderstorm winds knocked down a tree onto Highway 29.
Reidsville	6/5/2016	50	Thunderstorm winds brought down a tree on Camp Dan Valley Road near Pinrod Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Eden	6/15/2016	55	Thunderstorm wind brought down multiple trees on Route 311 near the intersection of State Road 1741.
Reidsville	6/24/2016	50	A tree was blown down by thunderstorm winds on Lawsonville Avenue.
Stoneville	6/24/2016	50	Thunderstorm winds knocked over a tree on State Route 770 in Stoneville.
Harrisons	6/29/2016	65	Thunderstorm winds caused extensive damage in and around Reidsville. In addition to numerous trees being blown down, several onto homes and cars, power lines and poles were also brought down. A church had considerable damage to its steeple.
Reidsville	6/29/2016	55	Thunderstorm winds blew over the awning covering pumps at a gas station located at the intersection of Scales and Settle Streets.
Bakers	7/1/2016	55	One tree was blown down at the intersection of Smothers Road and Poppy Road, while another was blown down at the intersection of Pannel Road and Settle Bridge Road.
Mayfield	7/2/2016	50	One tree was blown down on Williamson Creek Road near the intersection with Gravel Hill Road.
Boulevard	7/8/2016	52	Four to six trees were blown down by thunderstorm winds across the Eden area.
Mayodan	7/15/2016	55	Several trees and power lines were blown down by thunderstorm winds across the community of Mayodan.
Mayodan	7/15/2016	50	Several trees and power lines were blown down by thunderstorm winds around Madison.
Reidsville	7/15/2016	50	Several trees and power lines were blown down by thunderstorm winds in Reidsville.
Madison	7/27/2016	50	Several trees were blown down by thunderstorm winds across the community of Madison.
Reidsville	7/27/2016	50	A large tree was blown down by thunderstorm winds along Highway 29. Two trees were also blown down across the northeast side of the community of Reidsville.
Wentworth	7/27/2016	50	Thunderstorm winds brought down two trees within the western outskirts of the community of Wentworth.
Mayodan	5/1/2017	50	Thunderstorm winds brought down a tree onto Ayersville Road near the intersection with Squire Loop.
Stacy	5/1/2017	50	Thunderstorm winds brought down a tree along Estes Road near the location where it intersects Wolf Island Creek.
Wentworth	5/1/2017	50	Thunderstorm winds blew down a tree on Roach Road.
Oregon Hill	5/5/2017	50	Thunderstorm winds downed at least two trees.
Reidsville	5/5/2017	50	Thunderstorm winds downed a large tree limb onto two parked cars along Maple Avenue.
Eden	5/11/2017	50	Thunderstorm winds downed a tree on North Van Buren Road.
Eden	5/11/2017	50	Thunderstorm winds downed a tree at East Meadow and North Hundley Road.
Eden	5/11/2017	55	Thunderstorm winds downed dozens of trees near and just East of the City of Eden. Trees came down on Front Street, Maryland Avenue, and Carolina Avenue. These winds also damaged a dog kennel, shed and peeled a portion of tin roofing off a building.
Mayfield	5/11/2017	50	Thunderstorm winds were responsible for knocking down three large pine trees along Kingston Road, one of which fell against a high voltage power line causing temporary disruption.
Oregon Hill	5/11/2017	50	Thunderstorm winds brought down three large trees along Guerrant Springs Road.
Stacy	5/11/2017	50	Thunderstorm winds downed several trees along Warsham Mill Road. Another tree was reported down nearby, causing a traffic disruption near the intersection of Burton Road and Estes Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Bakers	5/31/2017	58	Thunderstorm winds downed numerous trees along Buckhorn Trail, including a few trees that were snapped over 30 feet in the air.
Foushee	5/31/2017	53	Thunderstorm winds downed several trees and power-lines along Cook Forest Road.
Intelligence	5/31/2017	55	Thunderstorm winds resulted in several uprooted trees near the community of Madison.
Madison	5/31/2017	55	Thunderstorm winds downed numerous trees near the intersection of US 220 and Ellisboro Road.
Madison	5/31/2017	50	Thunderstorm winds downed two trees near the intersection of West Huner Street and South Wilson Street. A third tree was blown down nearby in a backyard along K Fork Road near the Stokes County border.
Monroeton	5/31/2017	55	Thunderstorm winds downed a swath of trees in the general vicinity of the interchange of US 158 and Iron Works Road.
Monroeton	5/31/2017	50	Thunderstorm winds resulted in a tree down near the intersection of Iron Works Road and Monroeton Road.
Reidsville	5/31/2017	55	Thunderstorm winds causing numerous 12 inch in diameter or greater trees to fall across portions of a rail road track, impeding travel near the Turner Drive Crossing.
Madison	6/14/2017	60	Multiple trees were reported down due to thunderstorm winds near the county line. The Emergency Manager reported that one of the trees fell on a house destroying it. The building inspector condemned the structure.
Harrisons	7/8/2017	55	At least seven trees were blown down by thunderstorm winds between the 1900 block of Moir Mill Road and Hampton Road.
Reidsville	7/18/2017	50	A couple of branches, 3 to 4 inches in diameter, were blown down by thunderstorm winds.
Gold Hill	7/6/2018	50	Thunderstorm winds blew two trees down. Damage values are estimated.
Lawsonville	7/6/2018	50	Thunderstorm winds blew a couple of trees down near the intersection of Highway 158 and Grooms Road near Lick Fork Creek Road. Damage values are estimated.
Stoneville	7/6/2018	50	Thunderstorm winds blew several trees down in Stoneville. Damage values are estimated.
Leaksville	7/22/2018	50	Thunderstorm winds blew a tree down along Price road. Damage values are estimated.
Midway	8/7/2018	55	Thunderstorm winds blew down several trees across the southern part of Rockingham County.
Boulevard	8/8/2018	50	Thunderstorm winds blew down one tree near the intersection of Rhodes Road and Westerly Park Road.
Mayfield	8/8/2018	50	Thunderstorm winds blew down one tree on Dodson Road near the intersection with Gravel Hill Road.
Mayodan	8/8/2018	50	Thunderstorm winds blew down one tree that also took down a power line near the intersection of Ayersville Road and Turner Road.
Wentworth	8/8/2018	50	Thunderstorm winds blew down one tree on Camp Dan Valley Road and was blocking one lane of that road.
Stoneville	8/31/2018	52	Thunderstorm winds blew down a tree onto Phil Road.
Stoneville	8/31/2018	50	Thunderstorm winds blew down one tree on to a power line about one mile south-southwest of Stoneville.
Harrisons	10/11/2018	70	A storm survey concluded that numerous trees were found uprooted and blown down in a generally southerly direction, with the damage occurring in a divergent pattern along a broken path. A couple of the fallen trees landed on nearby homes, however damage to the structures appeared to be minimal. The damaging winds were the result of very heavy rain within the embedded thunderstorms in the area allowing the strong winds aloft to mix down to the surface.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Lawsonville	4/8/2019	50	Thunderstorm winds blew a tree down on a power line along Tate Road. Damage values are estimated.
Mayodan	5/12/2019	50	Thunderstorm winds blew one tree down at the intersection of Highway 704 and Cardinal Road and two more trees on Janet Road west of Stoneville.
Reidsville	5/12/2019	50	Thunderstorm winds blew down one tree on Barnes Street in Reidsville.
Reidsville	5/29/2019	50	Thunderstorm winds blew down one tree on Sherwood Drive in Reidsville.
Harrisons	5/31/2019	50	Thunderstorm winds blew down multiple large tree limbs on Strawberry Road.
Mayodan	5/31/2019	50	Thunderstorm winds blew down a tree on North Third Avenue in Mayodan. The tree uprooted and fell on to the front porch of a house and caused notable damage.
Pennington	5/31/2019	60	Thunderstorm winds blew down numerous trees and power lines near the intersection of Wolf Island Road and Elon Drive and blew down a few more large trees on to the railroad track near Narrow Gauge Road. The trees halted a Norfolk Southern train for a period of time until the track was clear.
Monroeton	6/20/2019	55	Multiple trees were blown down by thunderstorm winds within the community of Reidsville, including on Turner Drive and on Briggs Street. Two homes were damaged on Lawsonville Avenue when trees were blown down into each house.
Thompsonville	6/20/2019	55	A few trees were blown down by thunderstorm winds within the community of Williamsburg.
Wentworth	6/20/2019	55	A few trees were blown down by thunderstorm winds within the community of Wentworth.
Ayersville	7/22/2019	50	A tree was blown down by thunderstorm winds along Brushy Mountain Road near North Carolina Highway 770.
Leaksville	7/22/2019	50	A couple trees were blown down by thunderstorm winds on Shady Grove Road, with one tree falling near the intersection with Price Road and the other tree falling near Clarence Stone Highway.
Midway	7/22/2019	55	Several trees were blown down by thunderstorm winds, with a couple falling onto power lines along Spearman Drive near the Haw River State Park.
Boulevard	8/1/2019	50	A few trees were blown down by thunderstorm winds just to the northwest of Eden.
Draper	8/13/2019	50	One tree was blown down by severe thunderstorm winds at the intersection of N.C. 700 and Quesinberry Road.
Harrisons	8/13/2019	50	One tree was blown down at the intersection of Berrymore Road and Cedar Lane.
Pennington	8/13/2019	50	One tree blown down by severe thunderstorm winds at the intersection of Oregon Hill Road and U.S. 29.
Oregon Hill	8/15/2019	50	Two trees were blown down by severe thunderstorm winds at the intersection of Moir Hill Road and Quesinberry Road.
Foushee	8/21/2019	50	Multiple trees were blown down near Lake Reidsville due to severe thunderstorm winds.
Madison	8/21/2019	50	One tree was blown down due to severe thunderstorm winds.
New Leaksville	8/21/2019	50	One tree was blown down on Price Street due to severe thunderstorm winds.
Price	8/21/2019	50	A couple of trees were blown down by severe thunderstorm winds.
Reidsville	8/21/2019	50	One tree was blown down on Salem Church Road due to severe thunderstorm winds.
Reidsville	8/21/2019	50	One tree was blown down onto a power line on McCoy Street due to severe thunderstorm winds.
Reidsville	8/22/2019	50	Several trees were blown down by severe thunderstorm winds in the northern sections of Reidsville.
Stoneville	8/23/2019	50	One tree was blown down onto power lines by severe thunderstorm winds on Bryan Street, thus damaging the power lines.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
<b>Stokes County</b>			
Lawsonville	5/13/2000		Thunderstorms during the afternoon of the 13th produced damaging winds and hail up to golf ball size. Thunderstorm winds downed several trees in Wentworth, downed trees 7 miles southwest of Lawsonville, and downed trees 1 1/2 miles northwest of Pilot Mtn.
Lawsonville	5/20/2000		Thunderstorm winds on the afternoon of the 20th downed trees onto power lines, 3.5 miles north of Lawsonville, at the intersection of Route 704 and Route 8.
Walnut Cove	7/28/2000		Thunderstorms during the evening of the 28th produced damaging winds and hail up to 1 inch in diameter. Thunderstorm winds on the afternoon of the 28th downed trees onto Phillips Road, 1 mile north of Walnut Cove.
Countywide	8/9/2000		Thunderstorms during the late evening of the 9th and early morning of the 10th produced damaging winds. Thunderstorm winds downed trees across Rockingham, Stokes, Caswell, and Surry Counties. In addition, a downed tree in Mount Airy damaged a house roof. In all locations there were numerous reports of other minor property damage.
Walnut Cove	8/18/2000		Thunderstorm winds on the afternoon of the 18th downed trees and tree limbs 1 mile south of Walnut Cove.
Danbury	8/27/2000		Thunderstorms during the afternoon and evening of the 27th produced damaging winds. Thunderstorm winds downed trees 2 miles south of Yanceyville, 5 miles east of Reidsville, in Danbury, and in Shoal.
Countywide	9/14/2000		Thunderstorms during the evening of the 14th produced damaging winds. Thunderstorm winds downed trees in Madison and in Sandy Ridge. A second round of thunderstorms downed trees across Stokes County.
Sandy Ridge	9/14/2000		Thunderstorms during the evening of the 14th produced damaging winds. Thunderstorm winds downed trees in Madison and in Sandy Ridge. A second round of thunderstorms downed trees across Stokes County.
Walnut Cove	6/1/2002		Thunderstorms during the afternoon of the 1st produced damaging winds and hail up to tennis ball size. Thunderstorm winds downed trees 7 miles west of Yanceyville, Walnut Cove, 7 miles north of Jefferson, and downed trees and power lines in Mayodan.
Danbury	6/6/2002		Thunderstorms during the afternoon of the 6th produced damaging winds and hail up to nickel size. Thunderstorm winds downed trees 5 miles east of Danbury, onto Route 135, 3 miles southeast of Stoneville, and trees and power lines 1 mile west of Eden,
Walnut Cove	6/27/2002		Thunderstorms during the afternoon of the 27th produced flash flooding and damaging winds. Thunderstorm winds downed trees and power lines in Walnut Cove, trees near Madison causing damage to a mobile home and the roof of a home, and power lines in Reidsville and Ruffin. Heavy thunderstorm rains caused a mudslide across Route 321, 2.5 miles southeast of Boone.
Sandy Ridge	7/2/2002		Thunderstorms during the afternoon of the 2nd produced damaging winds and hail up to dime size. Thunderstorm winds downed numerous trees across Ashe county. One tree was downed onto a house, causing damage to the roof. Thunderstorm winds also downed a large tree in Sandy Ridge.
Meadows	8/18/2002		Thunderstorm winds downed trees in Meadows, blocking several roads, and 3 miles southwest of Monroeton, blocking Route 158.
Northeast Portion	9/4/2002		Thunderstorm winds on the 4th downed trees across northeastern Stokes County and 5 miles west of Pilot Mountain.
Danbury	6/11/2003	60	Thunderstorms on the 11th produced damaging winds. Thunderstorm winds downed trees in Glade Valley, in northern Stokes County, and in Danbury, and 5 miles north of Danbury.



**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
North Portion	6/11/2003	65	Thunderstorms on the 11th produced damaging winds. Thunderstorm winds downed trees in Glade Valley, in northern Stokes County, and in Danbury, and 5 miles north of Danbury.
Lawsonville	7/5/2003	60	Thunderstorms during the afternoon of the 5th produced flash flooding, hail up to nickel size, and damaging winds. Heavy thunderstorm rains flooded and closed roads around Purllear. Thunderstorm winds downed trees in Hays, 5 miles north of Lawsonville, and downed a tree onto a house in Mulberry.
Danbury, Pinnacle, Walnut Cove	7/19/2003	60	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size. A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3-foot diameter tree was also snapped off. Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Francisco	7/22/2003	60	Thunderstorms during the afternoon of the 22th produced damaging winds. Thunderstorms winds downed trees in Dobson and Francisco and trees and power lines from 3 miles south of Yadkinville to Yadkinville.
Danbury	8/17/2003	60	Thunderstorms during the late afternoon and early evening of the 17th produced damaging winds and hail up to penny size. Thunderstorm winds downed trees in Wentworth and 1 mile west of Danbury.
Pine Hall	6/6/2005	60	Thunderstorm winds during the evening of 6th downed trees in Pine Hill in Stokes county. A thunderstorm during the evening of the 6th produced penny sized hail 7 miles east of Ayersville.
Danbury	6/21/2005	60	Thunderstorm winds downed trees in the town of Danbury on the evening of the 21st.
Danbury, Meadows	7/7/2005	50	In Stokes County the damage consisted of some trees down and a shed blown over. In Stokes County there were numerous trees down between Mayodan and Stoneville.
Walnut Cove	7/28/2005	60	Severe thunderstorms, some with bowing line segments, resulted in trees and some power lines down.
Danbury	1/13/2006	65	An out building was blown into a roadway Trees were blown down. Some blocked roadways, others damaged a home at Sauratown Mountain.
Danbury, Germanton	4/22/2006	65	A cold front moved through the region during the morning hours on the 22nd. Some of the storms associated with the front reached severe limits producing wind gusts around 70 mph. These damaging winds downed several trees in both Stokes and Rockingham Counties. In Surry County, lightning from another storm brought down a tree onto a home, causing extensive damage to the sunroom portion of the house.
Danbury	6/11/2006	53	A severe thunderstorm produced hail up to quarter sized and downed tree limbs which created power outages.
Pinnacle, Quaker Gap, Walnut Cove	7/13/2006	50	In advance of an approaching cold front, thundestorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100 year old, 50 foot tall, with a 3 foot diameter trunk oak tree and a 40 foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
Sandy Ridge	7/19/2006	50	Thunderstorms began developing during the afternoon hours of the 19th due primarily to daytime heating in an already unstable atmosphere. Some of these

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
			increased to severe levels, producing damaging wind gusts. As evening arrived, severe storms continued to be a treat thanks to the approach and then arrival of a dying meso-scale convective complex that moved out of the Ohio Valley and into our region. Again, damaging wind gusts, and large hail resulted from these severe storms.
Germanton	7/22/2006	55	Thunderstorms developed in advance of an approaching cold front. A couple of these storms reached severe limits producing damaging wind gusts in the 65 to 80 mph range. Trees were downed in both Stokes and Surry Counties, but near Sioam in Surry County, two power poles were snapped off and power lines were down.
King	7/28/2006	55	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Walnut Cove	7/28/2006	55	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Danbury	6/8/2007	52	A tree was blown down just north of Hanging Rock State park. Two trees were blown down on Highway 89 near Piney Grove Road.
King	6/16/2007	52	A large tree was blown down in King.
Walnut Cove	6/19/2007	52	Trees blown down.
Walnut Cove	6/28/2007	52	Several large tree limbs down.
King	7/10/2007	56	Thunderstorm winds blew porch furniture off a deck. Damage values are estimates.
Prestonville	7/16/2007	50	Damage values are estimated.
Danbury	8/21/2007	55	Trees were blown down on Highway 89.
Lawsonville	8/21/2007	55	Trees were blown down on Route 8 in Lawsonville.
Sandy Ridge	3/4/2008	52	Thunderstorm wind gusts to 60 mph downed trees in northeast Stokes county.
Danbury	5/8/2008	55	Trees were blown down along Hall Road, two to three miles west of Danbury.
Danbury	5/8/2008	55	Trees were downed along Moores Spring Road near Hanging Rock State Park.
Walnut Cove	5/8/2008	55	Trees were blown down near the intersection of Rothrock Road and Highway 89.
Danbury	6/3/2008	50	One tree was blown down on Main Street in Danbury. Damage values are estimated.
Campbell	6/14/2008	50	A tree was blown down near the intersection of Routes 8 and 704. Damage values are estimated.
Pinnacle	6/14/2008	50	A tree was blown down on Volunteer Road. Damage values are estimated.
Pine Hall	6/26/2008	65	Trees were blown down. Damage values are estimates.
Danbury	7/9/2008	55	A tree was blown down. Damage values are estimated.
Germanton	7/9/2008	55	A tree was blown down. Damage values are estimated.
Lawsonville	7/9/2008	55	Two trees were blown down. Damage values are estimated.
Walnut Cove	7/9/2008	55	Trees were blown down near Highway 311. Damage values are estimated.
Danbury	8/14/2008	55	Trees were downed in the town of Danbury.
Pine Hall	8/14/2008	55	Trees were downed in the town of Pine Hall.
Danbury	6/3/2009	50	A large tree down was knocked down by thunderstorm winds and blocked a road.
Danbury	6/3/2009	50	A large tree was blown down by thunderstorm winds and blocked a road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Francisco	6/11/2009	50	Several trees were down across Highway 704.
Walnut Cove	6/11/2009	55	Numerous trees were reported down on Oak Hollow Drive.
Walnut Cove	6/13/2009	50	Trees were reported down and blocking part of Main Street in Walnut Cove.
Pinnacle	7/22/2009	50	Thunderstorm winds blew down a tree. Damage values are estimated.
Sandy Ridge	4/5/2010	70	A roof and siding material was torn off sheds and a mobile home porch. A small shed was also destroyed and a few trees snapped off.
Sandy Ridge	4/5/2010	70	A roof was torn off a large garage.
Pine Hall	4/8/2010	55	A power pole was snapped by thunderstorm winds along Madison Road.
Pinnacle	5/28/2010	50	Thunderstorm winds blew trees down at the intersection of Shoals and Hoosier near Pinnacle. Damage values are estimated.
Danbury	6/13/2010	50	A tree was blown down and blocking Highway 89 West. Damage amounts are estimated.
King	6/14/2010	60	Ten to fifteen trees were blown down between King and Pinnacle. Damage amounts are estimated.
Walnut Cove	6/14/2010	55	Thunderstorm winds knocked down trees in Walnut Cove. A tree also caught fire when it fell on a power line. Damage amounts are estimated.
Dillard	6/15/2010	50	Large limbs were reported blown down along Reynolds Road and Kay Fork Road. Damage amounts are estimated.
Sandy Ridge	6/15/2010	55	Several trees were blown down in Sandy Ridge. Damage amounts are estimated.
Danbury	6/24/2010	50	A tree was blown down on Court House Circle. Damage amounts are estimated.
Danbury	6/24/2010	60	Numerous trees were blown down on Sheppard Mill Road. Damage amounts are estimated.
Danbury	6/24/2010	60	Thunderstorm winds snapped off four power poles on Old Church Road. Damage amounts are estimated.
Pine Hall	6/24/2010	50	A tree was blown down blocking a street in Pine Hall. Damage amounts are estimated.
Dalton	7/13/2010	50	One tree was blown down by thunderstorm winds on Highway 52 at the Pilot Mountain State Park exit.
Germanton	7/13/2010	50	One tree was knocked down by thunderstorm winds on South Friendship Road.
Walnut Cove	7/13/2010	50	One tree was blown down on Highway 311 at the Olympic Family Restaurant.
Meadows	7/21/2010	50	A Post Office employee observed numerous large tree limbs blown down on Route 8.
Francisco	8/5/2010	50	A tree was reported down on Jackson Road.
Francisco	8/5/2010	50	One tree reported down at Smith and Horseshoe Road.
Hartman	8/5/2010	50	High winds brought down some trees on Pleasant View Church Road.
Harts Store	8/5/2010	50	A tree was blown down on Ray Loop Road.
Harts Store	8/5/2010	50	A tree was blown down.
Harts Store	8/5/2010	50	A tree was reported down at the intersection of Route 89 and George Road.
Lawsonville	8/5/2010	55	Several trees were brought down on Highway 89 and Clyde Amos Road.
Moore Springs	8/5/2010	50	A tree was blown down in the 1500 block of Route 66.
Moore Springs	8/5/2010	50	One tree was blown down onto Vineyard Road.
Vade Mecum	8/5/2010	50	A tree was reported down due to high winds at the intersection of Lynchburg Road and Frye Road.
Vade Mecum	8/5/2010	55	High winds brought several trees down.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Meadows	8/11/2010	50	A single tree was reported blown down by thunderstorm winds near the intersection of Highway 89 and Sunset Park Road.
Mt Olive	8/11/2010	50	A tree was brought down by thunderstorm winds at the intersection of Locust Road and William Fowler Road.
Vade Mecum	8/11/2010	50	A tree was blown down on Moore Springs Road.
Danbury	9/22/2010	50	Thunderstorm winds blew down a tree at 1101 Main Street. Damage values are estimated.
Francisco	9/22/2010	55	Thunderstorm winds blew a tree down across a trailer at 2979 Horseshoe Road. Damage values are estimated.
Francisco	9/22/2010	50	Thunderstorm winds blew a tree down at 1000 Francis Road. Damage values are estimated.
Francisco	9/22/2010	55	Thunderstorm winds blew a tree down at 3435 North Carolina Highway 89. Damage values are estimated.
Francisco	9/22/2010	60	Thunderstorm winds blew down numerous trees around the immediate area and numerous other locations in the county. Damage values are estimated.
Francisco	9/22/2010	55	Thunderstorm winds blew down trees at 1003 Frans Road. Damage values are estimated.
Francisco	9/22/2010	55	Thunderstorm winds blew trees down at the intersection of Frans Road and Cold River Run Road. Damage values are estimated.
Francisco	9/22/2010	55	Thunderstorm winds blew trees down at the intersection of Frans Road and North Carolina Route 66. Damage values are estimated.
Germanton	9/22/2010	55	Thunderstorms blew trees down along North Carolina Route 65 and Leake Memorial Church Road. Damage values are estimated.
Hartman	9/22/2010	55	Thunderstorm winds blew down trees along Phillips Road and Sheppard Mill Road. Damage values are estimated.
Meadows	9/22/2010	55	Thunderstorm winds blew trees down. Damage values are estimated.
Moore Springs	9/22/2010	55	Thunderstorm winds blew trees down at the intersection of Tom Martin Road and North Carolina Route 66. Damage values are estimated.
Pine Hall	9/22/2010	55	Thunderstorm winds blew trees down along Pine Hall Road. Damage values are estimated.
Pine Hall	9/22/2010	55	Thunderstorm winds blew trees down. Damage values are estimated.
Pinnacle	9/22/2010	55	A tree was blown down on Marshall Smith Road. Damage values are estimated.
Pinnacle	9/22/2010	55	Thunderstorm winds blew trees down along Edwards Farm Road. Damage values are estimated.
Prestonville	9/22/2010	50	Thunderstorm winds blew a tree down at 1077 Tom Shelton Road. Damage values are estimated.
Quaker Gap	9/22/2010	50	Thunderstorm winds blew a tree down at the intersection of Flat Shoals and Sizemore Roads. Damage values are estimated.
Shelton Store	9/22/2010	55	Thunderstorm winds blew trees down along Hart Road. Damage values are estimated.
Vade Mecum	9/22/2010	50	Thunderstorm winds blew a tree down at the intersection of Moore Springs Road and Stoney Ridge Road. Damage values are estimated.
Volunteer	9/22/2010	55	Thunderstorm winds blew down trees. Damage values are estimated.
Walnut Cove	9/22/2010	55	Thunderstorm winds blew trees down along Carmichael Road. Damage values are estimated.
Sandy Ridge	10/26/2010	50	Trees were blown down around Highway 770 and 704. A fence was also damaged by falling trees. Damage amounts are estimated.
Francisco	11/16/2010	50	A tree was reported blown down by thunderstorm winds at the intersection of Highway 89 and Forrest Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Collinstown	3/23/2011	50	Thunderstorm winds blew a tree down near Collinstown Road and Electric Plant Road.
Germanton	3/23/2011	50	Thunderstorm winds blew a tree down along Highway 8.
Germanton	3/23/2011	50	Thunderstorm winds blew a tree down on Highway 65 North in Germantown.
Hartman	3/23/2011	50	Thunderstorm winds blew a tree down near Seven Island Road and Damascas Road.
King	3/23/2011	55	Thunderstorm winds blew trees down on West Dalton Street and the intersection of Tise Lane and Trinity Church Road. Damage values are estimated.
Sandy Ridge	3/23/2011	50	Thunderstorm winds blew a tree down on Highway 704 West.
Vade Mecum	3/23/2011	50	Thunderstorm winds blew a tree down.
Lawsonville	4/5/2011	55	Trees were blown down by thunderstorm winds across the county.
King	5/26/2011	60	A squall line crossed Stokes County from southwest to northeast in about 30 minutes causing widespread tree damage. There were over 25 separate reports of a tree or multiple trees brought down. Amazingly, no structural damage to buildings was reported and only one location had power lines damaged, in the Walnut Cove area.
Moore Springs	6/7/2011	60	Thunderstorm winds blew two trees down along Route 268. Several other trees were also blown down between Pinnacle and Westfield.
King	6/10/2011	50	Thunderstorm winds blew a tree down along Newsome Road. Damage values are estimated.
King	6/10/2011	50	Thunderstorm winds blew a trees down between White Road and Charleston Court. Damage values are estimated.
Danbury	6/27/2011	55	Thunderstorm winds downed several trees across the city of Danbury. Damage values are estimated.
King	6/27/2011	55	Thunderstorm winds downed trees across King. Damage values are estimated.
King	6/27/2011	55	Thunderstorm winds downed trees in the City of King. Damage values are estimated.
King	7/4/2011	50	One tree was blown down near Pinnacle and at least a dozen around King.
Pine Hall	7/4/2011	50	Thunderstorm winds blew down a tree along Highway 311 near the county line.
Pinnacle	7/4/2011	50	Thunderstorm winds caused a large tree to be blown down in Pinnacle.
Walnut Cove	7/4/2011	50	Thunderstorm winds blew down one power pole in Germantown and a tree in Walnut Cove.
Vade Mecum	7/19/2011	50	Thunderstorm winds blew down two trees in the area.
Sandy Ridge	8/13/2011	60	The Stokes County Emergency Manager conducted ground survey of area and found four trees and numerous tree limbs down from near intersection of Snow Hill Church Road and Percey Moorefield Road to 3297 Percey Moorefield road. The damage observed was consistent with straight-line microburst wind event.
Poplar Springs	8/14/2011	50	Thunderstorm winds blew down a tree on Spainhour Road.
Prestonville	8/14/2011	50	A tree was blown down on Ward Road.
Francisco	9/2/2011	50	Thunderstorm winds blew a tree down onto a power line. Damage values are estimated.
Prestonville	9/2/2011	50	Thunderstorm winds blew a tree down on Tom Shelton Road. Damage values are estimated.
Sandy Ridge	9/2/2011	65	Thunderstorm winds blew numerous trees down. Damage values are estimated.
Asbury	9/5/2011	50	Thunderstorm winds blew one tree down on Flippin Road. Damage values are estimated.
Campbell	9/5/2011	50	Thunderstorm winds blew a tree down on Moore Road. Damage values are estimated.
Campbell	11/16/2011	52	Thunderstorm winds brought down trees at a number of locations from Campbell down to Flat Rock.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Quaker Gap	11/16/2011	60	Trees were blown down by thunderstorm winds at the intersection of North Friendship and Flat Shoals Roads.
Danbury	6/12/2012	50	Thunderstorm winds blew a tree down along NC Highway 8 and Gentry Road. Damage values are estimated.
Sandy Ridge	6/12/2012	50	Thunderstorm winds blew a tree down at the intersection of NC 704 East and Steele Road. Damage values are estimated.
Collinstown	6/29/2012	60	Thunderstorm winds blew around 50 trees down across the county. Many of these trees downed power lines as they fell. The heaviest hit part of the area was in the northeast part of the county near Sandy Ridge. Damage values are estimated.
Pine Hall	6/30/2012	50	Thunderstorm winds blew down several large tree limbs on Luther Williams Road. Damage values are estimated.
Asbury	7/1/2012	50	Several trees were blown down near Westfield.
Lawsonville	7/1/2012	50	Trees were blown down north of Danbury.
Asbury	7/2/2012	55	There were eight reports of trees blown down in northwest Stokes County.
Campbell	7/16/2012	60	Trees were blown down across a broad swath of northern Stokes County.
Sandy Ridge	7/16/2012	50	Trees down and debris near Virginia border.
Shelton Store	7/16/2012	50	Trees and debris down along Route 704 near the Virginia border.
Walnut Cove	7/16/2012	50	Trees were reported down in the Walnut Cove area.
Dillard	7/27/2012	50	A tree and multiple large tree limbs were blown down close to the intersection of Highway 772 and Dillard Road.
King	4/19/2013	60	The Stokes County Emergency Manager reported that there were considerable damage to trees in and around the town of Kind. The Stokes County 911 Center reported that numerous trees and large tree limbs were down in and around the town of King. A tree was down on a building near Main Street causing \$70,000 in damage alone to the structure and vehicles parked inside. Trees and/or large branches were also down on West Street, Spruce Street, and on Redwood Bend Road just outside of town. In Walnut Cove, further east, a tree was blown down on a church as reported by local broadcast media.
King	6/13/2013	50	Thunderstorm winds along a squall line downed trees along Gap Lane. Damage values are estimated.
Flat Shoals	6/26/2013	50	Thunderstorm winds blew several trees down. Damage values are estimated.
Sandy Ridge	7/4/2013	50	A tree was down on Amos Town Road.
Vade Mecum	7/27/2013	50	Four trees were reported blown down at the intersection of Highway 89 and Lynchburg Road.
King	8/22/2013	55	The public reported that a few trees were blown down by thunderstorm winds on Coventry Place Drive just southwest of King.
Sandy Ridge	8/22/2013	50	The Stokes County 911 Center reported that a couple of power lines and two trees were blown down by thunderstorm winds in the Sandy Ridge area.
Walnut Cove	8/22/2013	50	The Stokes County 911 Center reported that two trees were blown down by thunderstorm winds in the Walnut Grove area and one in the Madison area. Two trees were down five miles east-northeast of Walnut Grove, one on Pole Bridge Road and another on Gibson Road with another tree down on River Road near Madison.
Campbell	9/12/2013	50	Two trees were blown down along Highway 9 North.
Moore Springs	9/12/2013	50	One tree was blown down on Highway 268.
King	9/21/2013	55	Thunderstorm winds destroyed a playhouse, brought down a couple of trees and several large branches, and caused minor damage, mainly to underpinnings, to several mobile homes.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
King	2/21/2014	52	Damaging thunderstorm winds downed trees in the southwest part of King. Damage values are estimated.
Dalton	6/18/2014	60	Thunderstorm winds produced scattered damage over about a two mile region of Stokes County, near the community of King. Around 6 to 8 trees were blown down at Old Route 52 and Chestnut Grove Road. Thunderstorm winds caused siding damage to houses and downed trees and limbs along Sterling Pointe Road. On Carson Watts road, a tree was blown down onto powerlines. Damage values are estimated.
Germanton	6/19/2014	50	Thunderstorm winds blew a tree down on Highway 8. Damage values are estimated.
Mt Olive	6/19/2014	50	Thunderstorm winds blew a tree down on YMCA Camp Road. Damage values are estimated.
Danbury	7/13/2015	50	Thunderstorm wind blew down trees. Damage values are estimated.
Mt View	7/13/2015	50	Thunderstorm winds blew two trees down. Damage values are estimated.
Walnut Cove	7/13/2015	50	Thunderstorm winds blew two trees down. Damage values are estimated.
King	8/4/2015	56	A captain from the Stokes County Fire Department reported that multiple trees were down in the White Road and West Dalton road areas of King. Reports from the public directly, and also via social media outlets, confirmed that numerous trees were down one mile east to one mile north-northeast of King. While many of the trees were down in one of the city's parks, some trees were down on homes causing damage to the structures.
Francisco	8/5/2015	55	The Stokes County 911 Center reported that a number of trees were down throughout the town of Francisco.
King	8/5/2015	55	The Stokes County 911 Center reported that a number of trees were down throughout the town of King.
Lawsonville	8/5/2015	55	The Stokes County 911 Center reported that a number of trees were down throughout the town of Lawsonville.
Walnut Cove	2/24/2016	50	Thunderstorm winds knocked down trees onto Highway 65.
King	5/2/2016	50	Thunderstorm winds resulted in two trees down in community of King, North Carolina.
Pine Hall	5/12/2016	50	Thunderstorm winds resulted in a downed tree along Highway 311.
Walnut Cove	6/4/2016	55	Several trees and the tin roof of a shed was torn off by thunderstorm winds along Rosebud Road from Highway 8 to near Walnut Grove.
Meadows	6/29/2016	50	Thunderstorm winds brought down two trees along Route 8 and Dodgetown Road.
Pine Hall	6/29/2016	50	Thunderstorm winds blew over one tree onto Pine Hall Road.
Walnut Cove	7/1/2016	50	A large tree was blown down by thunderstorm winds.
Dalton	7/8/2016	52	Thunderstorm winds brought down trees near Pinnacle. One of the trees temporarily blocked the exit from U.S. Highway 52. Another tree was blown down north of King, temporarily closing YMCA Camp Road.
Pine Hall	7/8/2016	50	Multiple power lines and a tree were blown down by thunderstorm winds between Pine Hall and Walnut Cove.
Shelton Store	7/8/2016	50	A tree was blown down by thunderstorm winds at the intersection of Poure Road and Route 704.
Asbury	7/15/2016	50	Multiple trees were blown down by thunderstorm winds in the area of Asbury and Locust Grove Roads.
Francisco	7/15/2016	60	At least seventy trees, numerous tree limbs and several power lines were blown down by thunderstorm winds. A tin outbuilding was rolled over along Horseshoe Road. Several shingles were blown off a roof along the 1300 block of Francis Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Flat Shoals	7/19/2016	55	Numerous trees were blown down across the communities of Meadows through Walnut Cove. A couple of roads between Danbury and Germantown were temporarily closed due to downed trees.
King	7/27/2016	50	Several trees and powerlines were blown down by thunderstorm winds along North Main Street in the community of King.
Walnut Cove	7/27/2016	50	Several trees and power lines were blown down by thunderstorm winds along Tuttle Road.
Meadows	7/31/2016	50	A fallen large tree, brought down by thunderstorm winds, took down power lines at the intersection of Route 89 and Covington House Road.
Walnut Cove	7/31/2016	50	Several trees were blown down by thunderstorm winds along Fulp Road. A large tree was also blown down along Route 311.
Dillard	5/1/2017	50	Thunderstorm wind gusts resulted in two trees down along Dunlap Road.
Prestonville	5/1/2017	50	Thunderstorm winds brought down a tree along Tom Shelton Road.
Walnut Cove	5/1/2017	54	Thunderstorm wind gusts resulted in numerous trees down along Highway 65 and Baux Mountain Road.
Campbell	5/24/2017	54	Thunderstorm winds downed several trees along State Route 8.
Lawsonville	5/24/2017	54	Thunderstorm winds downed a few trees near North Stokes County High School.
Lawsonville	5/24/2017	52	Thunderstorm winds downed two trees on Hart Road.
Danbury	5/31/2017	55	Thunderstorm winds downed several trees near the intersection of Moore Springs Road and Hanging Rock Park Road.
Meadows	5/31/2017	50	Outflow winds from a strong thunderstorm downed a tree near the intersection of North Carolina Highway 8 and Highway 89.
Danbury	6/13/2017	52	Thunderstorm wind gusts caused several trees to fall down. Dime size hail was also reported near the hospital with this storm.
King	6/13/2017	52	Thunderstorm wind gusts caused trees to fall down in the city of King.
Vade Mecum	7/22/2017	55	Several trees were blown down by thunderstorm winds in the vicinity of Highway 66 from near Taylor Road to Moores Spring Road.
King	7/23/2017	50	A tree was blown down by thunderstorm winds in the community of King.
King	7/23/2017	50	Thunderstorm winds blew down a tree along the 800 block of Meadowbrook Lane. Another tree was blown down along Logan Court.
Pinnacle	7/23/2017	50	A tree was blown down by thunderstorm winds in the community of Pinnacle.
Danbury	7/28/2017	50	A tree was blown down by thunderstorm winds in the community of Danbury.
Dillard	7/28/2017	50	A tree was blown down by thunderstorm winds near the intersection of Route 772 and Yates Road.
Francisco	4/15/2018	50	Multiple large trees were blown down along the intersection of Route 89 and Horseshoe Road near Francisco.
Germanton	4/15/2018	50	Several trees were blown down by thunderstorm winds around the community of Germanton.
Rosebud	4/15/2018	50	Multiple large oak trees uprooted or snapped in half, and shingles blown off a house.
Walnut Cove	4/15/2018	50	Several trees and power lines were blown down around the community of Walnut Cove.
Hartman	5/20/2018	60	Thunderstorm winds brought down five trees onto Sheppards Mill Road.
Harts Store	6/18/2018	50	A large tree was blown down by thunderstorm winds.
Harts Store	6/18/2018	50	A tree was blown down by thunderstorm winds near the intersection of Aarons Corner Church Road and Highway 704.
Volunteer	6/18/2018	50	A large tree limb fell on a vehicle along Highway 268 near Grassy Knob Road, cracking the windshield of the vehicle.



**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Capella	6/25/2018	50	A tree was blown down by thunderstorm winds along Capella Road near the Closer Walk Baptist Church.
Francisco	6/25/2018	50	A tree was blown down by thunderstorm winds along George Farm Road.
Moore Springs	6/25/2018	50	A tree was blown down by thunderstorm winds along Highway 66 near Brown Mountain Church Road, while another tree was blown down along Keaton Road.
Germanton	7/22/2018	50	Thunderstorm winds blew five trees down around the community of Germanton. Damage values are estimated.
Lawsonville	8/1/2018	55	Thunderstorm winds blew down multiple trees on Snow Hill Church Road.
Vade Mecum	8/1/2018	55	Thunderstorm winds blew down multiple trees on Lynchburg Road.
Pine Hall	8/2/2018	50	Thunderstorm winds blew down one tree and multiple large tree limbs in Pine Hall.
Walnut Cove	8/2/2018	50	Thunderstorm winds blew down a few trees in Walnut Cove.
Danbury	8/8/2018	50	Thunderstorm winds blew down one power line along the 2900 block of Route 8, one tree at the intersection of Seven Island Road and Damascus Road, and another tree along the 3200 block of Moir Farm Road.
Dillard	8/8/2018	50	Thunderstorm winds blew down two trees along Route 772 between the intersections of Preston Road and Bethesda Church Road.
Prestonville	8/8/2018	50	Thunderstorm winds blew down one tree on Steele Road and a second tree on Tom Shelton Road.
Dillard	8/31/2018	50	Thunderstorm winds blew down one large pine tree on K-Fork Road close to the intersection with Goad Road.
Germanton	4/14/2019	50	Thunderstorm winds blew down three pine trees across the 2000 block of Brookhaven Road and across power lines at the same location. Damage values are estimated.
King	4/14/2019	50	Thunderstorm winds blew a tree down in Pine Hall. Damage values are estimated.
Vade Mecum	4/19/2019	50	Thunderstorm winds blew trees down in the area northwest of Hanging Rock. Damage values are estimated.
Danbury	6/20/2019	55	Several trees were blown down by thunderstorm winds within the community of Danbury.
Pine Hall	6/20/2019	50	Two trees were blown down by thunderstorm winds along the Stokes County border.
Walnut Cove	6/20/2019	55	Multiple trees were blown down by thunderstorm winds along Highway 65 in the Walnut Cove community.
Rosebud	8/13/2019	50	A large tree was blown down on a mobile home by severe thunderstorm winds. The mobile home was completely destroyed.
Vade Mecum	8/13/2019	55	Numerous trees and power lines were downed due to severe thunderstorm winds just north of Hanging Rock State Park.
Prestonville	9/12/2019	50	Thunderstorm winds got under the open end of a metal carport, lifted it into the air, rolled it over onto its roof, and subsequently destroyed it. Damage values are estimated.
<b>Surry County</b>			
Mt Airy	3/28/2000		Thunderstorm winds during the afternoon of the 28th downed a tree onto the garage portion of a house, damaging the roof.
Dobson	4/17/2000		Thunderstorms on the afternoon of the 17th produced hail up to one inch in diameter and damaging winds.  Thunderstorm winds downed trees and power lines in Dobson.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Pilot Mtn	5/13/2000		Thunderstorms during the afternoon of the 13th produced damaging winds and hail up to golf ball size.
			Thunderstorm winds downed several trees in Wentworth, downed trees 7 miles southwest of Lawsonville, and downed trees 1 1/2 miles northwest of Pilot Mtn.
Elkin	5/19/2000		A thunderstorm during the afternoon of the 19th produced sporadic damaging winds from 4 1/2 miles north of Elkin to 3 1/2 miles northeast of Elkin. Numerous trees were downed, a mobile home was destroyed with 2 minor injuries, a chicken house was destroyed, and several garages were damaged.
Mt Airy	6/3/2000		Thunderstorms during the afternoon of the 3rd produced damaging winds and hail up to golf ball size.
			Thunderstorm winds downed trees across eastern Wilkes County and large tree limbs 2 miles north of Mt Airy.
Level Cross	6/15/2000		Thunderstorms during the evening of the 15th produced damaging winds and hail up to dime size.
			Thunderstorm winds downed trees and snapped utility poles in Courtney, downed trees in Wentworth, trees in Level Cross, trees and power lines in Eden, and downed large trees across Oregon Hill Rd in Mayfield.
Pilot Mtn	6/25/2000		A thunderstorm on the afternoon of the 25th downed trees in Pilot Mtn.
Countywide	8/9/2000		Thunderstorms during the late evening of the 9th and early morning of the 10th produced damaging winds.
			Thunderstorm winds downed trees across Rockingham, Stokes, Caswell, and Surry Counties. In addition, a downed tree in Mount Airy damaged a house roof. In all locations there were numerous reports of other minor property damage.
Shoal	8/27/2000		Thunderstorms during the afternoon and evening of the 27th produced damaging winds.
			Thunderstorm winds downed trees 2 miles south of Yanceyville, 5 miles east of Reidsville, in Danbury, and in Shoal.
Flat Rock	11/9/2000		Thunderstorm winds during the evening of the 9th downed trees in Flat Rock and Boomer.
Mt Airy	6/22/2001		Thunderstorm winds on the 22nd downed trees in Mount Airy.
Mountain Park	8/23/2001		Thunderstorm winds during the afternoon of the 27th downed trees in Mountain Park and Zephyr.
Zephyr	8/23/2001		Thunderstorm winds during the afternoon of the 27th downed trees in Mountain Park and Zephyr.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Dobson	7/4/2002		Thunderstorms during the afternoon of the 4th produced damaging winds and hail up to one inch in diameter.  Thunderstorm winds downed trees in Elkin, southwestern Yadkin county, and across Ashe County. Thunderstorm winds also downed trees 4 miles west of Dobson, including onto two residences, causing damage to the roofs.
Elkin	7/4/2002		Thunderstorms during the afternoon of the 4th produced damaging winds and hail up to one inch in diameter.  Thunderstorm winds downed trees in Elkin, southwestern Yadkin county, and across Ashe County. Thunderstorm winds also downed trees 4 miles west of Dobson, including onto two residences, causing damage to the roofs.
Pilot Mtn	9/4/2002		Thunderstorm winds on the 4th downed trees across northeastern Stokes County and 5 miles west of Pilot Mountain.
Elkin	7/10/2003	60	Thunderstorms during the evening of the 10th produced damaging lightning and downed trees 7 miles east of Elkin.  Lightning created a fire that destroyed a garage in Traphill.
Dobson	7/12/2003	60	Thunderstorms during the evening of the 12th produced damaging winds.  Thunderstorm winds down trees in Traphill, 3 miles southwest of Dobson, and 5 miles northwest of State Road.
State Rd	7/12/2003	60	Thunderstorms during the evening of the 12th produced damaging winds.  Thunderstorm winds down trees in Traphill, 3 miles southwest of Dobson, and 5 miles northwest of State Road.
Elkin	7/19/2003	60	Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golf ball size.  A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its foundation, and knocked down and snapped off numerous trees and branches. A 3 foot diameter tree was also snapped off.  Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8

APPENDIX H: NCEI STORM EVENT DATA

Location	Date	MPH	Description
			miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.
Mt Airy	7/19/2003	60	<p>Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golfball size.</p> <p>A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3 foot diameter tree was also snapped off.</p> <p>Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.</p>
Pilot Mtn	7/19/2003	60	<p>Thunderstorms during the afternoon of the 19th produced a tornado, damaging winds, and hail up to golfball size.</p> <p>A small tornado developed about 2 miles north-northwest of Dillard and traveled southeast about four tenths of a mile before dissipating. The tornado was about 60 yards wide and damaged an abandoned house, moved a barn off of its fountain, and knocked down and snapped off numerous trees and branches. A 3 foot diameter tree was also snapped off.</p> <p>Thunderstorm winds downed trees 6 miles north of Danbury, downed trees and power lines in Pilot Mountain, downed trees blocked Route 772 near Duggins Road 8 miles north-northeast of Walnut Cove, downed trees along Route 52 near Pinnacle, and downed trees 1 north of Elkin and Mt. Airy.</p>
Dobson	7/22/2003	60	<p>Thunderstorms during the afternoon of the 22th produced damaging winds.</p> <p>Thunderstorms winds downed trees in Dobson and Francisco and trees and power lines from 3 miles south of Yadkinville to Yadkinville.</p>
Mt Airy	8/15/2003	60	Thunderstorms during the evening of the 15th downed trees 4 miles southeast of Mount Airy.
Elkin	8/22/2003	60	<p>Thunderstorms during the afternoon of the 22nd produced damaging winds.</p> <p>Thunderstorm winds downed trees 2 miles west of Monroeton and trees and power lines 6 miles north of Elkin.</p>

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Mountain Park	8/27/2003	60	Thunderstorm winds during the afternoon of the 27th downed trees in Mountain Park.
			Severe thunderstorms on the afternoon of the 30th produced damaging winds.
Dobson	8/30/2003	60	In North Wilkesboro, strong thunderstorm winds uprooted trees, with one landing on a vehicle. A portion of a facade was torn off a business and several power poles were knocked down.
			Another storm downed trees and powerlines around Dobson.
Dobson	5/23/2004	55	Severe thunderstorms downed a large tree and produced hail from penny to nickel size.
			During the afternoon of the 10th, severe thunderstorms produced large hail and damaging winds across portions of Northwest North Carolina.
Mt Airy	7/10/2004	60	
			Trees were blown over along Highway 89E, 2 miles east of Mt. Airy.
Dobson	7/18/2004	60	Thunderstorms during the evening of the 18th produced penny sized hail in Ennice. Thunderstorms downed trees and produced nickel size hail near Dobson.
Dobson	1/13/2005	52	Trees and limbs were down across much of the southwest to northcentral part of Surry Co.
Elkin	1/13/2005	52	Trees and limbs were down across much of the southwest to northcentral part of Surry Co.
Mt Airy	1/13/2005	52	Trees and limbs were down across much of the southwest to northcentral part of Surry Co.
Pine Ridge	7/5/2005	55	A severe thunderstorm produced damaging winds along Interstate 77 west and northwest of Pine Ridge. One location on the interstate highway had trees across it, and at a truck weigh station, trees came down on top of vehicles.
Pine Ridge	7/5/2005	55	A severe thunderstorm produced damaging winds along Interstate 77 west and northwest of Pine Ridge. One location on the interstate highway had trees across it, and at a truck weigh station, trees came down on top of vehicles.
Mt Airy	7/18/2005	50	Large tree down due to damaging thunderstorm winds.
Mt Airy	9/20/2005	60	Thunderstorms during the afternoon of the 20th produced hail up to penny size and downed trees in the Mount Airy area.
			A severe thunderstorm produced hail up to penny sized and wind gusts up to 60 mph during the afternoon of the 11th. Trees were downed at the Intersection of Highway 601 and 421 in Yadkinville city limits and the Forbush Community.
Pilot Mtn	6/11/2006	52	
			Several trees downed by a thunderstorm blocked Route 268 along Pilot Mountain in Surry county.
Mt Airy	7/13/2006	65	In advance of an approaching cold front, thunderstorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100 year old, 50 foot tall, with a 3 foot diameter trunk oak tree and a 40 foot

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
			tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
Low Gap	7/14/2006	50	An upper level disturbance passing across the region in the advance of a cold front helped to produce isolated thunderstorms. A few of these storms generated damaging winds that felled trees and downed some power lines.
Low Gap	7/20/2006	50	Scattered showers developed during the afternoon with a couple of them becoming severe. Wind gusts of 60 to 70 mph from two of the storms downed a few trees.
Siloam	7/22/2006	75	Thunderstorms developed in advance of an approaching cold front. A couple of these storms reached severe limits producing damaging wind gusts in the 65 to 80 mph range. Trees were downed in both Stokes and Surry Counties, but near Sioam in Surry County, two power poles were snapped off and power lines were down.
Elkin	7/28/2006	65	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Elkin	7/28/2006	60	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Mt Airy	8/2/2006	60	A severe thunderstorm snapped a power pole in Mount Airy. A walnut tree was also downed.
Dobson	8/3/2006	60	Two trees down.
Pilot Mtn	8/3/2006	55	One tree down.
Elkin	8/30/2006	60	Trees down.
Pilot Mtn	11/16/2006	55	Trees down in and near the city.
Dobson	6/25/2007	52	A 50-foot oak tree down on Rockford road.
State Rd	6/25/2007	52	Trees down at Route 21 and Mountain Park Road.
Pine Ridge	6/28/2007	52	One tree down.
Crutchfield	7/17/2007	50	Thunderstorm winds blew down trees and tree limbs on a road.
Mt Airy	8/3/2007	60	A large tree was blown down across the south bound lane of Interstate 77.
Mt Airy	8/3/2007	65	Several trees were downed, with minor damage to five structures, sporadically along a path about a mile long, from Sparger Road, just north of West Pine Street, east across Pipers Gap Road, to Fowler Street. This was caused by straight line winds from a severe thunderstorm. Estimated wind speeds of 70 to 75 mph accompanied the worst damage.
Siloam	8/29/2007	55	A couple of trees were blown down along Mount Zion Road and Grassy Creek Road.
Elkin	3/4/2008	60	Thunderstorm winds downed a twelve-inch diameter tree.
Mt Airy	3/4/2008	52	Multiple trees and power lines down across Mount Airy.
Salem	3/4/2008	52	Thunderstorm winds downed a carport on to a 1998 Dodge truck along Beasley Road in the Flat Rock community. The 30 foot by 30-foot carport with a shingled roof was anchored by a series of large wooden posts which snapped by the wind.
Mt Airy	4/19/2008	65	Damaging thunderstorm winds blew down trees, and utility buildings were blown into Locust Grove Lane, just off Siloam Road. Damage costs are estimates.
Ararat	5/8/2008	52	A large tree was blown down 2 miles southeast of Ararat.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Dobson	5/8/2008	52	A tree was blown down along U.S. Route 601, 1 mile southeast of Dobson.
Dobson	5/8/2008	55	Trees were blown down on the east side of Dobson.
Elkin	5/8/2008	55	Winds blew down power lines in the town of Elkin.
Fairview	5/8/2008	50	A tree was blown down on John Davis Road.
Mt Airy	5/8/2008	52	A tree was blown down in the town of Mount Airy.
Mt Airy	5/8/2008	55	Power lines were blown down in the town of Mount Airy.
White Plains	5/8/2008	52	A tree was blown down along Old Highway 601 near the White Plains community.
Rockford	6/7/2008	50	A tree was blown down by thunderstorm winds at the intersection of Rockford Road and Robert Burrus Road. Damage values are estimated.
Mt Airy	6/26/2008	60	Trees were blown down. Damage values are estimated.
Dobson	6/27/2008	50	One tree was blown down by thunderstorm winds on South Crutchfield Road. Damage values are estimated.
Dobson	6/27/2008	50	Thunderstorm winds blew down a tree on West Folger Street. Damage values are estimated.
Fairview	6/27/2008	50	A tree was blown down near the intersection of U.S. Highway 601 and Route 268. Damage values are estimated.
Dobson	7/6/2008	50	One tree was blown down onto a power line at Red Brush Road.
Elkin	7/30/2008	55	A large oak tree damaged a home in Elkin. The wall, brick, chimney and ceiling joist were all damaged.
Elkin	7/30/2008	55	A large walnut tree was blown down near the library in Elkin.
Elkin	8/2/2008	60	Three trees were uprooted, and two 16-inch diameter oak trees were snapped off 8 feet above the ground.
Pine Ridge	9/8/2008	50	A large tree as well as several large limbs were blown down one block north of Lakeview Circle.
Pine Ridge	9/8/2008	50	A tree was blown down near the intersection of Pine Ridge Road and Haystack Road.
Bannertown	9/30/2008	50	A tree was blown down on East Devon Road.
Flat Rock	9/30/2008	50	A tree was blown down on Mabe Hollow Trail.
Fairview	4/29/2009	50	Thunderstorm winds blew a tree down. Damage values are estimated.
Mountain Park	4/29/2009	50	Thunderstorm winds blew a tree down. Damage values are estimated.
Dobson	6/3/2009	50	Two trees were reported blown down by thunderstorm winds.
Level Cross	6/9/2009	52	Large tree limbs reported down along with dime-size hail.
Toast	7/11/2009	55	Thunderstorm winds blew trees down on Highway 89. Damage values are estimated.
Burch	8/5/2009	50	A tree was blown down on NC Route 268.
Dobson	8/5/2009	50	A tree was blown down on Hamlin Road.
Dobson	8/5/2009	52	Limbs were blown down by estimated 60 mph wind gust.
Elkin	8/5/2009	50	A tree was blown down on CC Camp Road.
Elkin	8/5/2009	50	A tree was blown down on E Manor Ridge Road.
Elkin	8/5/2009	50	A tree was blown down on Fremont Lane.
Fairview	8/5/2009	50	A tree was blown down on Dobbins Mill Road.
Fairview	8/5/2009	50	A tree was blown down on NC Route 268.
Mountain Park	8/5/2009	50	A tree was blown down on Kapps Mill Road.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Mountain Park	8/5/2009	50	A tree was blown down on River Road.
State Rd	8/5/2009	50	A tree was blown down along Main Street.
Mt Airy	8/11/2009	50	A tree was blown down on Armstrong Road.
Pilot Mtn	8/11/2009	50	A tree was blown down on Shoals Road.
Ararat	8/20/2009	55	Multiple trees were blown down in Ararat.
White Plains	8/20/2009	55	Several trees were blown down in White Plains.
Dobson	4/8/2010	55	A large tree brought down power lines at the intersection of Siloam Road and Ararat Road.
Dobson	4/8/2010	50	A tree down was blown down by thunderstorm winds near Zephyr Road and White Road.
Dobson	4/8/2010	50	One tree was blown down by thunderstorm winds on Old Highway 61.
Mountain Park	4/8/2010	55	One tree and a few power lines were blown down at Mountain Park Road and North Hays Road.
State Rd	4/8/2010	60	A mobile home shifted on its foundation on Thurmond Road. A roof was blown off a home on Zephyr Mountain Park Road and other buildings damaged.
Mt Airy	5/16/2010	50	Thunderstorm winds downed a tree on Chestnut Ridge Road 1.5 miles east of Reeves Mill Road. Damage values are estimated.
Pilot Mtn	5/16/2010	50	Thunderstorm winds blew a tree down at the intersection of Old Westfield Road and Matthews Road. Damage values are estimated.
Dobson	5/28/2010	50	Thunderstorm winds blew a tree down across Turkeyford Road. Damage values are estimated.
Mt Airy	5/28/2010	55	Thunderstorm winds downed multiple trees in and around Mt. Airy. Damage values are estimated.
Westfield	6/2/2010	50	A tree was reported blown down on Highway 89. Damage amounts are estimated.
Dobson	6/12/2010	55	Many trees were blown down at 3252 Zephyr Road. Damage amounts are estimated.
Dobson	6/12/2010	55	Trees were blown down on Highway 601. Damage amounts are estimated.
Elkin	6/12/2010	50	A two-foot diameter tree was blown down on US 21 just north of Elkin. Damage amounts are estimated.
Dobson	6/14/2010	50	A couple of trees were blown down in Dobson, one of which fell on a vehicle. Damage amounts are estimated.
Mt Airy	6/14/2010	50	Several large trees and power lines were blown down around Mount Airy. Damage amounts are estimated.
Westfield	6/19/2010	50	Trees were blown down blocking Wood Cove Drive. Damage amounts are estimated.
Flat Rock	6/21/2010	50	A tree was blown down at the intersection of McBride Road and Stanley Road. Damage amounts are estimated.
Flat Rock	6/21/2010	50	A tree was blown down on East Pine Street near McBride Road. Damage amounts are estimated.
Flat Rock	6/21/2010	50	A tree was blown down On Poteat Road. Damage amounts are estimated.
Flat Rock	6/21/2010	50	Tree down on power line with minor fire at 236 Southview Street. Damage amounts are estimated.
Flat Rock	6/21/2010	55	Trees and power lines were down at 112 Ezra Trail. Damage amounts are estimated.
Mt Airy	6/21/2010	50	A large tree was blown down on N. Main Street.
Mt Airy	6/21/2010	50	A tree and power lines were down at 2241 South Main Street. Damage amounts are estimated.
Mt Airy	6/21/2010	50	A tree was blown down at 1401 North Main Street. Damage amounts are estimated.



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Location	Date	MPH	Description
Mt Airy	6/21/2010	50	A tree was blown down at the intersection of East Pine Street and Luther Ridge Road. Damage amounts are estimated.
Mt Airy	6/21/2010	50	A tree was blown down at the intersection of Wards Gap Road and Myers Drive. Damage amounts are estimated.
Mt Airy	6/21/2010	50	A tree was blown down causing a fire at the intersection of Old Buck Shoals Road and South Main Street. Damage amounts are estimated.
Mt Airy	6/21/2010	55	Trees and power lines were down at Riverside Drive and Jackson Road. Damage amounts are estimated.
Salem	6/21/2010	50	A tree was blown down at the intersection of Eaton Street and Linville Road. Damage amounts are estimated.
Salem	6/21/2010	55	Trees and power lines down along with fire at Slate Road and McBride Road intersection. Damage amounts are estimated.
Salem	6/21/2010	55	Trees were blown down at 445 McBride Road. Damage amounts are estimated.
Elkin	6/23/2010	50	Multiple large tree limbs were blown down along Highway 268 near Oakland Drive. Damage amounts are estimated.
Mountain Park	6/24/2010	50	A tree was blown down at the intersection of Haystack Road and Luffman Road. Damage amounts are estimated.
Mountain Park	6/27/2010	50	A tree was blown down at the intersection of Abe Mayes Road and Swift Lane. Damage amounts are estimated.
Mountain Park	6/27/2010	50	A tree was blown down on River Road and Haystack Road. Damage amounts are estimated.
Mountain Park	6/27/2010	50	A tree was blown down on Union Hill Road. Damage amounts are estimated.
Mt Airy	6/27/2010	50	A tree was blown down at the intersection of Davis Street and Sunset Drive. Damage amounts are estimated.
Zephyr	6/27/2010	50	A tree was blown down on Crossroads Church Road. Damage amounts are estimated.
Flat Rock	7/9/2010	50	A tree was reported blown down near the intersection of Westfield Road and Rolling Hill Drive.
Mt Airy	7/9/2010	50	One tree was reported blown down on Simmons Road.
Pilot Mtn	7/9/2010	50	One tree was reported blown down on old U.S. Highway 52 behind the high school.
Burch	7/13/2010	50	A tree was blown down along Joe Layne Mill Road, just off of Highway 268.
Copeland	7/13/2010	50	Two trees were blown down on Rockford Road.
Bottom	7/18/2010	50	Thunderstorm winds blew down a tree at the intersection of Fisher Valley Road and Haystack Road.
Dobson	8/5/2010	55	Several trees were blown down by thunderstorm winds on Red Brush Road.
Flat Rock	8/5/2010	50	Trees were brought down on East Pine Street near Flat Rock.
Low Gap	8/5/2010	50	Some large tree branches and trees were down in the area of Blevins Store Road and Ladonia Church Road.
Mt Airy	8/5/2010	50	A few trees were knocked down on Linville Road.
Mt Airy	3/23/2011	60	Thunderstorm winds blew down numerous trees and power lines. Damage values are estimated.
Dobson	4/5/2011	50	A large pine tree was blown down across a driveway, and some lawn furniture was also blown around.
Mountain Park	4/26/2011	50	A few trees were blown down on Haystack road, and one on Red Hill Creek Road.
Pine Ridge	4/26/2011	50	Trees were blown down on a house along Maple Grove Church Road.
Mt Airy	4/28/2011	50	Several trees were blown down along Pine Street in Mount Airy.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Pilot Mtn	5/3/2011	50	Thunderstorm winds blew down a tree in the Pilot Mountain area.
Siloam	5/3/2011	50	Local police reported thunderstorm winds blew a tree down in Siloam.
Low Gap	5/13/2011	50	Several trees were brought down by thunderstorm winds on West Pine Street.
Mt Airy	5/13/2011	50	Thunderstorm winds blew down a tree on Virginia Street.
Bannertown	5/14/2011	50	A tree was blown down by thunderstorm winds in the Westfield Community.
Elkin	5/14/2011	50	Thunderstorm winds blew down a tree near Elkin.
Mt Airy	5/14/2011	50	Thunderstorm winds blew down a tree in Mt. Airy.
Zephyr	5/24/2011	50	Two large trees were blown down along Crossroads Church Road.
Bottom	5/26/2011	50	A tree was blown down near I-77.
Salem	6/7/2011	55	Thunderstorm winds blew a 12-inch diameter branch down. The branch blocked Route 52 north of Greenhill Road. A large oak tree was blown down in the 100 block of Kizer Street on a residence. The tree punctured and warped the roof of the house. Minor water damage occurred.
Woodville	6/9/2011	50	Thunderstorm winds blew a tree down onto a power line in Westfield. Damage values are estimated.
Woodville	6/9/2011	50	Thunderstorm winds blew several trees down. Damage values are estimated.
Salem	6/10/2011	50	Thunderstorm winds blew one tree down near the intersection of Linville and Stanley Roads. Damage values are estimated.
Toast	6/10/2011	50	Thunderstorm winds blew one tree down on power lines along Muse Avenue. Damage values are estimated.
Westfield	6/10/2011	50	Thunderstorm winds blew one tree down on Airview Drive. Damage values are estimated.
Elkin	6/11/2011	55	Thunderstorm wind blew down a tree that pierced the roof of a shed along Carter Mill Road. Damage values are estimated.
Elkin	6/11/2011	60	Thunderstorm winds blew several large trees down in the community of Elkin. Damage values are estimated.
Level Cross	6/11/2011	55	Thunderstorm winds blew three large poplar trees down on Hamlin Ford Road. Damage values are estimated.
Siloam	6/11/2011	60	Thunderstorm winds blew several trees down in the community of Siloam. Damage values are estimated.
State Rd	6/11/2011	60	Thunderstorm winds blew numerous trees down along Mountain Park Road. Damage values are estimated.
Dobson	6/18/2011	50	A large tree limb fell across West Atkins Street near the elementary school. Damage values are estimated.
Fairview	6/18/2011	50	Thunderstorm winds blew a tree down across Dobbins Mill Road. Damage values are estimated.
Mt Airy	6/18/2011	55	Thunderstorm winds downed numerous trees within a three mile path from area in and around Mt. Airy to near Flat Rock. Specifically, trees were blown down on Country Club Road, Springs Road, Highway 52 just west of town, Westlake Drive, and East Pine Street. One of the trees that fell on Springs Road fell onto a house. Many power outages were reported around the town of Mt. Airy.
Level Cross	6/21/2011	50	Thunderstorm winds blew a tree down at the intersection of Highway 268 and Quaker Church Road. Damage values are estimated.
Level Cross	6/21/2011	50	Thunderstorm winds blew a tree down on Copeland School Road. Damage values are estimated.
Zephyr	6/21/2011	50	Thunderstorm winds blew large limbs down along Maplebrook Drive. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Elkin	6/28/2011	55	Thunderstorm winds blew trees down on Highway 268. Damage values are estimated.
Dobson	7/4/2011	50	A tree was blown down along US Highway 601.
Rockford	7/4/2011	50	A tree was blown down into powerlines in Rockford.
State Rd	7/4/2011	50	Three trees were blown down by thunderstorm winds.
Ararat	7/6/2011	50	Thunderstorm winds blew down trees along Ararat Road.
Toast	7/6/2011	50	Thunderstorm winds blew down several trees along Wedgewood Drive and one on South Mckinney Road.
Copeland	7/11/2011	60	Twenty to twenty-five trees had damage to their tops, including large limbs being blown out. There was also minor damage to a home with shingles blown off and a basement window blown out.
Bottom	7/24/2011	50	Thunderstorm winds blew down a large tree on Round Peak Church Road, and another on Bryant Road.
Crutchfield	7/31/2011	50	Thunderstorm winds knocked down a tree at 9310 U.S. Highway 601.
Fairview	7/31/2011	50	Thunderstorm winds blew down a tree near the intersection of Route 601 and 268.
Burch	8/8/2011	60	Two portions of building roofs damaged near Joe Layne Mill Road and Dobson Road.
Mountain Park	8/8/2011	50	A tree was blown down on Union Hall Road.
Zephyr	8/8/2011	60	Over twenty large trees were reported down or uprooted along Dobbins Mill Rd. There was significant roof damage to a home and a business as well. Winds also blew down a tree near Highway 268 and Little Bend Trail.
Pilot Mtn	8/14/2011	50	Several trees were blown down by thunderstorm winds on trails at Pilot Mountain State Park.
Elkin	9/1/2011	60	Thunderstorm winds blew about one dozen trees down across the community of Elkon. Power was also out across portions of the town. Damage values are estimated.
Shoal	9/1/2011	60	Thunderstorm winds blew a power line down on Pinnacle Hotel Road. Damage values are estimated.
Ararat	9/2/2011	55	Thunderstorm winds blew a tree down on Homeplace Park Road. Damage values are estimated.
Ararat	9/2/2011	55	Thunderstorm winds blew four trees down within approximately a five-mile-wide swath extending from just south of Ararat to areas between Blackwater and Cedar Hill. Specific roads the trees fell across include Toms Creek Road, Chilton Road, Key Road, and Pilot Power Dam Road. Damage values are estimated.
Ararat	9/2/2011	55	Thunderstorm winds blew several trees were blown down between Bryant Mill Road and Eldora Road. Damage values are estimated.
Bottom	9/2/2011	50	Thunderstorm winds blew a tree down on Neal Road. Damage values are estimated.
Crutchfield	9/2/2011	50	Thunderstorm winds blew a tree down along U.S. 601. Damage values are estimated.
Fairview	9/2/2011	50	Thunderstorm winds blew a tree down near the intersection of Highway 268 and U.S. 601. Damage values are estimated.
Level Cross	9/2/2011	55	Thunderstorm winds blew a tree and power line down between Pratt Road and Greene Road. Damage values are estimated.
Level Cross	9/2/2011	50	Thunderstorm winds blew a tree down along Highway 268. Damage values are estimated.
Level Cross	9/2/2011	50	Thunderstorm winds blew two trees down. One tree fell on Stanford Church Road, the other on Jay Max Lane. Damage values are estimated.
Mt Airy	9/2/2011	50	Thunderstorm winds blew a tree down on Cook School Road. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Pilot Mtn	9/2/2011	50	Thunderstorm winds blew a tree down near the intersection of Dodson Mill Road and Whitaker Chapel Road. Damage values are estimated.
Pilot Mtn	9/2/2011	55	Thunderstorm winds blew a tree down on East Pine Street. Damage values are estimated.
Pilot Mtn	9/2/2011	70	Thunderstorm winds blew several power lines down. A store's sign and outdoor storage racks were blown away, and a tree was also blown down. A large Billboard and road signs were also blown down at and near the Family Dollar Store. Damage values are estimated.
Siloam	9/2/2011	50	Thunderstorm winds blew a tree down on Quaker Church Road. Damage values are estimated.
Woodville	9/2/2011	60	Thunderstorm winds blew power lines down. Damage values are estimated.
Bannertown	5/1/2012	50	Two trees were blown down on Hamburg Street.
Mt Airy	5/1/2012	50	Two trees were blown down on Reeves Mill Road.
Stoney Knoll	6/22/2012	55	Thunderstorm winds blew trees down on Bray Ford Road. Damage values are estimated.
Flat Rock	6/24/2012	50	Thunderstorm winds blew an oak tree down across Labrador Lane. Damage values are estimated.
Mt Airy	6/24/2012	50	Thunderstorm winds blew several large tree limbs down on Route 103. Damage values are estimated.
Woodville	6/24/2012	50	A tree fell on a mobile home. A 62-year-old male occupant was injured in the process. Damage values are estimated.
Low Gap	6/29/2012	65	Thunderstorm winds blew at least 200 trees down across the county. Fallen trees damaged the roofs of five homes and damage eight vehicles. Damage values are estimated.
Flat Rock	7/3/2012	50	A tree fell on Badgett Avenue near Mt. Airy.
Mt Airy	7/3/2012	50	Several trees were brought down in Mt. Airy.
Elkin	7/5/2012	55	Thunderstorm winds toppled a church steeple and brought down several large trees as well.
Zephyr	7/5/2012	55	Multiple trees down and damage was done to several buildings in Dobson and a tree was brought down on I-77.
Dobson	9/2/2012	50	Three trees were blown down by thunderstorm winds. The damage started at the intersection of Marion and Freeman Streets, and ended at Old Rockford Road.
Level Cross	9/2/2012	50	One tree was blown down at the intersection of Nurse Road and Tom Jones Road.
Woodville	9/2/2012	50	One tree was blown down at the intersection of Westfield Road and Hollingsworth Road.
Bottom	9/3/2012	50	One tree was blown down by thunderstorm winds near intersection of Tony Holder Road and Ivy Green Trail.
State Rd	9/3/2012	50	One tree was blown down by thunderstorm winds on Old U.S. Route 21 near the State Road Volunteer Fire Department.
Ararat	4/12/2013	50	The Surry County 911 Center reported that a large tree was blown down near the intersection of Little Mountain Church Road and Creed Road just west-northwest of Ararat with another large tree down four miles west-southwest of Pilot Mountain blocking a portion of Highway 268.
Bottom	4/19/2013	50	The Surry County 911 Center reported that power lines were down near the intersection of Red Brush Road and Fannie Simmons Road southeast of Bottom.
Elkin	6/13/2013	55	Thunderstorms along a squall line produced winds that downed numerous trees and power lines in the Elkin area. Damage values are estimated.
Dobson	6/26/2013	50	Thunderstorm winds blew trees down in Dobson. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Zephyr	6/26/2013	55	Damaging winds along a line of thunderstorm blew down trees throughout the county. A structure was damaged along Reeves Mill Road due to a fallen tree. Power lines were brought down by either winds or fallen trees on Joe Reed Trail and Zephyr Road. A transformer was also damaged on Joe Reed Road. Damage values are estimated.
Mt Airy	7/17/2013	50	Multiple trees were blown down and street flooding reported in Mount Airy.
Ararat	8/22/2013	50	The Surry County 911 Center reported that two trees were blown down by thunderstorm winds. One on Eldora Road five miles west of Pilot Mountain and another on Arrarat Road near Arrarat.
White Plains	8/31/2013	55	Employees of the Mount Airy Post Office observed that several trees were blown down by thunderstorm winds along North Carolina Route 601 just south of Mount Airy.
Mt Airy	6/17/2014	55	Thunderstorm winds blew down three trees on the north side of Mt. Airy. On Taylor Street, a tree was blown down on a car and building. Another tree was blown down at the intersection of Riverside Dr and Independence Blvd. The third tree was blown down at the intersection of Kyle St and Woodruff St. Damage values are estimated.
Westfield	6/17/2014	55	Thunderstorm winds blew one tree down on Welch Street. Damage values are estimated.
Woodville	7/2/2014	50	A tree was down on a power line near intersection of Woodville Road and Westfield Road and a tree fell onto a power line along Toms Creek Church Road.
Ararat	7/8/2014	55	Several trees were blown down by thunderstorm winds in the town of Ararat.
Pilot Mtn	7/8/2014	50	Thunderstorm winds brought trees down near Pilot Mountain.
State Rd	7/8/2014	50	Three trees were reported down as a thunderstorm tracked across the area. Trees were down on Mountain Park Road, Cooper Street and at the intersection of Chandler Drive and Jenkinstown Road.
Fairview	6/17/2015	50	A tree was blown down onto a power line on Twin Oaks Road near Snowhill Church Road.
Zephyr	6/17/2015	50	A tree was blown down along Bert Cockerman Road. In addition, a power line was blown down along Twin Oaks Road near Zephyr Road.
Pilot Mtn	8/5/2015	55	Broadcast media out of Winston-Salem North Carolina relayed reports that multiple trees were down on Dodson Mill Road, just northwest of Pilot Mountain.
Salem	8/10/2015	52	The Surry County Emergency Management Director reported that trees were down along Witt Street, Farmbrook Road, and Hamburg Street in Mount Airy.
Ararat	9/12/2015	60	A downburst caused a 2-mile damage path with several downed trees, power lines, and an old barn.
Low Gap	2/24/2016	50	Thunderstorm winds broke off several large branches from trees. Dime size hail was also reported.
White Plains	2/24/2016	65	This particular storm had very strong winds with much of its life with reports of damaging winds and large hail. The storm went directly through Mt. Airy where numerous trees were blown down in multiple locations. Reports ended in the Flat Rock area where downed trees and power lines were widespread.
Elkin	7/14/2016	55	Thunderstorm winds blew off a roof from a business within the City of Elkin. In addition, six large trees and a wooden fence were blown down, and a metal light pole was damaged.
Pine Ridge	7/14/2016	55	Thunderstorm winds severely damaged a garage, downed multiple trees and took a roof off a barn on Laurel Spring Church Road.
Woodville	7/15/2016	55	At least a dozen trees were blown down by thunderstorm winds near the intersection of Westfield and Albion Roads.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
Dobson	8/17/2016	50	Thunderstorm winds blew two trees down. One tree was felled near West Folger Street. The other tree, a large oak tree, was blown down onto a power line along South main Street. Damage values are estimated.
Mountain Park	5/19/2017	52	Thunderstorm winds downed several trees near the intersection of Haystack Road and Luffman Road.
Flat Rock	7/22/2017	50	A few trees, one to two feet in diameter, were snapped in half by thunderstorms winds.
Mt Airy	10/23/2017	45	Thunderstorm winds knocked several large tree limbs down.
Pine Ridge	10/23/2017	60	Many trees and power lines were knocked down by thunderstorm winds across the county, mainly in Pine Ridge where a possible microburst occurred.
Pine Ridge	4/15/2018	50	Power lines were blown down by thunderstorm winds along Pine Ridge Road.
Pine Ridge	6/1/2018	50	Several trees were blown down by severe thunderstorms winds, including along W. Pine Street, Laila Lane and on Sparger Road.
Low Gap	6/10/2018	50	At least two trees were blown down by thunderstorm winds at the Low Gap Recycling Center.
Mt Airy	6/18/2018	50	Two trees were blown down by thunderstorm winds near the intersection of Interstate 74 an Highway 52.
Level Cross	6/25/2018	55	Multiple trees were blown down by thunderstorm winds in the Level Cross area.
Pilot Mtn	6/25/2018	50	A tree was blown down by thunderstorm winds along Lightning Lane.
Ararat	7/21/2018	60	Thunderstorm winds blew twenty-six trees down from just southwest of Ararat to Ararat to Flat Rock. Damage values are estimated.
State Rd	8/2/2018	50	Thunderstorm winds blew down one tree near the intersection of US Route 21 and Old Highway 21.
Mt Airy	8/8/2018	60	Thunderstorm winds blew down twenty trees and power lines in Mount Airy.
Pilot Mtn	8/8/2018	50	Thunderstorm winds below down a power line on Barney Venable Road.
Shoal	8/8/2018	60	Thunderstorm winds blew down over twenty trees and two power lines near Shoals. The damage path was about 100 yards wide and between a quarter and a third of a mile long.
Dobson	4/14/2019	50	Thunderstorm winds blew numerous large tree limbs down along Tobe Hudson Road. Damage values are estimated.
Low Gap	4/14/2019	50	Thunderstorm winds blew down a tree on Lumber Plant Road.
Bottom	4/19/2019	50	Thunderstorm winds blew a tree down across Ladonia Church Road. Damage values are estimated.
Low Gap	4/19/2019	55	Thunderstorm winds blew down multiple trees in the Low Gap community. Damage values are estimated.
Pine Ridge	4/19/2019	50	Thunderstorm winds blew a couple of trees down. Damage values are estimated.
Pine Ridge	4/19/2019	65	Thunderstorm winds destroyed a barn and multiple trees. Damage values are estimated.
Mt Airy	5/12/2019	50	Thunderstorm winds blew down one tree in Mount Airy.
Mt Airy	5/12/2019	50	Thunderstorm winds blew down one tree at the intersection of Old Highway 52 South and Whisper Trial and a second tree at the intersection of Highway 52 and Cook School Road.
Pilot Mtn	5/12/2019	50	Thunderstorm winds blew down one tree in Pilot Mountain.
Pilot Mtn	5/12/2019	50	Thunderstorm winds blew down one tree on Whitaker Chapel Road.
Mountain Park	7/6/2019	50	A tree was blown down by thunderstorm winds near the intersection of Haystack Road and Luffman Road.
State Rd	7/6/2019	50	A tree was blown down by thunderstorm winds onto Cedar Creek Road near U.S. Highway 21.

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Location	Date	MPH	Description
Pilot Mtn	7/18/2019	55	Several trees were downed by thunderstorm winds near Pilot Mountain.
Shoal	8/21/2019	50	One tree down was blown down by thunderstorm winds on Stony Ridge Road.
Shoal	8/21/2019	50	One tree was blown down on Perch Road due to severe thunderstorm winds.
Siloam	8/21/2019	50	One tree down was blown down by thunderstorm winds on Hardy Road.
Woodville	9/29/2019	50	Thunderstorm winds blew a tree down on Slate Mountain Road. Damage values are estimated.
<b>Yadkin County</b>			
Courtney	6/15/2000		Thunderstorms during the evening of the 15th produced damaging winds and hail up to dime size. Thunderstorm winds downed trees and snapped utility poles in Courtney, downed trees in Wentworth, trees in Level Cross, trees and power lines in Eden, and downed large trees across Oregon Hill Rd in Mayfield.
Countywide	8/10/2000		Thunderstorms during the early morning of the 10th produced damaging winds. Thunderstorms winds downed trees in Traphill and across Yadkin County.
Southwest Portion	7/4/2002		Thunderstorms during the afternoon of the 4th produced damaging winds and hail up to one inch in diameter. Thunderstorm winds downed trees in Elkin, southwestern Yadkin county, and across Ashe County. Thunderstorm winds also downed trees 4 miles west of Dobson, including onto two residences, causing damage to the roofs.
West Portion	6/8/2003	65	Thunderstorms during the 8th produced flash flooding and damaging winds, Heavy thunderstorm rains caused a partial washout of State Route 1514 near Aho and U.S. Route 321 at Aho Road. Heavy rains also flooded Dry Creek in Draper with water 6 inches deep running across the road. 5 miles east of Eden a creek flooded across Wolf Island Road. Thunderstorm winds downed trees in Millers Creek, Roaring River, 10 miles northeast of Wilkesboro, western Yadkin County, Ayersville, 5 miles northwest of Wentworth, across Route 62 in Hamer, and also tore the roof off of a tobacco barn in Hamer.
Countywide	7/18/2003	65	Thunderstorms during the afternoon of the 18th produced damaging winds and hail up to nickel size. Thunderstorm winds downed trees in Roaring River, onto a car near Wilkesboro, and across Yadkin County.
Yadkinville	7/22/2003	60	Thunderstorms during the afternoon of the 22th produced damaging winds. Thunderstorms winds downed trees in Dobson and Francisco and trees and power lines from 3 miles south of Yadkinville to Yadkinville.
Courtney	7/27/2005	50	Damaging thunderstorm winds downed trees in the area around Courtney.
Courtney	7/28/2005	60	Severe thunderstorms, some with bowing line segments, resulted in trees and some power lines down.
East Bend	7/28/2005	60	Severe thunderstorms, some with bowing line segments, resulted in trees and some power lines down.
Yadkinville	1/13/2006	65	Two trees were blown down over Highway 67 east of Boonville.
Jonesville	6/11/2006	53	Thunderstorm winds downed several trees.
Yadkinville	6/11/2006	57	Trees downed blocked Hamptonville Road in Yadkinville.
Yadkinville	6/11/2006	52	A severe thunderstorm produced hail up to penny sized and wind gusts up to 60 mph during the afternoon of the 11th. Trees were downed at the Intersection of Highway 601 and 421 in Yadkinville city limits and the Forbush Community. Several trees downed by a thunderstorm blocked Route 268 along Pilot Mountain in Surry county.
Countywide	7/13/2006	65	In advance of an approaching cold front, thundestorms developed. Some of these storms became severe producing damaging winds and large hail. The severe winds ranged generally between 60 and 75 mph with numerous reports of large trees down. A 100-year-old, 50 foot tall, with a 3 foot diameter trunk oak tree and a 40

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
			foot tall sycamore tree in Yadkin County was among this lot. In locations of Rockingham, Stokes, and Yadkin Counties some of the downed trees fell on houses and vehicles. The hail that fell ranged from penny to nickel size.
East Bend	7/14/2006	55	An upper level disturbance passing across the region in the advance of a cold front helped to produce isolated thunderstorms. A few of these storms generated damaging winds that felled trees and downed some power lines.
Enon	7/14/2006	60	An upper level disturbance passing across the region in the advance of a cold front helped to produce isolated thunderstorms. A few of these storms generated damaging winds that felled trees and downed some power lines.
Yadkinville	7/20/2006	55	Scattered showers developed during the afternoon with a couple of them becoming severe. Wind gusts of 60 to 70 mph from two of the storms downed a few trees.
Jonesville	7/28/2006	60	Thunderstorms developed with the passage of an upper level disturbance. Some of these storms reached severe limits by producing wind gusts on the order of 60 to near 75 mph. Numerous trees were blown down by these winds, some into power lines and roof tops. Other wind damage included damage to a mobile home in Roaring River, Wilkes County.
Enon	8/30/2006	60	Trees down.
East Bend	11/16/2006	55	Some trees down.
Longtown	11/16/2006	55	Trees down on Highway 21N.
Yadkinville	6/11/2007	60	Four trees were snapped or uprooted.
East Bend	6/28/2007	52	Large tree down.
Yadkinville	7/10/2007	50	A large tree was blown down. Damage values are estimates.
Yadkinville	7/27/2007	55	Thunderstorm winds blew down three trees and a power line. The trees were reported down on Whitaker Road and Myers Road. Damage values are estimated.
Yadkinville	8/21/2007	55	A severe thunderstorm brought down numerous trees in Yadkinville. Two vehicles were damaged when trees fell on them. No damage estimates were available for the two cars. A sixty foot pine tree was blown down, destroying the wooden front gate to a business. The damage amounts are rough estimates.
Yadkinville	8/22/2007	60	Severe thunderstorm winds caused rafters atop a business to collapse. The business was under construction and no one was hurt.
Jonesville	3/4/2008	52	Several large tree limbs were downed by thunderstorm winds.
Boonville	5/8/2008	50	Trees were blown down onto a transformer which caused a fire.
Yadkinville	5/8/2008	55	Trees were blown down onto power lines in Yadkinville.
East Bend	6/26/2008	65	Several trees were blown down in the East Bend area along Highway 67. One tree fell on a car. Damage values are estimated.
East Bend	6/27/2008	55	Thunderstorm winds brought down three trees in East Bend. Damage values are estimated.
Martins Store	6/28/2008	50	A cold front moving into moist, unstable air across northwest North Carolina triggered isolated thunderstorms on June 28. One of these storms produced wind gusts that blew down trees near Yadkinville, NC.
Shacktown	7/9/2008	55	A large tree was blown down. Damage values are estimated.
Union Hill	7/9/2008	65	Trees one foot in diameter were blown down near the Highway 67 bridge. Damage values are estimated.
Windsors Xrds	7/29/2008	50	Large tree limbs were blown down. Damage values are estimated.
Buck Shoals	8/2/2008	55	Numerous trees and power lines were downed.
Brooks	6/10/2009	55	Numerous trees were knocked down.
Hamptonville	7/23/2009	55	Thunderstorm winds blew down some trees. Damage values are estimated.



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Location	Date	MPH	Description
Arlington	8/5/2009	55	A large tree was blown down on a home along Haynes Road.
Boonville	8/5/2009	50	Several trees were blown down in town.
Hamptonville	8/5/2009	50	Several trees were downed in the Hamptonville area.
Jonesville	8/5/2009	50	Several trees were blown down across Jonesville.
Huntsville	9/28/2009	50	Two oak trees were down along Farmington Road, damaging a fence.
Boonville	6/3/2010	50	Numerous large tree limbs were blown down along with one half inch diameter hail. Damage amounts are estimated.
Jonesville	6/12/2010	50	A large tree was blown down in Jonesville. Damage amounts are estimated.
Yadkinville	6/13/2010	50	A power line was blown down by thunderstorm winds. Damage amounts are estimated.
Boonville	6/14/2010	55	Numerous trees were blown down near Center Road. Damage amounts are estimated.
Boonville	6/14/2010	50	A pine tree was blown down on Highway 601. Damage amounts are estimated.
Boonville	6/14/2010	50	A tree was blown down on vehicle on Mitchells Chapel Road. Damage amounts are estimated.
Courtney	6/14/2010	50	A tree was blown down on phone lines on Wesley Avenue. Damage amounts are estimated.
East Bend	6/14/2010	50	A tree was blown down on Siloam Road. Damage amounts are estimated.
East Bend	6/14/2010	55	Several trees were blown down on Smithtown Road near the Fairground Road intersection. Damage amounts are estimated.
Enon	6/14/2010	50	A tree was blown down on a power line on Taylor Road. Damage amounts are estimated.
Longtown	6/14/2010	55	Several trees were blown down on Cranberry Road near Mitchells Chapel Road. Damage amounts are estimated.
Longtown	6/14/2010	50	Two trees down on a power line on Whitaker Road. Damage amounts are estimated.
Richmond Hill	6/14/2010	50	A tree was blown down on Richmond Hill Church Road near Rockford Road. Damage amounts are estimated.
Richmond Hill	6/14/2010	55	Several trees were blown down on Pendry Road. Damage amounts are estimated.
Yadkinville	6/23/2010	50	A tree was blown down in Yadkinville. Damage amounts are estimated.
Smithtown	6/24/2010	50	A tree was blown down between Siloam and Pilot Mountain State Park. Damage amounts are estimated.
Yadkinville	7/9/2010	50	Large tree limbs were blown down in town.
Marler	7/13/2010	50	One tree was knocked down by thunderstorm winds on Mountain View Church Road.
Nebo	7/17/2010	50	Two trees were blown down on a trailer and a car. One power pole was also knocked down by thunderstorm winds.
Yadkinville	11/16/2010	55	Several trees were blown down along Highway 601 near Booneville.
Cycle	4/5/2011	50	Two chicken houses were destroyed by thunderstorm winds. Several trees were also downed by the winds.
Jonesville	5/3/2011	55	Several trees and power lines were brought down by the winds in Jonesville.
Hamptonville	5/24/2011	55	A number of trees were blown down in the Hamptonville area.
Shacktown	5/24/2011	50	Trees were blown down on the grounds of Forbush High School.
Courtney	5/26/2011	50	A rood was blown off a structure on Brawley Road. Additional damage was reported on Wyo Road.
East Bend	5/26/2011	50	Thunderstorm winds blew trees and power lines down. One tree fell on a house.
Hamptonville	6/9/2011	50	Thunderstorm winds blew several trees down. Damage values are estimated.

**APPENDIX H: NCEI STORM EVENT DATA**

Location	Date	MPH	Description
East Bend	6/28/2011	55	Thunderstorm winds blew trees down on Route 67. Damage values are estimated.
Boonville	7/13/2011	55	Several trees and large limbs were blown down by thunderstorm winds.
Yadkinville	7/13/2011	50	Thunderstorm winds blew down a tree on Highway 601 near Surry Community College.
Jonesville	7/24/2011	50	Thunderstorm winds blew down a tree.
Yadkinville	7/24/2011	50	Four trees were blown down by thunderstorm winds in Yadkinville.
Arlington	8/11/2011	50	Three trees were reported down due to wind gusts.
Boonville	8/13/2011	50	County dispatch reported several trees were blown down by thunderstorm winds in Boonville on Highways 601 and 67.
Forbush	8/13/2011	55	A large thunderstorm cell brought down numerous large tree limbs at 3409 Rockett Road and two trees on Baltimore Road.
Jonesville	9/1/2011	55	Thunderstorm winds blew several trees down in Jonesville. One of these trees fell on top of an automobile. Damage values are estimated.
Courtney	9/2/2011	60	Thunderstorm winds blew several trees down in the Courtney area. Damage values are estimated.
Yadkinville	9/2/2011	65	Thunderstorm winds blew trees down near and west of Yadkinville. Along Hoots Road, trees came down on a power line. These subsequently fell on a house, trapping its occupants. Also, a roof was blown off a barn along Old Route 21 around three miles west of town. Damage values are estimated.
Jonesville	7/2/2012	55	Scattered reports were received of downed trees along Highway 67 in northern Yadkin County. Dime size hail also occurred.
Boonville	7/5/2012	50	Multiple trees were blown over across Boonville.
Boonville	7/23/2012	50	A large tree was blown over and was blocking US Highway 601.
Yadkinville	6/13/2013	55	Thunderstorm winds along a squall line blew trees down on top of four houses. Damage values are estimated.
East Bend	6/26/2013	50	Thunderstorm winds blew a tree down. Damage values are estimated.
Hamptonville	6/26/2013	50	Thunderstorm winds blew a tree down. Damage values are estimated.
Windsors Xrds	7/28/2013	61	Numerous trees were down in about a 1-mile stretch along Hamptonville Road along with power outages. In addition, a hay field was flattened and dime-size hail covered the ground.
Courtney	8/10/2013	50	Personnel with the Yadkin County Fire and Rescue Department reported that two trees were blown down by thunderstorm winds along Courtney-Huntsville Road near the intersection of Chris Drive.
Martins Store	8/10/2013	50	One tree was down by thunderstorm winds along Rome Anthony Road near the intersection of Lone Hickory Road.
Shacktown	8/10/2013	50	The Yadkin County 911 Center reported that a tree was blown down by thunderstorm winds near the intersection of Shacktown Road and Blue Dan Lane.
Yadkinville	8/10/2013	50	The Yadkin County 911 Center reported that two trees were blown down by thunderstorm winds along Hoots Road approximately two miles west of North Carolina Route 601.
Smithtown	9/21/2013	60	Two outbuildings were damaged. Debris from outbuildings damaged a residence. A few trees were also blown down.
Forbush	6/17/2014	55	Thunderstorm winds blew two trees down southwest of East Bend. Powerlines were brought down by one of the falling trees, and one of the trees came to rest over Indian Heaps Road. Damage values are estimated.
Shacktown	4/9/2015	55	Thunderstorm winds blew trees and a power line down on Falcon Road. Damage values are estimated.

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Location	Date	MPH	Description
Boonville	8/5/2015	56	The public reported that multiple trees and power lines were down on Woodruff Road near its intersection with North Carolina Route 67, or approximately three miles west-northwest of Boonville.
Brooks	8/5/2015	56	The Yadkin County 911 Center reported that a number of trees and power lines were down throughout the town of Hamptonville.
Huntsville	2/24/2016	50	Thunderstorm winds knocked down trees over Farmington Road in Mocksville.
Wagoner	7/8/2016	60	Numerous trees and power lines were blown down by a line of severe thunderstorms across portions of Yadkin County. Near the Hamptonville area, one fallen tree caused minor damage to a home while another fallen tree landed on a patrol car, destroying the vehicle. Another tree fell and caused damage to a bridge along Wesley Road near the the Boonville area.
Yadkinville	7/19/2016	50	Thunderstorm winds downed two trees along Country Club Road.
Boonville	7/22/2016	50	A few trees and power lines were blown down by thunderstorm winds.
Courtney	7/22/2016	50	A large tree was blown down by thunderstorm winds onto a truck near Turners Creek Baptist Church.
Flint Hill	7/22/2016	50	Several trees were blown down along Flint Hill Road. One tree fell onto a house, breaking a window and damaging the roof and gutter.
Yadkinville	7/22/2016	50	A few trees and power lines were blown down by thunderstorm winds.
Martins Store	7/27/2016	50	A large tree was blown down by hunderstorm winds at the intersection of Brandon Hills Road and Neelie Road.
Yadkinville	7/27/2016	50	A large tree was blown down by thunderstorm winds at the intersection of Highway 421 and Myers Road.
Brooks	7/31/2016	50	A few trees were blown down by thunderstorm winds across the community of Hamptonville.
Cycle	7/31/2016	50	A couple of trees were blown down by thunderstorm winds. One tree blocked the Yadkin Wilkes Highway.
East Bend	9/29/2016	55	Thunderstorm winds downed a few trees in the East Bend area.
Yadkinville	9/29/2016	55	Thunderstorm winds downed a few trees within the town of Yadkinville.
East Bend	5/1/2017	50	Thunderstorm winds brought down a tree on a house along Highway 67.
Lone Hickory	5/1/2017	50	Thunderstorm winds blew down two trees along Lone Hickory Road and an additional tree onto Liberty Church Road.
Arlington	5/9/2017	50	Thunderstorm winds downed trees on East End Boulevard in Jonesville.
Brooks	5/19/2017	51	Thunderstorm winds knocked multiple trees down within the community of Hamptonville.
Hamptonville	5/24/2017	60	Thunderstorm winds downed numerous trees and damaged at least six homes within the community of Hamptonville. Winds form thunderstorms also downed four trees on Hamptonville Road.
Brooks	6/13/2017	50	Thunderstorm wind gusts caused a tree to fall down, blocking a road in Hamptonville.
Swanecreek	6/13/2017	50	Thunderstorm wind gusts caused a couple of trees to fall down south of Elkin.
Arlington	10/23/2017	50	Thunderstorm winds knocked down a tree along Fall Creek Church Road.
Yadkinville	10/23/2017	50	Thunderstorm winds brought down a tree at the intersection of Wilson Street and West Main.
Forbush	5/10/2018	50	Thunderstorm winds knocked down power lines in the Forbush area.
Boonville	5/20/2018	60	Thunderstorm winds knocked down trees and power lines in Booneville.
Jonesville	5/20/2018	55	Thunderstorm winds knocked down trees and power lines in Jonesville.
Arlington	6/1/2018	55	Numerous trees were blown down across Yadkin County by severe thunderstorm winds.

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Location	Date	MPH	Description
Jonesville	6/1/2018	55	Multiple trees were blown down by severe thunderstorm winds.
Windsors Xrds	6/1/2018	50	Multiple trees were blown down by severe thunderstorm winds.
Huntsville	6/11/2018	55	Several trees and large limbs were blown down by thunderstorm winds along Baltimore Road, while another tree was blown down along Cornelius Road.
Branon	6/25/2018	50	A tree was blown down by thunderstorm winds along Hoots Road near Watson Road.
Wagoner	6/25/2018	50	A tree was blown down by thunderstorm winds along Highway 21 near Judge Road.
Swanecreek	7/25/2018	50	Thunderstorm winds downed three trees on Rena Road. Damage values are estimated.
Yadkinville	7/31/2018	55	Thunderstorm winds blew several trees down near the intersection of Old Route 421 and Fred Hinshaw Road. Damage values are estimated.
Flint Hill	8/7/2018	55	Thunderstorm winds blew down several trees near the intersection of Route 67 and Butner Mill Road.
Longtown	8/7/2018	50	Thunderstorm winds blew down one tree along Whitaker Road.
Richmond Hill	8/7/2018	50	Thunderstorm winds blew down one tree at the intersection of Rockford Road and Gadberry Road and a second tree along Rockford Road between the intersections of Route 67 and Nebo Road.
Smithtown	8/7/2018	50	Thunderstorm winds blew down one tree on Vallie Davis Drive just off Route 67.
Boonville	8/8/2018	50	Thunderstorm winds blew down one tree at the intersection of Moxley Road and North Oak Ridge Church Road.
Smithtown	4/14/2019	50	Thunderstorm winds blew numerous large tree limbs down between Smithtown and East Bend. Damage values are estimated.
Yadkinville	4/14/2019	50	Thunderstorm winds blew three trees down in Yadkinville - one along Hoots Road, one along Rudy Road, and one along Highway 601. Damage values are estimated.
Arlington	5/31/2019	55	Thunderstorm winds uprooted several trees and snapped several more tree tops along Winters Road about three miles east of Arlington.
Cycle	6/20/2019	55	Numerous trees were blown down across the county by an organized line of severe thunderstorms producing damaging winds.
Forbush	6/30/2019	65	Over 100 trees were blown down by severe thunderstorm winds across a 1/4-mile area of the East Bend community in Yadkin County. Damage was concentrated along the 3500 block of Dal Road and the 3000 to 3500 blocks of Tyra Road. One tree was blown down onto a home, causing enough damage that the occupants had to evacuate and shelter elsewhere.
Jonesville	7/6/2019	50	Several trees were reported down in the area around Jonesville as a result of thunderstorm winds.
Jonesville	8/13/2019	50	One tree was blown down onto a house by severe thunderstorm winds on Dogwood Street.
Yadkinville	8/13/2019	50	A couple of trees and a power line were blown down by severe thunderstorm winds on Lee Avenue. One tree and a power line were also blown down by severe thunderstorm winds on Country Club Road.
Boonville	8/22/2019	50	One tree was blown down by severe thunderstorm winds on Walnut Street.
Courtney	8/22/2019	50	One tree was blown down by severe thunderstorm winds on Courtney-Huntsville Road.