Douglas County Multi-Jurisdictional Hazard Mitigation Plan

(Insert Month) (Year)

Encompassing the Jurisdictions of:
Douglas County, Georgia, and the City of Douglasville, Georgia

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Executive Summary

This Douglas County Multi-Jurisdictional Hazard Mitigation Plan (Month/Year) is being developed to update and revise hazard mitigation activities for Douglas County, Georgia (GA). This plan encompasses two Douglas County jurisdictions, Douglas County, GA, and the City of Douglasville, GA, and supersedes the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (federally approved April 18, 2016). The Douglas County Mitigation Planning Committee, or MPC, will evaluate the mitigation measures to be undertaken and outline a strategy for the implementation of mitigation projects.

Formal adoption and implementation of a hazard mitigation plan, or HMP, may present many benefits to Douglas County, GA, and the City of Douglasville, GA, aka the planning area. Most notably, by identifying problems and possible solutions in advance of a disaster, the planning area will be in a better position to obtain hazard mitigation funding from the Federal Emergency Management Agency (FEMA). This may include both pre- and post-disaster financial assistance.

This document aims to produce the following strategic outcomes:

- Reduce loss of life and decrease property losses due to the occurrence of natural disasters within the planning area
- Provide the framework and coordination to encourage government, and both public and private sector organizations at all levels, to undertake mitigation to minimize potential disasters and to employ mitigation strategies in the recovery following disasters

Specifically, these strategic outcomes will be brought about through the following planning process:

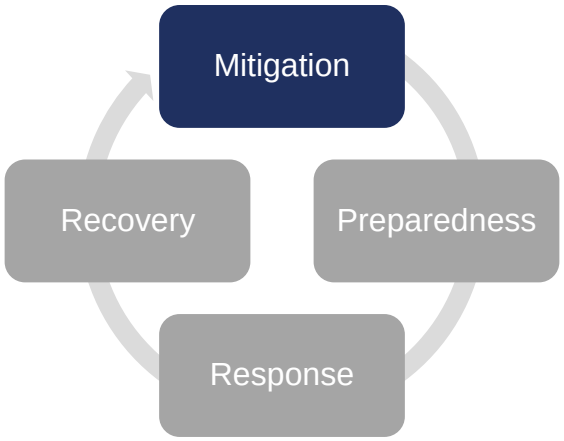
1) Identify, describe, and characterize the hazards to which Douglas County and its participating jurisdiction(s) are susceptible
2) Assess the risk of each hazard, including probability, frequency, exposure, and vulnerability
3) Examine feasible mitigation opportunities appropriate for the identified hazards, and prioritize those opportunities
4) Implement mitigation actions to reduce loss of life and damage to property
5) Identify mitigation opportunities for long-term planning consideration

Glossary of Terms

ASCE – American Society of Civil Engineers
BFE – Base Flood Elevation
CFR – Code of Federal Regulations
CDC – Centers for Disease Control and Prevention
CRS – Community Rating System
CWPP – Community Wildfire Protection Plan
DCEMA – Douglas County (GA) Emergency Management Agency
DFIRM – Digital Flood Insurance Rate Map
DMA 2000 – Disaster Mitigation Act of 2000
EMS – Emergency Medical Services
EMA – Emergency Management Agency
EOC – Emergency Operations Center
EOP – Emergency Operations Plan
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FMA – Flood Mitigation Assistance Grant Program
FP&S – Fire Prevention and Safety Grants
FOUO – For Official Use Only
GIS – Geographic Information System
GEMA – Georgia Emergency Management Agency
GMIS – Georgia Mitigation Information System
HMGP – Hazard Mitigation Grant Program
HMP – Hazard Mitigation Plan
IBC – International Building Code
ICS – Incident Command System
LEPC – Local Emergency Planning Committee
MPC – Mitigation Planning Committee
MJHMP – Multi-Jurisdictional Hazard Mitigation Plan
MOU – Memorandum of Understanding
NFHL – National Flood Hazard Layer
NFIP – National Flood Insurance Program
NICC – National Interagency Coordination Center
NOAA – National Oceanic and Atmospheric Administration
NCEI – National Centers for Environmental Information
NRC – National Response Center
NWS – National Weather Service
PDM – Pre-Disaster Mitigation (Grant Program)
POC – Point of Contact
RFP – Request for Proposal
RL – Repetitive Loss
SFHA – Special Flood Hazard Area
SOP – Standard Operating Procedure
SRL – Severe Repetitive Loss
TRI – Toxic Release Inventory (United States Environmental Protection Agency)
UDC – Unified Development Code
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USGS – United States Geological Survey
WUI – Wildland Urban Interface

Introduction to Mitigation

The Emergency Management Cycle & Mitigation



Understanding the emergency management cycle is the first step in effectively planning and operating in relation to all disaster-related activities. The emergency management cycle is an open-ended and ongoing process. The four phases in the process are mitigation, preparedness, response, and recovery. Each phase of the cycle can last for years, months, or only moments in duration, while different paths can exist simultaneously.

Mitigation planning is the process of determining how to reduce or eliminate loss of life and damage to property resulting from natural disasters. It is carried out as any sustained action to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. As is the goal of emergency management, so is the goal of mitigation to save lives and reduce property damage.

The Disaster Mitigation Act of 2000 (DMA 2000)

In the past, federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) became law on October 30, 2000, and amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the "Stafford Act") (Public Law 93-288, as amended). Regulations for this activity can be found in Title 44 of the Code of Federal Regulations Part 206, Subpart M.

This legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. This act establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of the act specifically addresses mitigation planning at the state, local, and tribal levels. It identifies new requirements that allow HMGP funds to be used for mitigation planning activities and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities and identifiable gaps.

DMA 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. It encourages and rewards local and state pre-disaster planning and promotes sustainability as a strategy for disaster resistance. This enhanced planning network will better enable local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects. To implement the new DMA 2000 requirements, FEMA prepared an interim final rule, published in the Federal Register on February 26, 2002, at 44 CFR Parts 201 and 206, which establishes planning and funding criteria for states and local communities.

On October 31, 2007, FEMA subsequently published an Interim Rule in the Federal Register, which ensures the Flood Mitigation Assistance (FMA) program planning requirements are consistent with the mitigation planning regulations as cited in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201 (44CFR Part 201).

This interim rule established that local communities must comply with mitigation planning requirements to be eligible to apply for FEMA mitigation project grant funding, including FMA and FEMA's Severe Repetitive Loss (SRL) Program. Meeting the requirements of the regulations cited above ensures participating jurisdictions in the planning area will be eligible to receive disaster assistance, including hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

Douglas County has the responsibility to coordinate activities relating to hazard evaluation and mitigation, and to prepare and submit to FEMA a local hazard mitigation plan, following the criteria established in 44 CFR 201.6 and Section 322 of the DMA 2000 (Public Law 106- 390).

Section 1 – Planning Process

1.1 – Plan Introduction

Planning Process
- Plan Development
- Stakeholder Participation
- Community Involvement

Local Procedures & Resources

Planning Area

Hazard Risk Assessment

Mitigation Strategy

This update to the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) comprises two jurisdictions: one county, Douglas County, GA; and one city, Douglasville, GA. Each jurisdiction, as documented within the plan update, actively participated in the planning process from its inception. Accordingly, each jurisdiction provided at least one representative to offer a locality-specific perspective.

Members of the Mitigation Planning Committee, or MPC, actively participated in meetings, solicited input from community members, and ensured that all jurisdictional information was reflected in the plan.

If a committee member could not attend a meeting, they were contacted by phone in order to receive all documentation from the meeting. The phone call(s) consisted of a brief overview of the meeting along with time for the planning committee member to offer his/her suggestions or comments. A detailed description of the planning process, including a list of contributions from each jurisdiction, is provided in Section 1.2.2 – Jurisdictions. A complete list of planning committee participation can be found in Section 1.3 – Stakeholder Participation.

1.2 – Plan Development

1.2.1 – Plan Drafting Stage

Douglas County's plan revision process began on January 18, 2019, when the Douglas County Emergency Management Agency (DCEMA) applied for a Pre-Disaster Mitigation (PDM) planning grant under FEMA Project 428-0053. The County was awarded the grant to begin the process of updating its previously FEMA-approved mitigation plan. Following the funding commitments, Douglas County hired Tennessee-based BOLDplanning Inc. (BOLDplanning) to facilitate plan development.

Douglas County's mitigation planning process was initiated on August 13, 2019, when BOLDplanning hosted a public kick-off planning meeting. At this meeting, an initial Mitigation Planning Committee (MPC), comprised of representatives from each participating jurisdiction, was organized. The MPC was instructed to solicit interested persons from their communities to also participate on the committee. All participating jurisdictions actively participated in the planning process by soliciting input and taking part in plan-related meetings.

There were (insert final number) planning events held throughout the planning process. The final planning event, which was the period of open comment (virtual), took place September 21 – October 2, 2020. Due to the COVID-19 pandemic, this event was held virtually rather than in person, safely allowing the public and plan stakeholders to provide feedback from remote locations.

Other planning events included meetings with representation from the other participating jurisdiction(s) as well as the public. Planning events also included conference phone calls with municipal and agency officials who could not attend scheduled meetings. Additionally, there were monthly situation report

(SitRep) calls with Douglas County and its participating jurisdiction(s) to provide updates along the phases of plan development. These SitRep calls were held at the beginning of each month and were facilitated by BOLDplanning via Zoom® web conferencing.

Throughout the planning process the public was given multiple opportunities to review plan drafts, ask questions, and provide input on hazards. They were also invited to provide feedback on mitigation project prioritization, hazard identification, and hazard ranking. Further, BOLDplanning launched two online Hazard Mitigation Plan (HMP) surveys specifically created for the planning area.

The first survey, the Douglas County, GA Hazard Mitigation Plan Survey (https://publicinput.com/E036) allowed for MPC members, plan stakeholders, and the general public to provide input to hazards and potential hazard mitigation projects that are ongoing for the County. The second survey, the Douglas County, GA Hazard Mitigation Plan – Open Comment Survey (https://publicinput.com/O2780), allowed all MPC members, plan stakeholders, and the public to provide feedback and input on the MJHMP update prior to its submission to the Georgia Emergency Management Agency (GEMA) and FEMA. Details and documentation pertaining to the participation of the MPC and the public can be found in Appendix C – Public Participation.

Planning Process Summary

1) Each participating jurisdiction appointed a jurisdictional representative to serve on the MPC along with DCEMA, other plan stakeholders, and BOLDplanning.
2) DCEMA engaged BOLDplanning to provide staff support in facilitating the planning process and preparing the plan.
3) Meetings were held with MPC members to understand and agree on planning processes and steps required, including organizing resources, assessing hazards, developing a mitigation plan, implementing the plan, and monitoring progress.

BOLDplanning held subsequent discussions about the planning process with GEMA staff.

1.2.2 - Jurisdictions

The following table lists the participating jurisdictions of Douglas County, their lead representative contact during the MJHMP update's development, along with their MPC contributions by plan development phase.

Table 1: Jurisdictional Contribution by Planning Phase

Jurisdictional Contribution by Planning Phase				
Jurisdiction and Representative	**Planning Process**	**Risk Assessment**	**Mitigation Strategy**	**Plan Maintenance**
Douglas County Jason Milhollin, Douglas County Emergency Management Agency, Director	• Lead the Mitigation Planning Committee (MPC) • Provided information on critical facilities, hazards, Points of Contact (POCs) • Served as POC and jurisdiction lead for the MPC	• Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment	• Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach	• Will lead in the MPC as prescribed in Section 2 – Plan Maintenance
City of Douglasville Rochelle Robinson, City of Douglasville, Mayor	• Participated in MPC • Provided information on critical facilities, hazards, POCs • POC and jurisdiction lead for the MPC	• Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment	• Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach	• Will participate in the MPC as prescribed in Section 2 – Plan Maintenance
Douglasville Douglas County Sewer and Water Authority Sidney Miller, Douglasville Douglas County Sewer and Water Authority, Human Resources and General Services Manager	• Participated in MPC • Provided information on critical facilities, hazards, POCs • POC and lead jurisdiction for the MPC	• Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment	• Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach	• Will participate in the MPC as prescribed in Section 2 – Plan Maintenance

1.2.3 – Major Mitigation Planning Meetings

The Douglas County MPC held various public meetings to discuss the mitigation planning process as well as to gain public support and input for the plan update. Following is a brief synopsis of those meetings. Proof of meetings, sign-in sheets, and public notification documentation can be found in Appendix C – Public Participation.

Multi-Jurisdictional Hazard Mitigation Plan Update Kick-Off and Public Information Meeting – August 13, 2019

BOLDplanning was on site in Douglas County to host a kick-off meeting in the City of Douglasville, GA. Prior to the meeting, a public announcement ran for two weeks in the *Douglas County Sentinel* newspaper. At the meeting, the public was invited to voice any concerns, ask questions, and provide input on the mitigation plan update. The Douglas County MPC was formed during this meeting and they reviewed the planning process, asked questions, and were assigned roles. BOLDplanning worked with the MPC to collect contact information, hazard history, facility information, and other pertinent jurisdictional information. Documentation for this meeting is located in Appendix C – Public Participation.

Multi-Jurisdictional Hazard Mitigation Plan Update Public Review Period – September 20, 2020 – October 2, 2020

Prior to the Public Review Period, a public announcement ran for two weeks in the *Douglas County Sentinel newspaper,* and appeared on DCEMA's website. Due to the ongoing COVID-19 pandemic and government reopening plans for both Douglas County and the City of Douglasville (https://www.douglasvillega.gov/government/city-departments/community-relations/covid-19-re-opening-plan), MPC members and the public were invited to review a draft copy of the Douglas County MJHMP update posted to DCEMA's (https://ga-douglascounty.civicplus.com/188/Emergency-Management) website before asking questions or voicing concerns. The MPC, stakeholders, and the public provided feedback and input on the plan draft using the Douglas County, GA Hazard Mitigation Plan – Open Comment Survey (https://publicinput.com/O2780), which was also posted to DCEMA's website (for public review) prior to submission to the State of Georgia and FEMA. Documentation pertaining to the Public Review Period is Appendix C – Public Participation.

Multi-Jurisdictional Hazard Mitigation Plan Update Final Review Meeting – (Date TBD)

The updated Douglas County MJHMP was reviewed by the MPC and any stakeholders, as requested, prior to its submission to GEMA. However, due to the COVID-19 pandemic, the Douglas County Multi-Jurisdictional Hazard Mitigation Plan Update Review meeting was not able to be conducted in-person. In place of the in-person meeting, DCEMA emailed the MPC and stakeholders, requesting final plan review and final comments (via reply email).

Multi-Jurisdictional Hazard Mitigation Plan Update Adoption Signing – (Date TBD)

The Douglas County MJHMP (update) adoption letters will be disseminated and signed by the participating jurisdictions. The signing of these resolutions codifies the adoption of the plan update by the participating jurisdictions.

1.3 – Stakeholder Participation

The Douglas County MPC is made up of stakeholders working together for the development and ongoing maintenance of this plan update. The participants are grouped into actively participating representatives from the participating jurisdictions within Douglas County.

- **Mitigation Planning Committee (MPC)** – This group consists of the jurisdictional representatives from the planning area, the Georgia Emergency Management Agency (GEMA), supporting state and federal agencies, and BOLDplanning.
- **Other Stakeholders** – This group consists of interested parties from the local community and a state university. This plan was developed with the support and input from various commercial interests.
- **Members from the public-at-large** – FEMA requires this planning effort to be open to constant input from interested citizens in compliance with the Sunshine Laws. In Georgia, public meetings must comply with the State's Open Meetings Act, unless established by statutory exemption. Therefore, any individual citizen who wishes to be involved in this effort to mitigate future disasters is encouraged to attend the MPC meetings and to solicit relevant comments to be included in the draft sections of the written plan.

The following table details the stakeholders and MPC members who participated in the hazard mitigation planning process. This list contains all relevant local and state agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, and any appropriate neighboring communities.

Table 2: Plan Stakeholders & MPC Members

Plan Stakeholders & MPC Members			
Name	**Organization**	**Position**	**Collaboration/Invitation**
Principal Plan Developers			
Stu Miller	BOLDplanning	CEO	Executive management
Brittney Whatley	BOLDplanning	Project Support	Provided additional support and input; coordinated kick-off meeting
Cathleen Atchison	BOLDplanning	Project Support	Provided additional support and input; coordinated kick-off meeting
Emily Long	BOLDplanning	Mitigation Project Lead	Project lead and mitigation specialist
Linda Young	BOLDplanning	Plan Reviewer, Plan Editor	Plan reviewer and editor
James Woulfe	BOLDplanning	Plan Reviewer	Provided final plan review prior to GEMA and FEMA submissions
Local Governments			
Jason Milhollin	Douglas County Emergency Management Agency (EMA)	Director	Mitigation Planning Committee Chair, represented jurisdiction, and provided additional support and input
Eve Cogsdell	Paulding County, GA Emergency Management Agency (EMA)	EMA Coordinator/Emergency Operations Center Assistant Director	Represented jurisdiction
Ed Dean	Douglas County GIS Department	GIS Manger	Provided additional support and input
Melissa Dickinson	City of Douglasville, GA	Public Services Assistant Director	Represented jurisdiction
Rick Everett	Austell Gas System	Maintenance Supervisor	Represented jurisdiction
Kathy Macias	Douglasville-Douglas County Water & Sewer Authority (DDCWSA)	Project Engineer	Provided additional support and input
Mike Mettler	City of Douglasville	Building Official	Provided additional support and input
Sidney Miller	Douglasville-Douglas County Water & Sewer Authority (DDCWSA)	Human Resources & General Services Manager	Provided additional support and input
Greg Plumley	Austell Gas System		Represented jurisdiction
Greg Roberts	City of Douglasville	Public Services Director	Represented jurisdiction
Lyndsey Sargent	Douglasville-Douglas County Water & Sewer Authority (DDCWSA)	Communications Coordinator	Represented jurisdiction
Cory Shelton	Douglas County, GA Fire Department	Captain	Provided additional support and input
Scott Spenser	Douglas County, GA Fire Department	Fire Chief /EMS Director	Represented jurisdiction; provided additional support and input
James Worthington	Douglas County, GA Board of Commissions	Development Services Directors	Provided additional support and input
Scott Zachmeyth	Douglas County, GA Fire Department	Deputy Fire Chief	Represented jurisdiction

Table 2: Plan Stakeholders & MPC Members (Cont'd)

Plan Stakeholders & MPC Members			
Name	**Organization**	**Position**	**Collaboration/Invitation**
State and Federal Agencies			
Lucy Herring	Georgia Emergency Management Agency/Homeland Security (GEMA)	Hazard Mitigation Planning Specialist	Represented Agency; provided additional support and input
Celia Mayben	Georgia Environmental Protection Division	Emergency Response State On-Scene Coordinator	Provided additional support and input
Brian Rooks	Georgia Forestry Commission	Chief Ranger	Provided additional support and input

1.4 – Community Involvement

The Douglas County MPC provided the opportunity for neighboring communities, agencies, businesses, academia, non-profits, and other interested parties to be involved in the mitigation planning process. The public was notified of open meetings via Douglas County's website, and a local newspaper. BOLDplanning and DCEMA invited all non-covered jurisdictions, including school districts and others with expiring mitigation plans, to participate in the plan update. Any jurisdiction or school district not covered in this MJHMP update is either covered under another plan or declined to participate.

Participating jurisdictions were notified of MPC meetings via email, and phone. Emergency managers from neighboring Georgia counties, Paulding, Cobb, and Carroll, as well as the City of Villa Rica, were personally invited to attend the public draft review meeting. For two weeks prior to each public meeting, an announcement was placed on DCEMA's website (https://ga-douglascounty.civicplus.com/188/Emergency-Management). For documentation, see Appendix C – Public Participation.

At the first public planning, meeting attendees ranked and identified hazards, created a community profile, prioritized mitigation projects, and completed a risk assessment questionnaire. During this meeting, and the latter public review meeting, concerned citizens and other parties were invited to review the most current draft, provide any input of feedback, and ask any relevant questions of the Douglas County MPC and BOLDplanning.

Due to the COVID-19 pandemic, and government reopening/COVID-19 Safe Practices for Douglas County and the City of Douglasville, the Public Review Period of the plan draft was held virtually. MPC members and the public were invited to review a draft copy of the Douglas County MJHMP Update posted to DCEMA's website before asking questions or voicing concerns. The MPC, stakeholders, and the public provided feedback and input on the plan draft by completing a feedback questionnaire.

Relevant federal, regional, state, and local governments as well as any private and non-profit organizations were invited to provide input and technical expertise. The entities, who volunteered, either in person or by providing hazard data, are listed in the following table.

Table 3: Partner Involvement by Entity

Partner Involvement by Entity		
Entry Classification	**Entity**	**Entity Input**
Federal Agencies	Environmental Protection Agency (EPA), National Parks, National Oceanic and Atmospheric Administration/ National Centers for Environmental Information (NOAA/NCEI), USACE, United States Department of Agriculture (USDA), FEMA, Natural Resources Conservation Service (NRCS), United States Geological Survey (USGS), National Weather Service (NWS), U.S. Census Bureau	Provided census data, weather data, dam data, land use data, and geological data
State Agencies	GEMA, Georgia Bureau of Investigation (GBI), Georgia Department of Transportation (GDOT), Georgia Environmental Protection Division, Georgia Forestry Commission, State Courts	Provided oversight and technical assistance; provided hazard records; provided hazard data
Local Governments	DCEMA; Douglas County Planning and Zoning; Participating Municipalities (City of Douglasville); Douglas County Public School System	Provided input as MPC members / principal subjects; Provided input – GIS maps; Provided input – public school map
Private Organizations	BOLDplanning, Douglasville-Douglas County Water & Sewer Authority (DDCWSA)	Directed planning effort as principal planners; provided input from various interests
Academia	University of Georgia Information Technology Outreach Services (ITOS)	Provided input – HAZUS® report

Section 2 – Local Procedures & Resources

Planning Process

Local Procedures & Resources

- Available Resources
- Continued Public Involvement
- Plan Maintenance Process

Planning Area

Hazard Risk Assessment

Mitigation Strategy

2.1 – Available Resources

2.1.1 – Documentation Resources

The MPC conducted a comprehensive review of Douglas County, GA, and the City of Douglasville, GA, to determine the availability of existing emergency management and preparedness information.

Douglas County Critical Facilities List

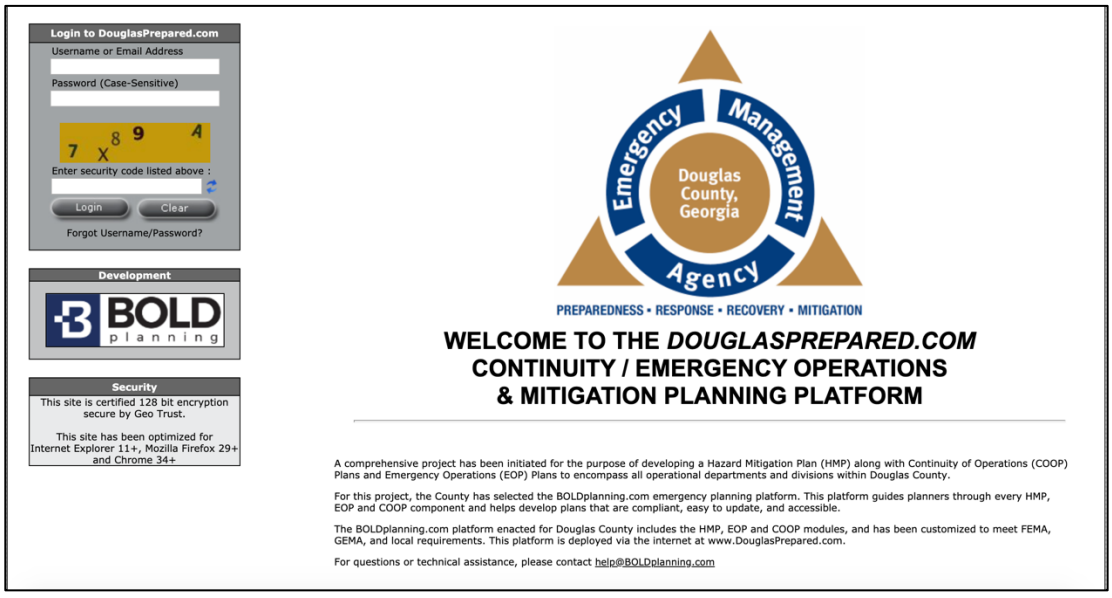
The MPC compiled a list of critical facilities and pertinent information on those facilities. This list is used throughout the hazard mitigation plan (HMP) update and is the basis for the vulnerability assessments and loss estimates. The complete list is posted in Appendix D – Critical Facilities & Infrastructure.

Douglas County Comprehensive Transportation Plan (CTP)

The Douglas County Board of Commissioners initiated the development of its first ever 25-year Comprehensive Transportation Plan (CTP) in collaboration with the cities of Austell, Douglasville, and Villa Rica to tackle transportation issues on a county-wide basis. The plan is available online at: https://www.celebratedouglascounty.com/264/Douglas-County-Comprehensive-Transportat

Douglas County Continuity of Operations (COOP) Plan and Emergency Operations Plan (EOP)

DCEMA has developed a countywide COOP and EOP. Using a commercial template to follow "best practices" methodology, these plans are "living documents" that are continually being developed, tested, and updated using the BOLDplanning.com platform "douglasprepared.com".



Douglas County, Georgia Multi-Jurisdictional Hazard Mitigation Plan

Douglas County is currently covered by a FEMA-approved Multi-Jurisdictional Hazard Mitigation Plan

(MJHMP). The current 2015 plan has been reviewed and its contents incorporated throughout this plan update per FEMA requirements.

Douglas County, Georgia Comprehensive Plan Update – November 6, 2018
The Douglas County, Georgia Comprehensive Plan Update (2018) was prepared by the Atlanta Regional Commission using funds provided by the State of Georgia. The Georgia Department of Community Affairs has laid out required elements of the Comprehensive Plan. All communities must complete a Community Goals section, list Needs & Opportunities, and write a Community Work Program. The following five elements are only required for some communities: Capital Improvements, Land Use, Economic Development, Transportation, and Housing. The Capital Improvements element is only required for communities that assess impact fees; Douglas County and the City of Douglasville do not assess impact fees and do not need to complete this element. The Comprehensive Plan Update includes data and demographics from both communities, as the information is relevant to addressing issues in both the County and the City.

City of Douglasville, Georgia Comprehensive Plan Update - 2018
The City of Douglasville, Georgia Comprehensive Plan Update (2018) was prepared by the Atlanta Regional Commission using funds provided by the State of Georgia. The Comprehensive Plan Update includes data and demographics from both communities, as the information is relevant to addressing issues in Douglas County as well as the City of Douglasville.

Douglas County, Georgia Flood Information Brochure
The Douglas County, Georgia Flood Information Brochure provided information related to the following in Douglas County, GA: flood hazard area; flood safety; property protection measures; floodplain permit requirements; substantial improvement/damage; flood insurance; drainage system maintenance; flood warning system; natural & beneficial functions; and flood warning system. Additional information regarding flood-related issues in Douglas County can be obtained through FEMA or Douglas County Development Services.

Hazard Risk Analyses Supplement to the Douglas County Joint Hazard Mitigation Plan
In 2020, the Georgia Department of Emergency Management partnered with the Carl Vinson Institute of Government at the University of Georgia to develop a detailed risk assessment focused on defining hurricane, riverine flood, and tornado risks in Douglas County. This assessment identifies the characteristics and potential consequences of the disaster, how much of the community could be affected by the disaster, and the impact on community assets.

Georgia Hazard Mitigation Strategy, Standard and Enhanced Plan – March 18, 2019 – March 17, 2024
The Georgia Hazard Mitigation Strategy (GHMS) is a result of the State's continued efforts to reduce its exposure to losses from natural hazards and to maintain eligibility for the full range of disaster assistance available under the Robert T. Stafford Disaster Relief and Emergency Assistance Act as amended by the Disaster Mitigation Act of 2000 (DMA 2000). The Enhanced State Mitigation Plan documents the State's commitment to the objectives of hazard mitigation. This designation recognizes Georgia as a proactive leader in implementing a comprehensive statewide program. The enhanced status acknowledges the extra effort a state has made to reduce losses, protect resources, and create safer communities.

Georgia Safe Dams Programs *(https://epd.georgia.gov/watershed-protection-branch/safe-dams-program)*
Pursuant to the Georgia Safe Dams Act, O.C.G.A. Secs. 12-5-370 et seq., the Safe Dams Program is

responsible for developing and maintaining an inventory of dams, classifying dams, and ensuring compliance of all regulated dams. The Dam Diagram and Inventory of Dams information was included in the Dam Failure hazard of this plan.

Douglas County Planning Documents
Douglas County and its participating jurisdiction(s) provided a host of planning-, zoning-, and development-related documents. These documents were reviewed, assessed, and cataloged to compile Section 5.1 – Mitigation Capabilities as well as Section 5.5 - Planning Integration of this MJHMP update.

2.1.2 – Fiscal Resources

The MPC conducted an assessment of their available funding options. The following is a list of federal, state, and local funding sources that are either available or relevant to the Douglas County mitigation plan update.

Fire Prevention and Safety Grants (FP&S)
These grants are administered by FEMA to enhance safety of the public and firefighters from fire and fire-related hazards. The primary goal is to target high-risk populations and reduce injury. Fire departments, local governments, and recognized community organizations are eligible to receive this funding.

Flood Mitigation Assistance Program (FMA)
The FMA program is designed to aid in the buyout of repetitive loss (RL) and severe repetitive loss (SRL) properties as well as assist in the funding of flood mitigation projects and activities.

Hazard Mitigation Grant Program (HMGP)
The HMGP is managed by FEMA and administered by GEMA. Douglas County does not have any HMGP funds available for mitigation planning.

Pre-Disaster Mitigation Grant Program (PDM)
PDM, which is managed by FEMA, is a nationally competitive grant program. The development of this plan has been funded by a PDM grant at a 75% match.

Local Revenues & Budgets
Recognizing the importance of hazard mitigation planning, Douglas County and its participating jurisdiction(s) have self-funded the 25% match required by FEMA's PDM grant.

2.1.3 – Technical Resources

The Douglas County MPC employed a variety of technical resources in its plan development. These technical resources were instrumental in completing an accurate vulnerability and risk assessment.

BOLDplanning Inc.
With over 16 years of experience in hazard mitigation planning, BOLDplanning Inc. was the principal plan writer.

Georgia Mitigation Information System (GMIS)
GMIS is an online mapping tool developed by Information Technology Outreach Services (ITOS), a division of the Carl Vinson Institute of Government at the University of Georgia and the Hazard Mitigation Division of GEMA/Homeland Security (HS). GMIS supports the documentation and implementation of mitigation activities through the State of Georgia through mapping and reporting of critical facilities, mitigation

properties, and National Flood Insurance Program (NFIP) properties. Each risk assessment map developed for this plan, along with the HAZUS® models, were created using HAZUS® 2.2SP1.

ArcGIS v10
Each map developed for this plan was created using ESRI's ArcGIS v10.

FEMA DFIRM – Map Data Center
FEMA's National Flood Hazard Layer (NFHL) data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.

National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NOAA/NCEI)
Weather data and historical events were primarily provided by NOAA/NCEI, which is formerly known as the National Climatic Data Center (NCDC).

U.S. Army Corps of Engineers (USACE)
USACE provided Douglas County and BOLDplanning with data from its national dam inventory containing their location and assessed hazard level.

2.2 – Continued Public Involvement

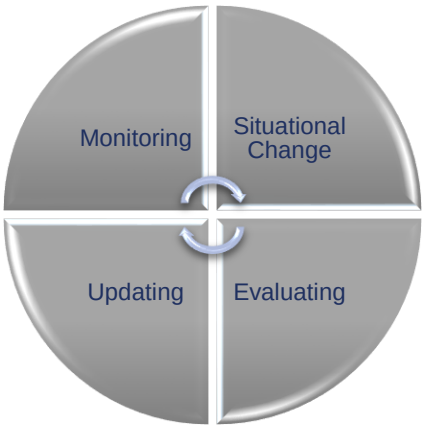
Douglas County is dedicated to involving the public in the continual shaping of its mitigation plan and the development of its mitigation projects and activities.

The Douglas County MPC will continue to keep the public informed about its hazard mitigation projects and activities through DCEMA's website. Additionally, it will provide a "comments/suggestions" option for the public to submit input through the website.

The public will also be invited to participate in annual MPC meetings to review and discuss the mitigation-related events of the past year.

Copies of the updated Douglas County MJHMP will be available online at DCEMA's website and distributed to the participating jurisdictions of Douglas County, the City of Douglasville, Douglasville-Douglas County Water and Sewer Agency (DDCWSA).

2.3 – Plan Maintenance Process

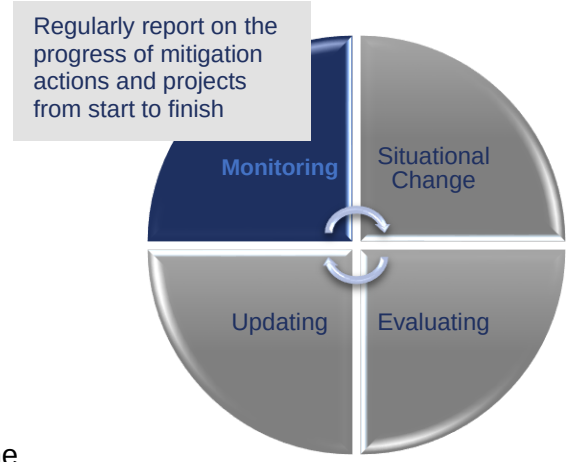


The Douglas County MPC has developed a method to ensure monitoring, evaluation, and updating of its mitigation plan. Upon adoption of the Douglas County MJHMP (update), DCEMA will utilize its MPC to provide plan updates, revisions, and data collection for future MJHMP planning purposes. The MPC chair will form a subcommittee for proposed mitigation projects comprised of DCEMA's director and jurisdictional representatives from the MPC. The chair of the subcommittee will be determined by a vote in the subcommittee. Additional members may be added based on necessity. The sub-committee will submit a quarterly report to the MPC, which in turn, will submit an annual

report to DCEMA. Refer to the Douglas County MJHMP (Update) Quarterly Report form at the end of this section for additional details.

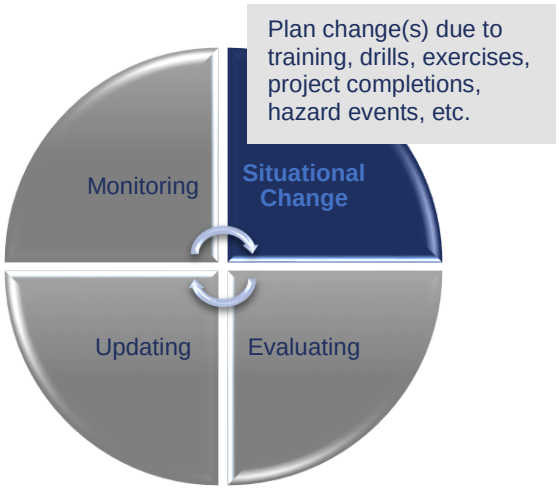
DCEMA may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the MJHMP plan due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

2.3.1 – Plan Monitoring & Situational Change



Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

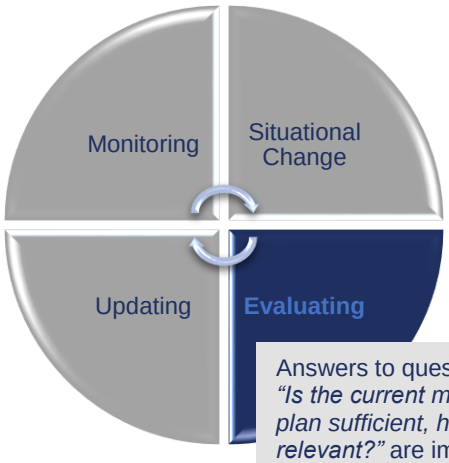
A monitoring report will be written and submitted for review to the MPC and after the annual MPC meeting or when triggered by situational change. The monitoring report answers the following questions:



- ✓ *Is the mitigation project under, over, or on budget?*
- ✓ *Is the mitigation project behind, ahead of, or on schedule?*
- ✓ *Are there any changes in Douglas County's capabilities which impact the MJHMP plan?*
- ✓ *Are there any changes in Douglas County's hazard risk?*
- ✓ *Has the mitigation action been initiated or its initiation planned?*
- ✓ *Is the current process of prioritizing mitigation actions and projects appropriate and accurate?*
- ✓ *Has the current method of incorporating mitigation actions and projects yielded a comprehensive action and project strategy to address seen and unforeseen hazards?*
- ✓ *If applicable, has participation in a mitigation action's collaboration been regular?*
- ✓ *Was a negative result caused directly or indirectly by insufficient levels of public outreach?*
- ✓ *If any, what plan updates occurred, why they occurred, and what is their impact?*

The plan maintenance process is cyclical and maintenance items can operate simultaneously within the process.

2.3.2 – Plan Evaluating



Answers to questions e.g., *"Is the current mitigation plan sufficient, helpful and relevant?"* are imperative during an evaluation

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making.

An evaluation report (see example on the next page) will be written and submitted to Douglas County's MPC when the situation dictates.

The following situations are typical examples of when an evaluation will be necessary.

- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

An evaluation report will ask the following questions in response to the previously listed events.

- ✓ *Do the mitigation objectives and goals continue to address the current hazards?*
- ✓ *Are there new or previously unforeseen hazards?*
- ✓ *Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?*
- ✓ *Does a change in the mitigation strategy demand a change of or addition of mitigation actions or projects?*
- ✓ *Are current resources appropriate for implementing a mitigation project?*
- ✓ *Was the outcome of a mitigation action/project expected?*
- ✓ *Are there implementation problems?*
- ✓ *Was the public engaged to the point where they were satisfied with current engagement strategies?*
- ✓ *Did the public participate in a number that produced a positive yield on the plan, action, or project?*
- ✓ *Are there coordination problems?*

2.3.3 – Plan Updating

Typically, a MJHMP update is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. A plan update also occurs every five years per FEMA guidelines. Additionally, when new hazard data becomes available, it will be added to the MJHMP. New data will be confirmed or denied at annual MPC meetings.

For whatever reason, a MJHMP update can be written any time it is deemed necessary by DCEMA.

According to FEMA/DMA 2000 guidelines for mitigation planning, Douglas County will begin the update process three years from this plan's adoption. It will do so under the direction of the County's EMA Director.

An update is necessary if any deficiencies are found during plan evaluation

2.3.4 – Evaluation Report

Douglas County Mitigation Planning Committee
Douglas County Multi-Jurisdictional Hazard Mitigation Plan
Evaluation Report

Hazard Mitigation Plan Sub-Committee Chair: _____
Meeting Date: _____
Plan Approval Date:_____
Plan Expiration Date: _____
Have there been any disasters or training event since the last report? If so, list them below:

Disaster Number/ Training Event	Hazard Type(s)	Was the hazard expected or unforeseen?	Is a plan update required?
Example: DR-1000	*Volcanic Eruption*	*Unforeseen*	*Yes*
Example: Annual Training	*Flash Flooding*	*Expected*	*No*

Mitigation Projects:

Mitigation Project	Participating Jurisdiction(s)	Proposed/Scheduled/In Progress/Completed	Behind/Ahead/On-Schedule	Estimated Completion Date
Example: Tornado Safe Room	*Cannon*	*In Progress*	*On-Schedule*	*1/1/2021*

Public Engagement and Outreach Notes:

Miscellaneous Notes:

Section 3 – Planning Area

Planning Process
Local Procedures & Resources
Planning Area
- Demographics
- Land Use & Development
- Critical Facilities & Infrastructure

Hazard Risk Assessment
Mitigation Strategy

Located in the north central portion of the State of Georgia, and only 20 miles from Atlanta on Interstate 20, Douglas County encompasses approximately 200 square miles of gently rolling foothills in the Appalachian Piedmont. It is bordered on the south by the Chattahoochee River, to the east by Cobb County, to the north by Paulding County, and to the west by Carroll County. Given its relatively small land area, Douglas County ranks 138th in Georgia's 159 counties. However, its population—currently estimated at 145,331 people (U.S. Census Bureau, July 2018)—makes Douglas County the 18th most populated in the state.

Douglas County is strategically located as the western gateway to Atlanta, and is in close proximity to Atlanta's Hartsfield-Jackson International Airport. Douglas County is included in the Atlanta-Sandy Springs-Marietta, Georgia, metropolitan statistical area, known to most as metro Atlanta.

The County seat, and the only participating jurisdiction within Douglas County, is the City of Douglasville. Covering 22.46 miles, the City features a unique blend of small-town charm coupled with metropolitan amenities, appealing to residents, visitors, and businesses from a variety of industries. A portion of the City of Douglasville, which is located downtown, is distinguished as a National Historic District. According to the U.S. Census Bureau (July 2018 estimate), the population of the City of Douglasville is 34,190, or 4.25% of the County's entire population.

Douglas County, which is managed by a five-member Board of Commissioners, is the only comprehensive government in Douglas County. As such, it provides all services to its citizens, including fire and emergency services, libraries, jail facilities, E-911, transportation planning, roadway signalization, signage and marking, vanpool and express bus service, an informative and interactive web site, a government access cable television channel, landfill and recycling programs, direct sponsorship and planning of events to bring the community together, and other traditional government services.

The Douglas County Emergency Management Agency (EMA) is responsible for the management of all emergency preparedness program areas within the County. In times of emergency or disaster, the County's EMA coordinates the response of local agencies ensuring the most appropriate resources are dispatched to the impacted area. Through its major programs, the County's EMA works with local governments, volunteer organizations and the private sector throughout Douglas County to develop disaster preparedness plans and mitigation projects. It also provides training and exercise activities under the provisions of Georgia statutes, helping safeguard Douglas County residents and its many all-important facilities.

Among the many key facilities within Douglas County are the:

- Douglas County Courthouse, which houses most of the functions of County government,
- Multi-modal Transportation Center, which serves as the headquarters for the County's outstanding Rideshare, vanpool and express bus programs,
- Three public libraries, which are operated by the County and are part of the West Georgia Library System,

- Douglas County Fire/EMS Department, which serves the entire County, including the City of Douglasville, through nine fire stations,
- Douglas County Sheriff's Office and Jail, which provides local law enforcement and houses prisoners, arrested, and/or convicted, in both the County and the City of Douglasville,
- Woodie Fite Senior Center, which is dedicated to enhancing the lives of active senior citizens, and
- The Parks and Recreation Department, which sponsors programs at unique park facilities throughout the County.

As for public utilities, the Dog River in the western portion of Douglas County is the County's potable water source. It is managed by the state-chartered Douglasville-Douglas County Water and Sewer Authority (DDCWSA). Other waterways include Sweetwater Creek, Anneewakee Creek, and Gothard's Creek. Electric service and natural gas is provided by either Georgia Power or Greystone Power, depending upon the location. There are three cell phone towers registered with the Federal Communications Commission (FCC) in Douglas County.

The Douglas County School System is comprised of three district offices, seven high schools, eight middle schools, and 20 elementary schools. See Map 8 for reference.

According to the U.S. Census Bureau (July 2018 estimate), there are 53,033 residential units and 2,568 employer establishments in Douglas County. The numbers are not available for the City of Douglasville. The median property value (2013-2017) in Douglas County is $140,100, and the homeownership rate is 65.8%. The median property value (2013-2017) in the City of Douglasville is $153,500, and the homeownership rate is 43.1%. The total estimate of structural property throughout the county is valued at $10,715,696,000.

Table 4: Structural Summary, Douglas County

Structural Summary							
Jurisdiction	**Agricultural**	**Commercial**	**Government**	**Industrial**	**Residential**	**Education**	**Religious**
Douglas County	$205,000	$640,231,000	$167,896,000	$418.603.000	$9,045,011,00	$334,224,000	$99,526,00

Data Source: FEMA's HAZUS® database
Note: The exposure values represented in the HAZUS® report are the total number and replacement cost for all Douglas County buildings.

Table 5: Populations Summary

Populations Summary		
Jurisdiction	**Housing**	**Population**
Douglas County	53,033	145,331
City of Douglasville	13,391	33,210
Total	**66,424**	**178,541**

Data Source: U.S. Census Bureau, Quick Facts, 2018 Population Estimates and Housing Units, July 1,2018 Data (https://www.census.gov/quickfacts/fact/table/US/PST0452195) and Census Reporter – City of Douglasville, GA (https://censusreporter.org/profiles/16000US1323900-douglasville-ga/)

3.1 – Demographics

As indicated in Douglas County's 2015 Multi-Jurisdictional Hazard Mitigation Plan, and per the U.S. Census Bureau (2010), Douglas County's population was 132,403 and the City of Douglasville had population at 30,961. For the City of Douglasville, this is approximately a 57% increase from the 2000 Census count which was 19,740. To a somewhat lesser degree, for the County, it was roughly a 44% increase from 92,241 inhabitants in 2000. This unprecedented growth can partially be explained by urban Atlanta population moving to suburban counties and also by large population influx following Hurricane Katrina in 2005.

Since that time, the population of Douglas County, including the participating jurisdiction(s) of the City of Douglasville, continues to increase, but at a substantially slower pace. Between 2010 and 2018, the population of Douglas County is estimated to have grown by nearly 10 percent (9.76%), and the population of the City of Douglasville is anticipated to have increased by almost 11 percent (10.43%). These numbers equate to nearly a 58% change in population for Douglas County between 2000 and 2018; and almost 73% change in population for the City of Douglasville, as indicated in the Table 6 below. Of course, the results of the 2020 census will determine the actual numbers.

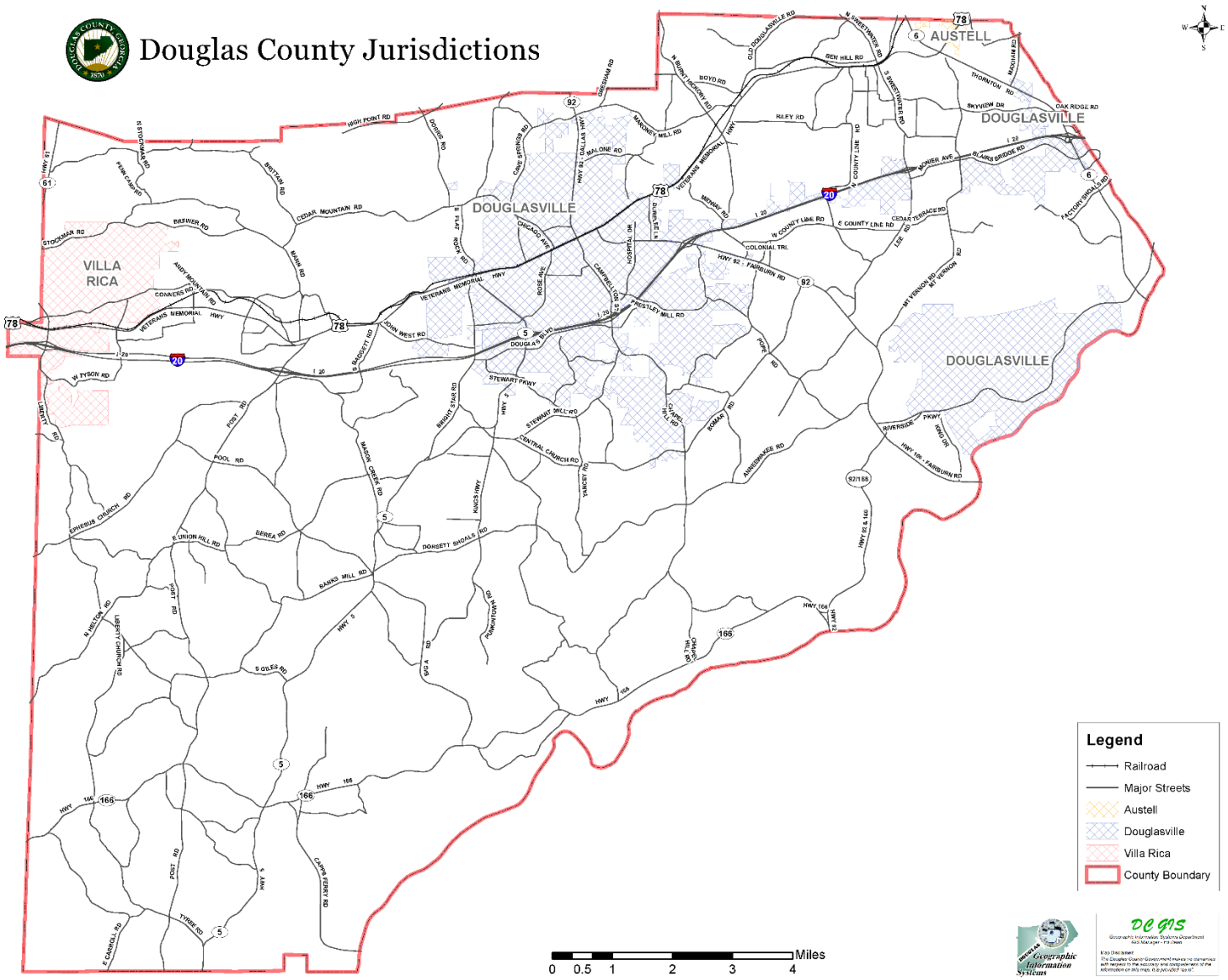
Table 6: Community Demographics

Community Demographics							
Jurisdiction	**Size (Sq. Mi.)**	**Population**			**% Population Change**		
		2000	**2010**	**2018**	**2000 - 2010**	**2010 - 2018**	**2000 - 2018**
Douglas County	200.07	92,241	132,403	145,331	43.5%	9.76%	57.6%
City of Douglasville	22.46	19,740	30,961	34,190	56.8%	10.43%	73.2%

Data Source: 2015 Douglas County, GA Multi-Jurisdictional Hazard Mitigation Plan and U.S. Census Bureau Quick Facts: Population, Census, April 1, 2010, and Population Estimates, July 1, 2018 (https://www.census.gov/programs-surveys/sis/resources/data-tools/quickfacts.html)

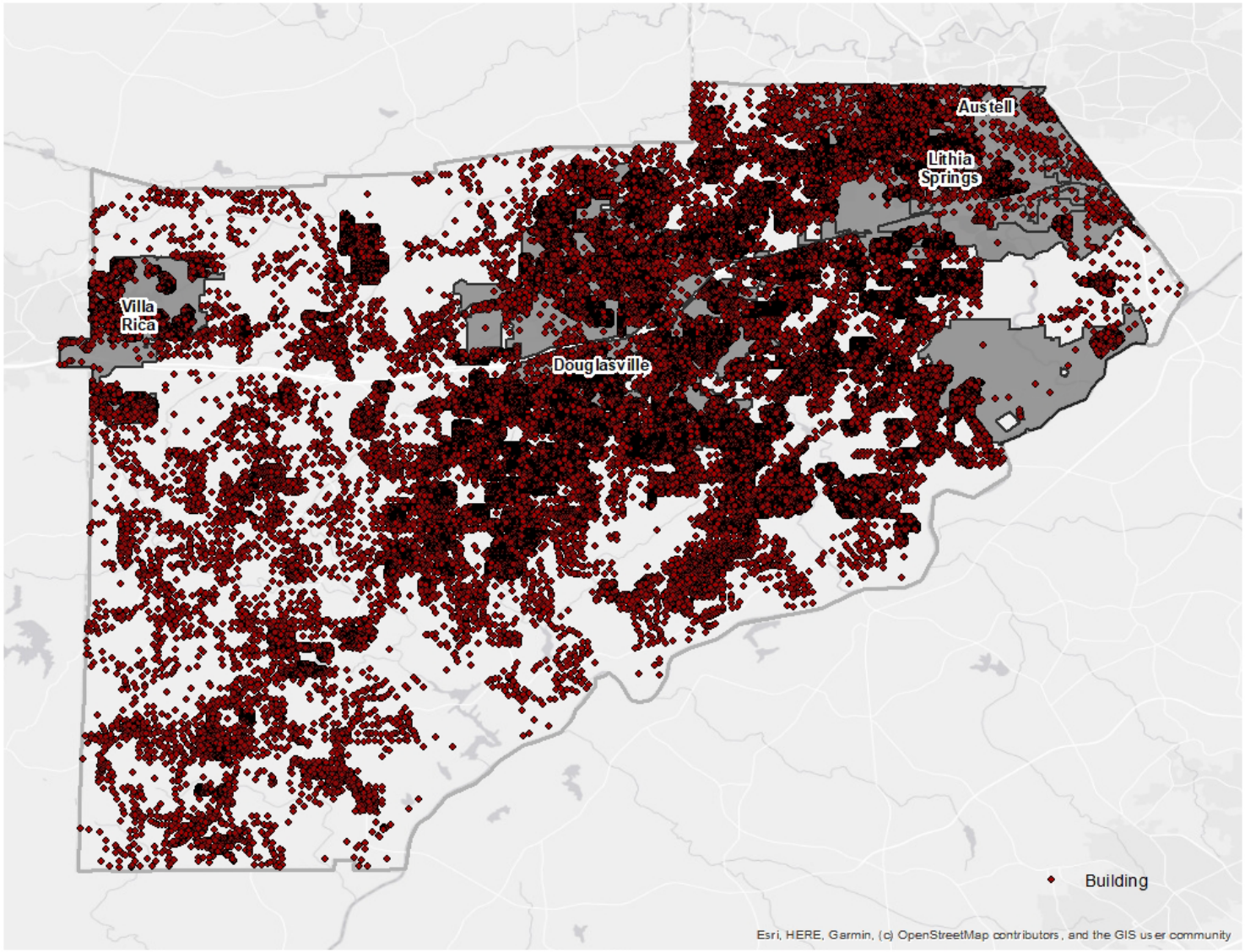
** Percent of Population Change Calculation: https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change*

Map 1: Douglas County, GA - Community Profile



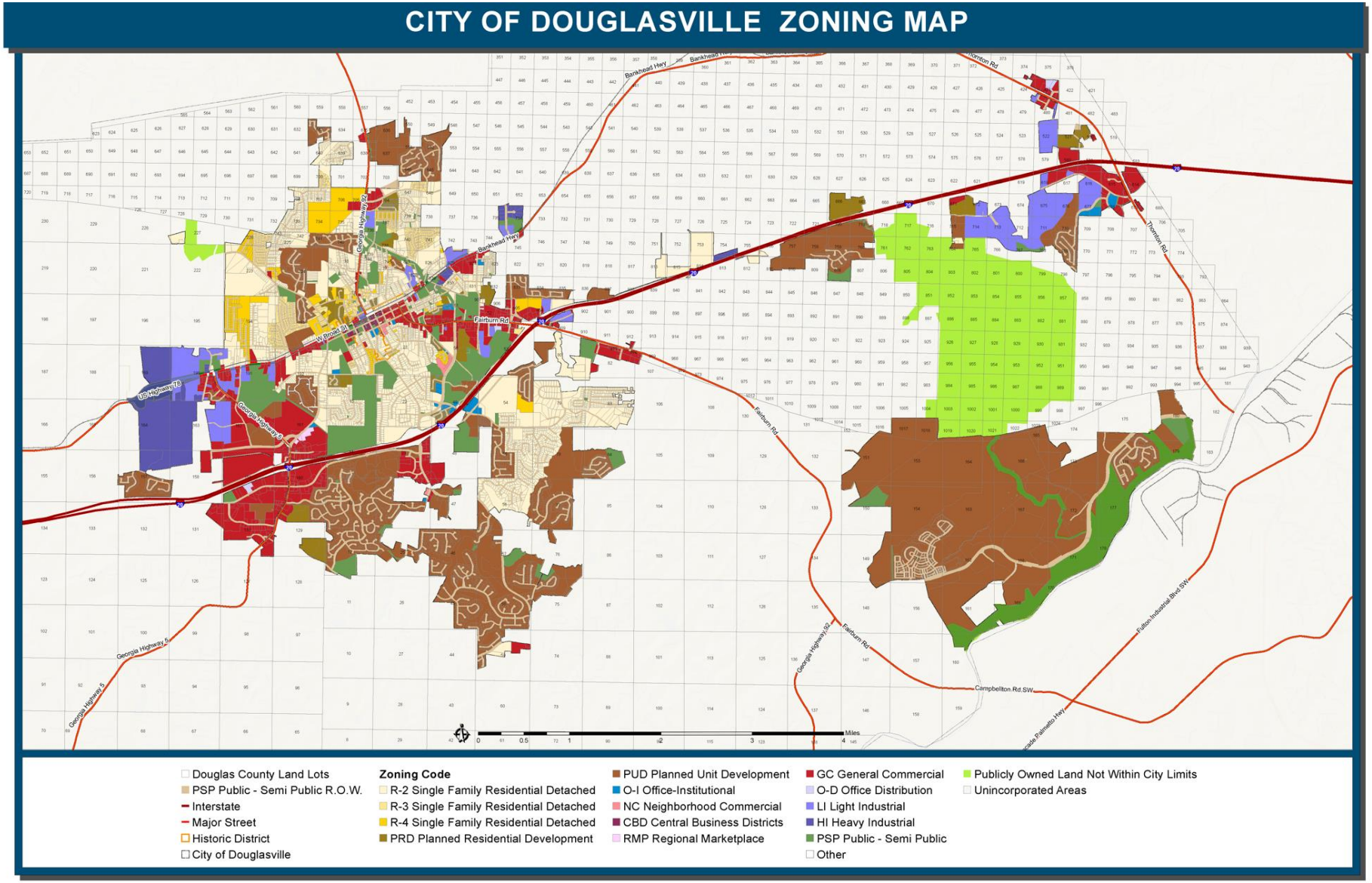
Map Source: Douglas County, GA GIS Department

Map 2: Douglas County, GA - Community Profile



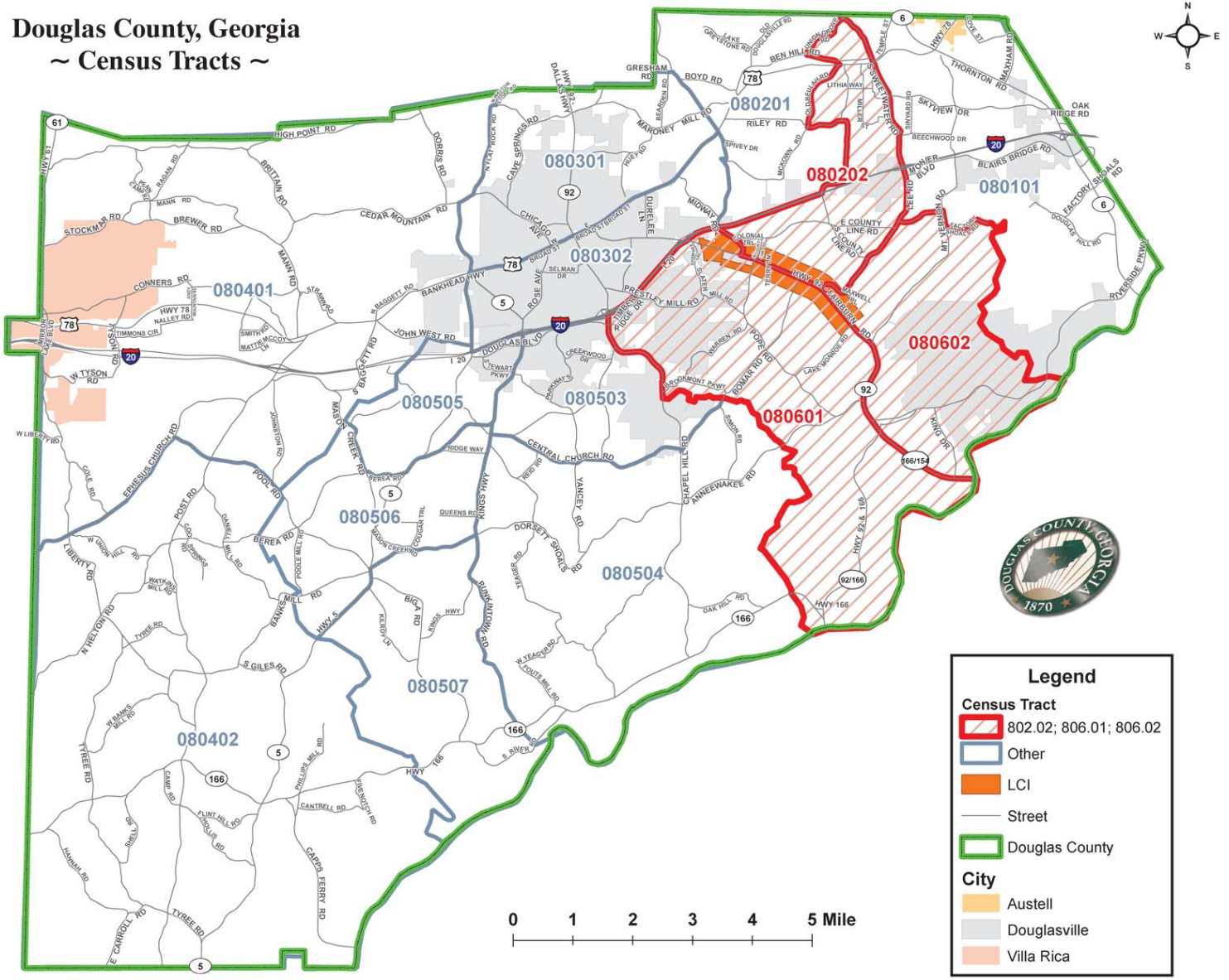
Map Source: Hazard Risk Analyses Supplement to the Douglas County Joint Hazard Mitigation Plan – GEMA/ University of Georgia Carl Vinson Institute of Government

Map 3: City of Douglasville, GA - Community Profile



Map Source: City of Douglasville, GA, Community Development Department

Map 4: Douglas County, GA – Census Tracts Map



Map Source: Douglas County, GA, GIS Department

3.2 – Land Use & Development Trends

Although both participating jurisdictions in the planning area experienced substantial growth in population between 2000 and 2010, the rate slowed substantially but remained sustainable from 2010 through 2018. It was during this time that Douglas County developed its 2015 Multi-Jurisdictional Hazard Mitigation Plan, which reflected the change. For this reason, it is unlikely the entire planning area has a significantly changing hazard vulnerability, and thus, requires no significant changes with this plan update.

Often, municipalities with stagnant growth or low, sustainable growth, see this time as an opportunity to focus mitigation efforts on existing vulnerabilities. This is best accomplished by continuing to enforce and inspect zoning, ordinances, building codes, etc. The recent update to the Douglas County Comprehensive Plan indicates that the County will be looking to incorporate "Community Character Areas" for future land use development patterns. As stated in the Comprehensive Plan, these "Community Character Areas" are intended to ensure compatible and unified development within specified areas of the County. These areas define the overall land use characteristics in generalized areas of Douglas County, such as density, land use, economic development, natural and historic resources, and types of community facilities. Character area designations and characteristics are designed to guide zoning decisions.

In 2018, Douglas County staff, the Planning Commission, the Board of Commissioners, and other boards in reviewing specific proposals for new development and major renovation proposals should use the outlined "Quality of Development Guidelines" and "Character Area Standards." Architects, property owners, and developers should also use the guidelines as a reference as they prepare plans for projects for the Douglas community. It is recommended that Douglas County adopt a two-step growth management strategy that begins with the effort to define the character of a place, i.e., Community Character Areas, and ends with establishing the regulatory measures (such as adopted design guidelines by area, zoning districts or overlays) required to protect that character. Here are the descriptions of some of the "Character Area Standards" for Douglas County:

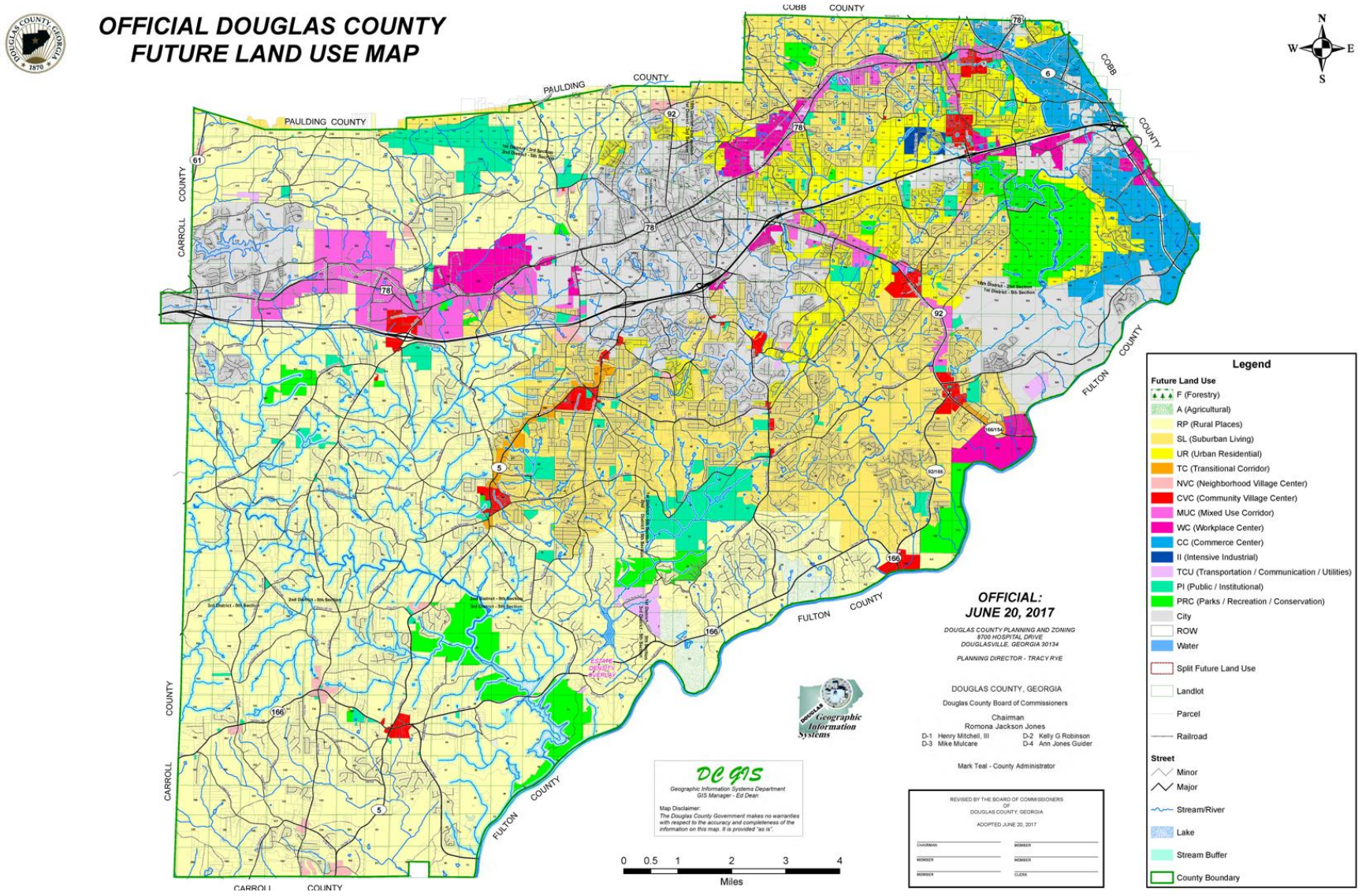
- ***Suburban Living****: As Douglas County continues to experience growth in both residential and commercial development, areas meant for traditional subdivision and commercial growth to serve nearby residents are necessary. The intent of this character area is to channel growth pressures to areas that are suitable in terms of land use patterns and infrastructure investment, and to areas that have a more "suburban" feel.*
- ***Urban Residential****: Areas designated as Urban Residential are located primarily within areas that are currently experiencing growth pressures, such as outside of Douglasville and within areas where public water and sewer, and/or major transportation investment exist or are planned. This character area will serve as a transitional area from the higher density and commercial uses as planned by the City of Douglasville, while protecting existing and planned single-family neighborhoods. Compatibility issues of the surrounding area, and specifically established neighborhoods should be a primary policy determination of the type of new development that is approved.*
- ***Parks/Recreation/Conservation:*** *The Parks/Recreation/Open Space character area classification is for those areas within Douglas County that have been developed for parks or recreation use, or is designated open space. Not all developed or needed open space areas are indicated on the Character Area map located within the Douglas County, GA Comprehensive Plan Update 2018.*

Open space is required in all zoning Master Plans submitted to the County and is required in other developments when necessary to address recreational and aesthetic concerns, or to create buffers between different land uses, or as required by the Unified Development Code (UDC).

For hazards that affect the entire planning area, increased population growth increases a jurisdiction's overall vulnerability, while decreased population growth decreases it. While it is difficult to quantify the exact change in vulnerability in either direction, it can be depicted as generally directly proportional to the population change itself. The following maps, provided by the Douglas County Planning and Zoning Department and the City of Douglasville, reflect the future land use for both participating jurisdictions. For more information on each hazard's effect(s) within the entire planning area, see Section 4 – Hazard Risk Assessment.

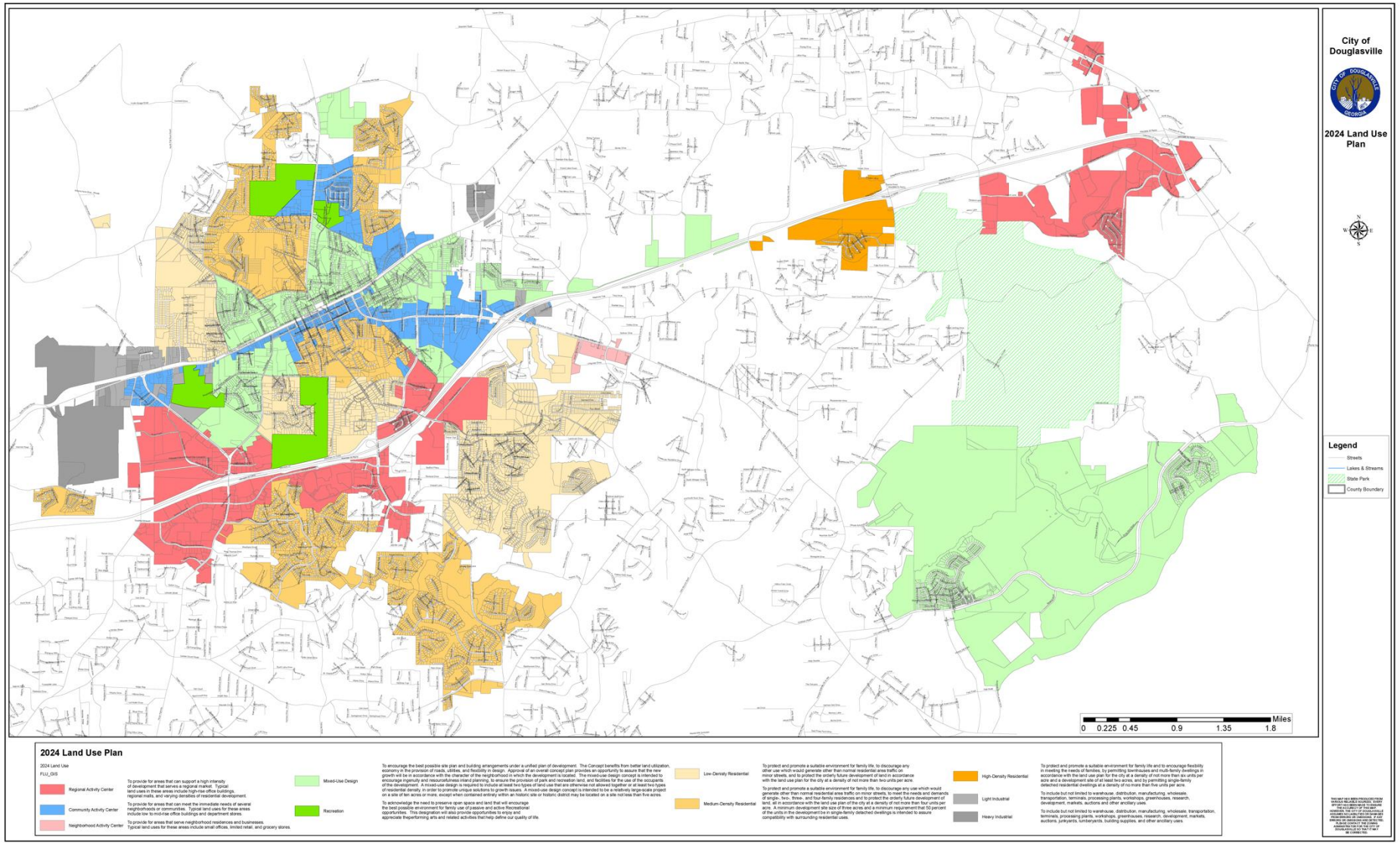
A hazard specific analysis, as it pertains to land use and development trends, is covered under each hazard in Section 4 – Hazard Risk Assessment.

Map 5: Douglas County, GA – Official Future Land Use Map



Map Source: Douglas County, GA, Planning and Zoning Department

Map 6: City of Douglasville, GA – Official Future Land Use Map



Map Source: City of Douglasville, GA, Planning and Zoning Department

3.3 – Critical Facilities

Certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, and education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some facilities and infrastructure are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits this definition will vary slightly from community to community, but the definition remains as a guideline for identifying critical facilities and infrastructure. For Douglas County and its participating jurisdiction(s), the table below lists the identified critical facilities and infrastructure. A complete list can be found in Appendix D – Critical Facilities & Infrastructure.

Table 7: Critical Facilities, Douglas County

Douglas County Critical Facilities Listing												
Jurisdiction	**Airport Terminal**	**Bus Station/ Dispatch Facility**	**County Government Facility**	**Court House**	**Data Center**	**Dept. of Motor Vehicles**	**Diagnostic Laboratory**	**Education Facility**	**Emergency Response Facility**	**Energy Facility**	**Fire Station/ EMS**	**Fire Training Facility/ Academy**
City of Douglasville	0	1	5	1	0	1	1	1	2	2	8	1
City of Lithia Springs	0	0	0	0	1	0	0	0	0	0	1	0
City of Villa Rica	1	0	0	0	0	0	0	0	0	0	1	0
City of Winston	0	0	0	0	0	0	0	0	0	0	1	0
Total	**1**	**1**	**5**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**11**	**1**

Table 7: Critical Facilities, Douglas County (Cont'd)

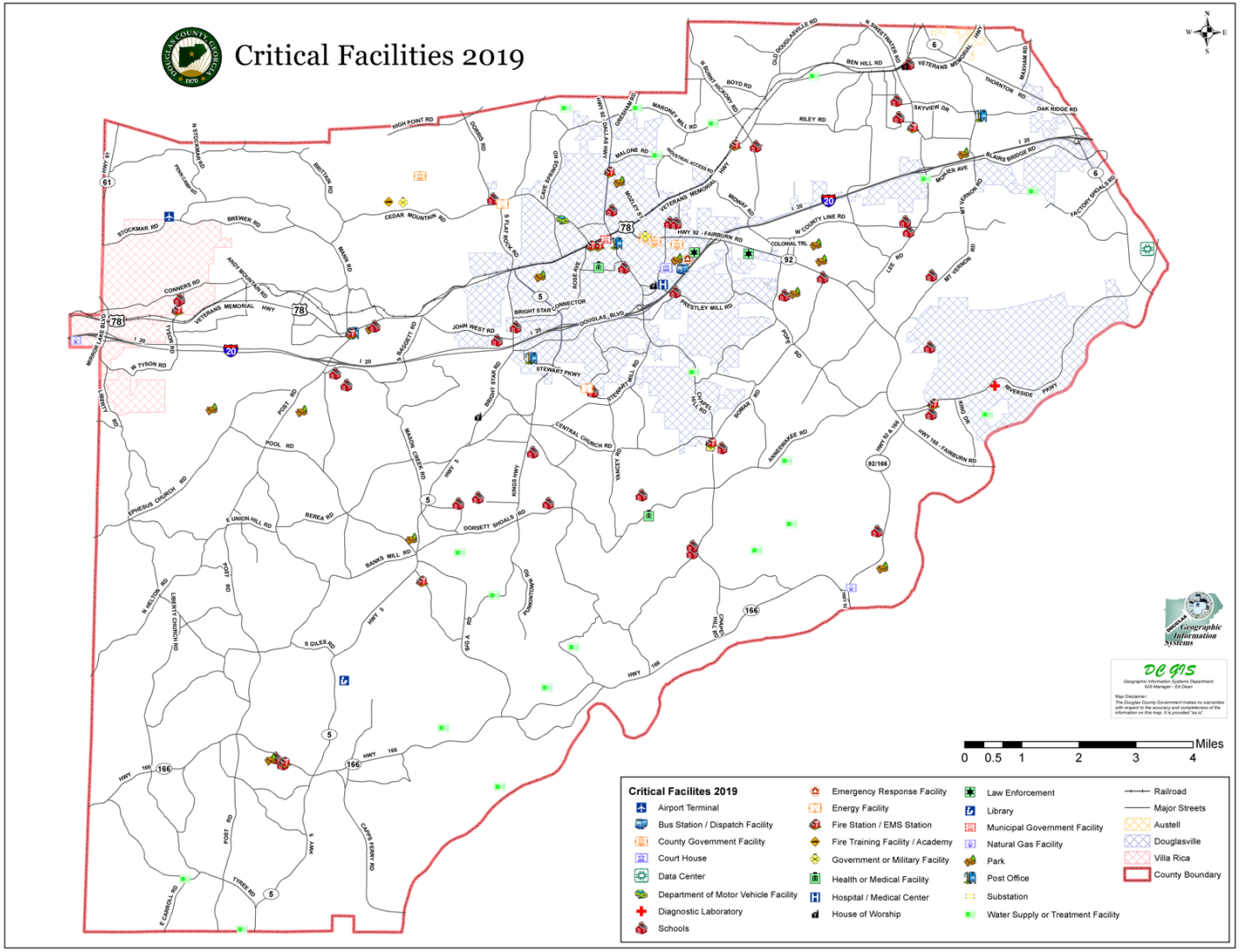
Douglas County Critical Facilities Listing											
Jurisdiction	**Government or Military Facility**	**Health or Medical Facility**	**Hospital/ Medical Center**	**House of Worship**	**Law Enforcement**	**Library**	**Municipal Government Facility**	**Natural Gas Facility**	**Park**	**Post Office**	**School**
City of Douglasville	4	2	1	2	3	1	1	1	9	2	2
City of Lithia Springs	0	0	0	1	0	0	0	0	1	1	0
City of Villa Rica	0	0	0	0	0	0	0	1	1	0	0
City of Winston	0	0	0	0	0	0	0	0	2	1	0
Total	**4**	**2**	**1**	**3**	**3**	**1**	**1**	**2**	**13**	**4**	**2**

Table 7: Critical Facilities, Douglas County (Cont'd)

Douglas County Critical Facilities Listing						
Jurisdiction	**School (Elementary) Elementary**	**School: High School**	**School: Middle School**	**Substation**	**Water Supply or Treatment Facility**	**Total Number of Critical Facilities within Douglas County and All Participating Jurisdictions**
City of Douglasville	14	4	4	1	16	**90** – (1 Bus Station/Dispatch Facility, 5 County Government Facility, 1 Court House, 1 Dept. of Motor Vehicles, 1 Diagnostic Laboratory, 1 Education Facility, 2 Emergency Response Facility, 2 Energy Facility, 8 Fire Station/EMS, 1 Fire Training Facility/Academy, 4 Government or Military Facility, 2 Health or Medical Facility, 1 Hospital/Medical Center, 2 House of Worship, 3 Law Enforcement, 1 Library, 1 Municipal Government Facility, 1 Natural Gas Facility, 9 Park, 2 Post Office, 2 School, 14 School: Elementary, 4 School: High School, 4 School: Middle School, 1 Substation, 16 Water Supply or Treatment Facility)
City of Lithia Springs	4	1	1	0	3	**14 –** (1 Data Center, 1 Fire Station/EMS, 1 House of Worship, 1 Park, 1 Post Office, 1 School: Elementary, 1 School: High School, 1 School: Middle School, 3 Water Supply or Treatment Facility)
City of Villa Rica	1	0	0	0	0	**5 –** (1 Airport Terminal, 1 Fire Station/EMS, 1 Natural Gas Facility, 1 Park, 1 School: Elementary)
City of Winston	2	0	1	0	1	**8–** (1 Fire Station/EMS, 2 Park, 1 Post Office, 2 School: Elementary, 1 School: Middle School, 1 Water Supply or Treatment Facility)
Total	**21**	**5**	**6**	**1**	**20**	**117**

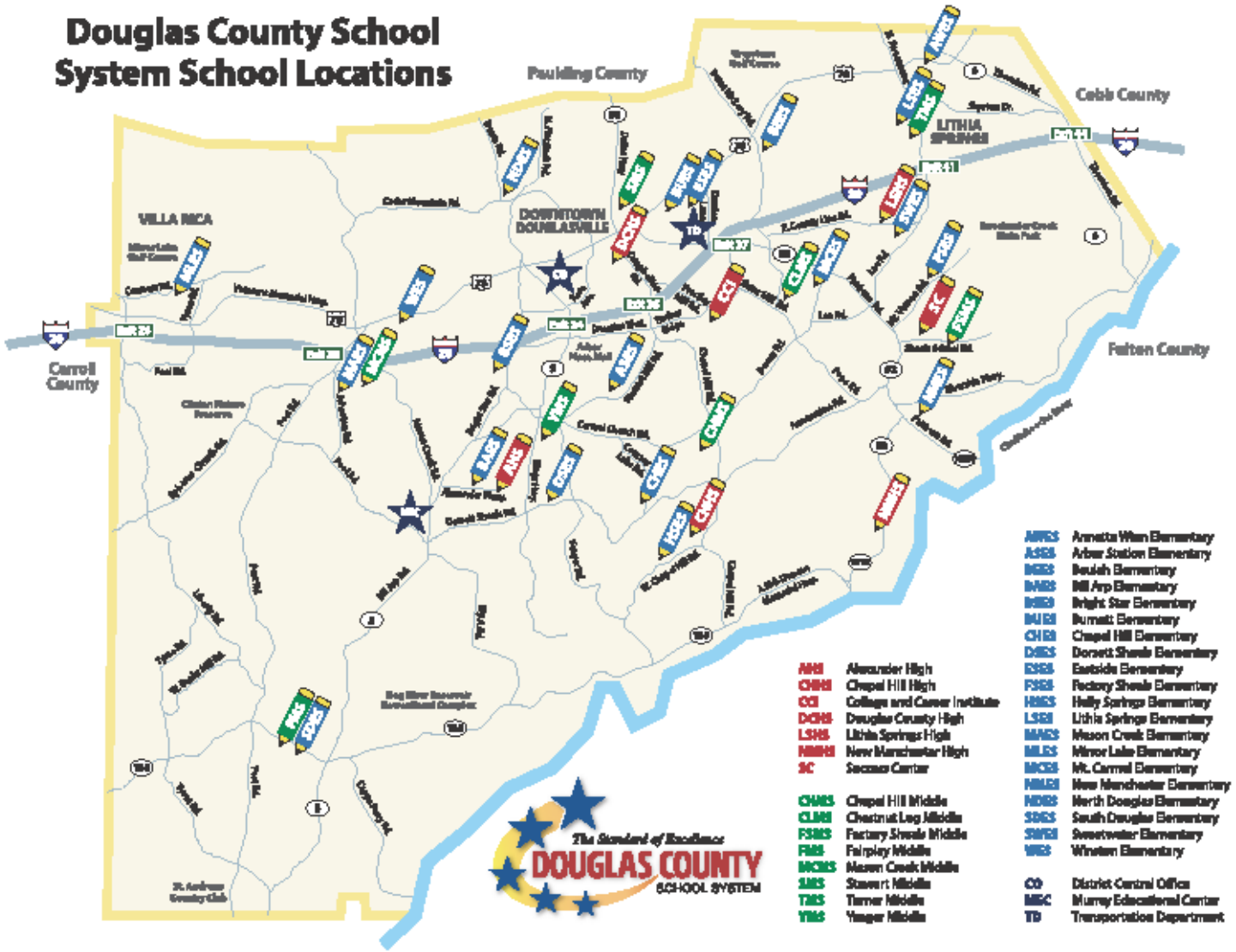
The following maps, generated by the Douglas County GIS Department and Douglas County Public Schools in 2019, reflect critical facilities within the planning area.

Map 7: Douglas County, GA, Critical Facilities & Infrastructure



Map Source: Douglas County, GA GIS Department

Map 8: Douglas County, GA, School System & Locations



Map Source: Douglas County, GA Public School System

Section 4 – Hazard Risk Assessment

The goal of hazard mitigation is to reduce the future impacts of hazards, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist recovery. To be done correctly, mitigation decision-making should be based on risk assessment.

A risk assessment consists of three components: hazard profiling, exposure, and vulnerability assessment. The process entails past hazard events, probability of future events, asset lists, loss estimation, and other sections where appropriate.

Planning Process
Local Procedures & Resources
Planning Area
Hazard Risk Assessment
- Identifying Hazards
- Profiling Hazards
- Hazards
- Land Use & Development Trends
- Hazard Risk Summary
- Excluded Hazards

Mitigation Strategy

Review of recently declared disasters, i.e., from 2015 to the present, provides an overview of the hazards facing Douglas County and its participating jurisdiction(s). This timeframe is referenced because Douglas County had a previous, FEMA-approved HMP that expired on June 12, 2020. Since 2015, Douglas County and its participating jurisdiction(s) have experienced two presidentially declared disasters. These disaster declarations were due to severe storms and flooding and hurricane. A list of the declared disasters occurring in Douglas County and its participating jurisdiction(s) since 2015 is presented in Table 8 below. Smaller events are more frequent and are not reflected in the table. For documentation of the FEMA Disaster Declaration Maps, see Appendix E – FEMA Presidential Declarations.

***Note**: Human-caused hazards such as Communicable Disease were not identified in the 2019 Georgia Hazard Mitigation Strategy Standard and Enhanced Plan (March 18, 2019 – March 17, 2024) and Statewide Hazard Assessment, or the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (approved by FEMA, April 2016). This disaster declaration was included in the table below due to the COVID-19 pandemic affecting Douglas County and its participating jurisdiction(s) during the drafting of this plan update.*

Table 8: Presidential Disaster Declarations, Douglas County

Presidential Disaster Declarations, Douglas County		
Designation	**Incident Period**	**Incident Type**
DR- 4259	12/22/2015 – 01/13/2016	Severe Storm and Flooding
DR - 4338	09/7/2017 – 09/20/2017	Hurricane Irma
DR - 4501	01/20/20 – Continuing	COVID-19 Pandemic

Data Source: FEMA

4.1 – Identifying Hazards

The first step in developing a hazard assessment is to identify the hazards that have a reasonable risk of occurring in Douglas County and its participating jurisdiction(s). Proper identification allows for appropriate and well-planned action in order to mitigate the extent and impact of a hazard event. It also helps facilitate emergency response and recovery operations. Further, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard events overall.

Table 9 (below) lists the 13 hazards identified in the Georgia Hazard Mitigation Strategy Standard and Enhanced Plan (March 18, 2019 – March 17, 2024) and Statewide Hazard Assessment, as well as the justification for their inclusion/exclusion within this Douglas County MJHMP update. Research indicates 5 of the 13 hazards, namely coastal hazards, geological hazards, seismic hazards, hurricane wind, and extreme heat, pose no reasonable risk to the planning area. As such, they are excluded from this plan update. Justification for their exclusion can be found in Section 4.3 – Excluded Hazards.

Of the 13 state-identified hazards, 7 do pose some level of risk to Douglas County and/or at least one of its participating jurisdiction(s). These are dam failure, drought, flooding (inland), severe weather, severe winter weather, tornado, and wildfire. One additional, unnatural (or human-caused) hazard, hazardous materials, also poses risk to Douglas County and its participating jurisdiction(s) due to the location of the County within a major rail transportation corridor. For this reason, hazardous materials is included within this MJHMP update. Details for each of these eight hazards and their potential impact on Douglas County and its participating jurisdiction(s) are located in Section 4.3 – Hazard Risk Summary.

Note: The hazard of hazardous materials is not included in the Georgia Hazard Mitigation Strategy Standard and Enhanced Plan. The State of Georgia does not include any human-caused hazards, as the intent of its plan is to mitigate against only natural hazards.

Table 9: State of Georgia Identified Hazards

State of Georgia Identified Hazards			
Hazards in State / Previous County HMP	**Previous Inclusions**	**Included/Excluded**	**Justification**
Dam failure	State Plan, Prior Plan	Included	No reasonable risk
Drought	State Plan, Prior Plan	Included	Disaster history
Inland Flooding	State Plan, Prior Plan	Included	Disaster history
Seismic Hazards	State Plan	Excluded	No reasonable risk
Severe Weather	State Plan, Prior Plan	Included	Disaster history
Severe Winter Weather	State Plan, Prior Plan	Included	Disaster history
Geological Hazards	State Plan	Excluded	No reasonable risk
Coastal Hazards	State Plan	Excluded	No reasonable risk
Tornadoes	State Plan, Prior Plan	Included	Disaster history
Hurricane Wind	State Plan	Excluded	No reasonable risk
Wildfire	State Plan, Prior Plan	Included	Disaster history
Wind	State Plan	Included	No reasonable risk
Extreme Heat	State Plan	Excluded	No reasonable risk

4.2 – Profiling Hazards

Hazard profiles are outlined in the proceeding sections of the Douglas County Hazard Mitigation Plan. For some hazards, the Repetitive Loss (RL) Structures and HAZUS® Models sections are left out due to the lack of applicability to the associated hazard.

4.2.1 – Hazard Description

This section describes the general characteristics of the specified hazard.

4.2.2 – Location & Extent

This section contains information about the location, i.e., the geographic area(s) within the planning area, that are affected by the hazard, along with the extent (strength and magnitude) of the specific hazard.

4.2.3 – Previous Occurrences

This section contains a history of previous hazard events for the profiled hazard.

***Methodology**: Most of the historical data used in the risk assessment originates from the National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NOAA/NCEI). In most instances, the hazard affects a large geographic area, and thus, the hazard data is reported at a county level. This is the best available data for these hazards. The calculations for Previous Occurrences and the Probability of Future Events are based on county-level data as well.*

4.2.3A – Probability of Future Events

This section of the plan describes the likelihood, or probability, of the identified hazard actually occurring within the planning area. If discrete quantitative data is available, a finite probability will be listed. See Table 10 (below) for additional information related to the probability of future events.

Table 10: Probability Categories

Probability Categories	
Category	**Range (Per Year)**
Unlikely	Less than 0%
Occasional	1% -10%
Likely	11% - 50%
Highly Likely	51-100%

4.2.4 – Vulnerability & Impact

This section describes the potential impacts of the hazard for each participating jurisdiction, and provides an overall summary of each jurisdiction's vulnerability to the hazard through structures, systems, populations, and community assets that are susceptible to damage/loss from the hazard.

4.2.4A –Critical Facilities & Infrastructure

When appropriate, this section details the infrastructure and facilities pertinent to the hazard.

4.2.4B – Land Use & Development Trends

This section provides a general description of land use and development trends within the participating jurisdictions.

4.2.4C – Unique & Varied Risk

Each jurisdiction's risk, where it varies from the risks facing the entire planning area, is discussed in this section.

4.2.4D – Repetitive Loss Structures

If applicable to the profiled hazard, a description of the location types, along with estimates for the number of repetitive loss properties, will be provided in this section.

4.2.5 – HAZUS® Models

If applicable to the profiled hazard, HAZUS® models may be included in this section of the plan. HAZUS® is a GIS (mapping) tool that allows analysts to create a fictional scenario for the planning area using specific details to show what could happen if that scenario were to occur. This type of mapping is helpful to fill in gaps where there is a lack of historical data. It also allows jurisdictions to visualize which facilities and populations would potentially be affected by the profiled hazard(s).

4.2(D) – Drought

4.2.1 – Hazard Description

Photo Source: AJC.com – Lake Lanier Low Water Levels as Drought Continues (https://www.ajc.com/news/local/lake-lanier-low-water-levels-drought-continues/KhJDPIuMwQv5C5Q9iLVUJP/)

Drought is defined as an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and or underground water supply. It is, however, a normal, seasonal, and recurrent feature of climate that occurs in virtually all climate zones—typically in late spring through early fall. The duration of drought varies widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. The hydrological imbalance can be grouped into the following non-exclusive categories:

Agricultural: When the amount of moisture in the soil no longer meets the needs of previously grown crops,

Hydrological: When surface and subsurface water levels are significantly below their normal levels,

Meteorological: When there is a significant departure from the normal levels of precipitation, and

Socio-Economic: When the water deficiency begins to significantly affect the population.

When below average, little or no rain falls, soil can dry out, and plants can die. If unusually dry weather persists and water supply problems develop, the time period is defined as a drought. Human activity such as over-farming, excessive irrigation, deforestation, and poor erosion controls can exacerbate a drought's effects. It can take weeks or months before the effects of below average precipitation on bodies of water are observed. Depending upon the region, droughts can happen more quickly, be noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the faster the effects will be realized. A naturally dry region, which typically relies more on subsurface water will take more time to actualize its effects.

Periods of drought can have significant environmental, agricultural, health, economic, and social consequences. The effects vary depending upon vulnerability and regional characteristics. Droughts can also reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and decrease contamination. The most common effects are diminished crop yield, increased erosion, dust storms, ecosystem damage, reduced electricity production due to reduced flow through hydroelectric dams, shortage of water for industrial production, and increased risk of wildland fires.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. Among them are the U.S. Drought Monitor, the Palmer Drought Index, and the Standardized Precipitation Index, as next described.

The U.S. Drought Monitor provides a summary of drought conditions across the U.S. and Puerto Rico. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-

based drought indices and indicators, along with local expert input, into a single composite drought indicator.

The Palmer Drought Index (PDI), devised in 1965, was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to circulate water supply and demand; incorporates soil moisture; and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief.

Table 11: Palmer Drought Severity Index

Palmer Drought Severity Index	
Extremely Wet	4.0 or more
Very Wet	3.0 to 3.99
Moderately Wet	2.0 to 2.99
Slightly Wet	1.0 to 1.99
Incipient Wet Spell	0.5 to 0.99
Near Normal	0.49 to -0.49
Incipient Dry Spell	-0.5 to -0.99
Mild Drought	-1.0 to -1.99
Moderate Drought	-2.0 to -2.99
Severe Drought	-3.0 to -3.99
Extreme Drought	-4.0 or less

The Standardized Precipitation Index (SPI) is a way of measuring drought that is different from the Palmer Drought Index (PDI). Like the PDI, this index is negative for drought, and positive for wet conditions. However, the SPI is a probability index that considers only precipitation, while PDI indices are water balance indices that consider water supply (precipitation), demand (evapotranspiration) and loss (runoff).

Table 12: Standard Precipitation Index

Standard Precipitation Index	
Extremely Wet	2.0+
Very Wet	1.5 to 1.99
Moderately Wet	1.0 to 1.49
Near Normal	-.99 to .99
Moderately Dry	-1.0 to -1.49
Severely Dry	-1.5 to -1.99
Extremely Dry	-2 and less

Drought is a persistent problem across the nation, as evidenced by its widespread presence in 2018. Early in the year (February 2018), the U.S. Drought Monitor reported that 38.4% of the continental U.S. was in drought. That was the highest percentage since the 40% recorded in May 2014. Additionally, consider there is technically no longer a “fire season” for the State of California, as it has become a tinderbox for drought-related wildfires year-round. Other states across the country are, unfortunately, following suit.

4.2.2 – Location & Extent

The State of Georgia is no stranger to drought. It has experienced numerous bouts of dry weather for several years. Per the U.S. Drought Monitor, since 2000, the most prolonged duration of drought in Georgia lasted 161 weeks, beginning on April 11, 2006, and ending on May 5, 2009.

Illustration 1: Drought Percent Area, State of Georgia

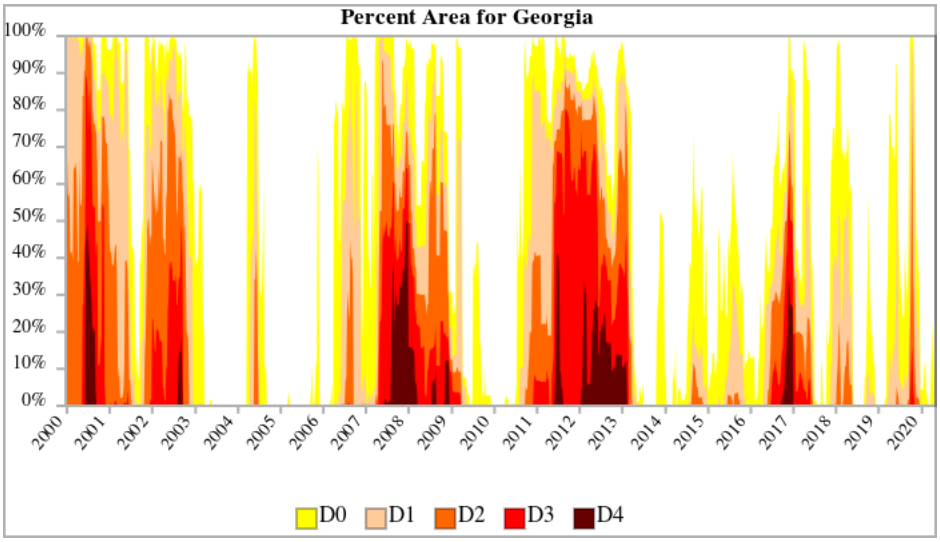


Illustration Source: Drought in Georgia from 2000-2020, Drought.gov

The most intense period of drought occurred the week of December 25, 2007, when 49.86% of Georgia's land was affected. Since the year 2000, NOAA/NCEI has recorded 33 drought events in Douglas County alone.

Drought typically does not have a direct impact on critical facilities or structures. However, possible losses/impacts to them can include loss of critical functions due to low water supplies. Severe droughts can negatively affect drinking water supplies. Should a public water system be affected, the losses could total into the millions of dollars if water must be shipped from other locations.

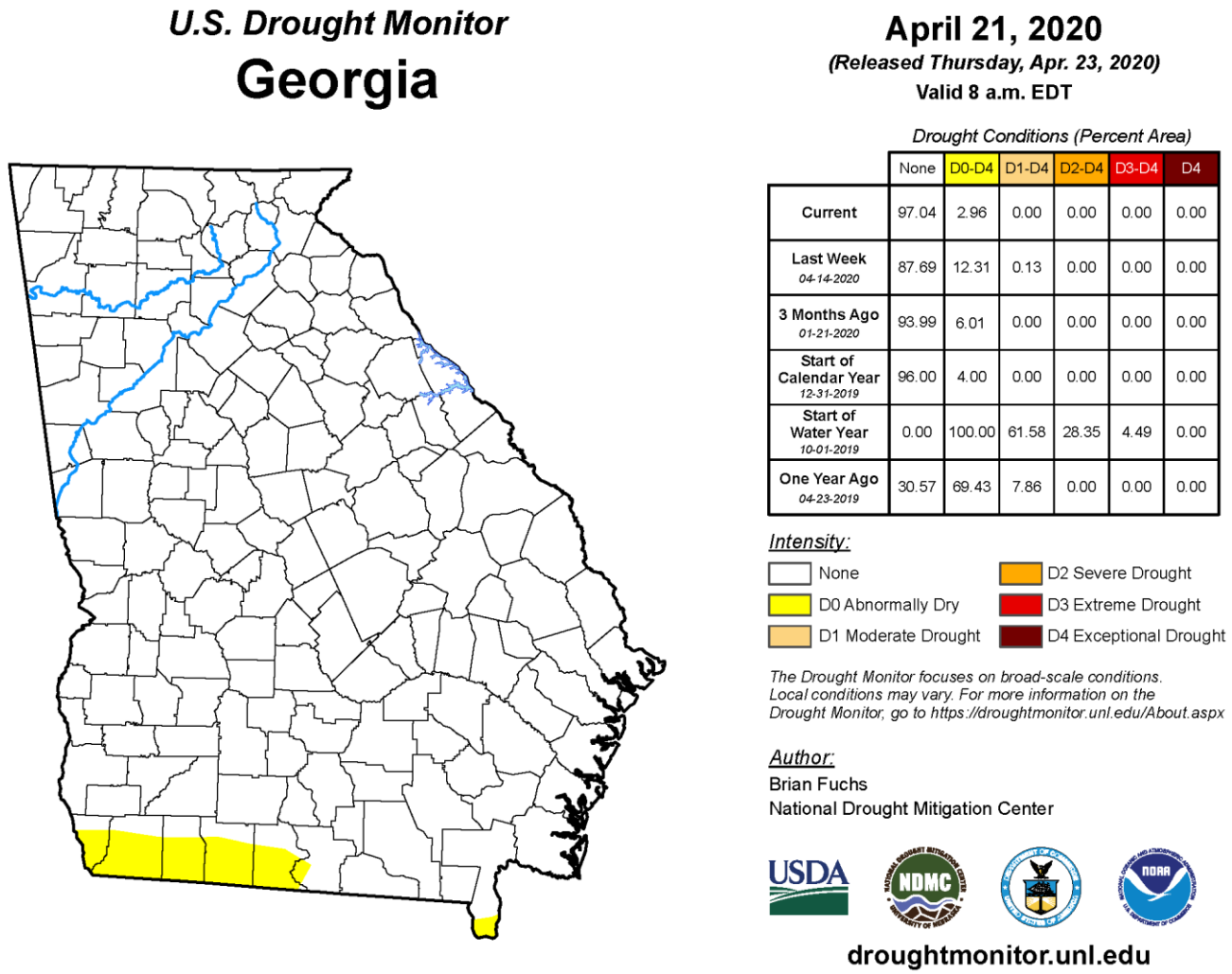
Severe drought could also pose a significant risk to public health if water sources become scarce, or worse, contaminated. This is especially true for those who get their drinking water from private wells. Per the Centers for Disease Control (CDC), viruses, such as E. coli and salmonella, as well as protozoa and bacteria, can pollute both groundwater and surface water when rainfall decreases. Additionally, acute respiratory and gastrointestinal illnesses are more easily spread from person-to-person when hand washing is compromised by a perceived or real lack of available water.

Severe drought can also increase an area’s vulnerability to wildfire due to dry vegetation. Dry, hot, and windy weather combined with dry vegetation and a spark, whether through human intent, accident, or lightning, can trigger ablaze. Such fires, as experienced in Georgia’s Okefenokee National Wildlife Refuge in April 2017, can scorch hundreds of thousands of acres of land.

In September 2019, 7.5 million people in the State of Georgia experienced drought conditions. By the end of the month, that number reached 62 percent of the state. Severe to Exceptional drought (categories D2-

D4) went from 0 percent of Georgia at the start of the month to 28 percent by the end. On December 27, 2019, the Georgia Environmental Protection Division (EPD), lifted the Level 1 Drought Response due to the rainfall at the end of 2019 which helped improve drought conditions in the region. This drought order was in place for much of the 15-county metro Atlanta region which included Douglas County and its participating jurisdiction. As of April 23, 2020, and according to U.S. Drought Monitor, 9.6% of the State of Georgia is abnormally dry, and 0% is moderately dry, including Douglas County. This is due to the increase amount of rainfall in the state of Georgia since December 2019.

Map 9: Georgia Drought Conditions, April 2020



Map Source: U.S Drought Monitor, Drought.gov

The Standardized Precipitation Index (SPI)

The SPI shows the actual precipitation compared to the probability of precipitation for various time frames. The SPI is an index based on precipitation only. It can be used on a variety of time scales, which allows it to be useful for both short-term agricultural and long-term hydrological applications. A drought event occurs any time the SPI is continuously negative and reaches an intensity of -1.0 or less as indicated in the

following table, Table 12. The event ends when the SPI becomes positive. Each drought event, therefore, has a duration defined by its beginning and end, and intensity for each month the event continues. The positive sum of the SPI for all the months within a drought event can be termed the drought's magnitude.

4.2.3 – Previous Occurrences

As previously mentioned, this update to the Douglas County 2015 Multi-Jurisdictional Hazard Mitigation Plan covers a date range from January 1, 2015, to April 1, 2020. During this time period, there have been 14 documented occurrences of drought within the planning area.

Table 13: Drought Events, Douglas County

Drought Events, Douglas County					
Location	**Date**	**Event Type**	**Injuries/ Deaths**	**Property Damage**	**Crop Damage**
Douglas (Zone)	06/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	07/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	08/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	09/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	10/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	11/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	12/01/2016	Drought	0/0	$0	$0
Douglas (Zone)	01/01/2017	Drought	0/0	$0	$0
Douglas (Zone)	02/01/2017	Drought	0/0	$0	$0
Douglas (Zone)	03/01/2017	Drought	0/0	$0	$0
Douglas (Zone)	04/01/2017	Drought	0/0	$0	$0
Douglas (Zone)	09/10/2019	Drought	0/0	$0	$0
Douglas (Zone)	10/01/2019	Drought	0/0	$0	$0
Drought (Zone)	11/01/2019	Drought	0/0	$0	$0
Total – 14 Events			**0/0**	**$0**	**$0**

Data Source: NOAA/NCEI Storm Events Database

In order to gain a better understanding of previous occurrences, and accurately calculate future probability, the following drought events (2000 to present day) were also taken into consideration. From January 1, 2000, to April 1, 2020, NOAA/NCEI recorded 33 drought events in Douglas County. In September 1999, the rainfall deficit was greater than ten inches for the year. According to the National Climatic Data Center, north-central Georgia, including Douglas County, experienced drought conditions in 1997, 1999, 2000, 2002, 2007, 2008, 2011, and 2012. Also, DDCWSA reported fluctuations of drought condition throughout 2016-2019. Most drought incidences occurred in the spring and summer months and end in the winter and spring months due to increased precipitation. According to NOAA/NCEI, the effects of these droughts were bothersome, but not costly, as no significant property or crop damage was reported.

4.2.3A – Probability of Future Events, Drought

Douglas County and its participating jurisdiction(s) can expect a drought event with a 233.3% probability per year, or 2.33 events per year, based upon Table 10: Probability Categories. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a drought for Douglas County and its participating jurisdiction(s) is considered **highly likely**.

Table 14: Probability of Future Events, Drought

Probability of Future Events, Drought	
Event Year	**Event Count**
2015	0
2016	7
2017	4
2018	0
2019	3
2020	0
Total Recorded Events =	14
Total Years =	6
Yearly Probability =	**233.3%**

Data Source: NOAA/NCEI Storm Events Database

4.2.4 – Vulnerability & Impact

Douglas County and its participating jurisdiction(s) have recorded 33 drought events since 2000, of which the range and magnitude was between “slightly dry” and “extremely dry.” Based on the future probability in Table 14, from January 1, 2015 to April 1, 2020, Douglas County and its participating jurisdiction(s) can expect 2.33 drought events per year with each ranging anywhere below 0 and -4 on the Palmer Drought Severity Index and 0 to -2 on the Standard Precipitation Index. Therefore, drought does not pose any risk to facilities in Douglas County or its participating jurisdiction(s).

Table 15: Historical Impacts, Drought

Historical Impacts, Drought	
Count of Events	14
Impacts Per Year	2.33
Average Magnitude	-
Magnitude Range	-
Average Cost	$0
Magnitude of Cost	$0 - $0
Total Recorded Cost	$0
Average Fatalities	0.00
Total Fatalities	0.00
Average Injuries	0.00
Total Injuries	0.00

Data Source: NOAA/NCEI Storm Events Database

Vulnerability of Population

Drought itself poses no direct risk of injury or death to populations in Douglas County and its participating jurisdiction(s).

Vulnerability of Systems

Drought, however, can have a significant effect on a jurisdiction's agriculture and tourism economies. If the precipitation level is below normal, farmers will struggle to grow crops and feed livestock. If rivers, streams, and in the case of Douglas County, the Dog River Basin, dry up, the community will be less likely to enjoy the planning area's amenity resources.

4.2.4A – Critical Facilities & Infrastructure

Drought does not pose any risk to critical facilities and infrastructure within in Douglas County or its participating jurisdiction(s). A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Currently, there are development projects underway in Douglas County, which means that there are potentially more citizens and facilities becoming vulnerable to a drought. Even so, drought has little effect on facilities. However, the population of Douglas County, including the participating jurisdiction(s) of the City of Douglasville, continues to increase, but at a substantially slower pace.

Water conversation is a major need during drought events. The Dog River Basin is the primary drinking water source in Douglas County. The Douglas County Board of Commissioners has been diligent in trying to protect the land inside this drainage basin from overdevelopment so that the quality and quantity of the water in the Dog River Reservoir will not be diminished. Over the past few years, Georgia has been in a drought situation. Still, Douglas County, due to development regulations in the Dog River Basin, has had to mandate self-imposed water restrictions when in Level 2 Drought conditions, like in 2017. DDCWSA encourages the community to conserve water during drought events and provides this information through its website (https://www.ddcwsa.com/epd-declares-level-1-drought-response-for-douglas-county/) and public outreach events within the community.

4.2.4C – Unique & Varied Risk

Douglas County and its participating jurisdiction(s) have significant agricultural areas at risk to drought.

4.2.4D – Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

Not applicable.

4.2(FI) – Flooding, Inland

4.2.1 – Hazard Description

Photo Source: NOAA, Flooding

Flooding, as defined by the National Weather Service (NWS), is the rising and overflowing of a body of water onto normally dry land. It can result from any overflow of inland or tidal waters, or an unusual accumulation or runoff of surface waters from any source. Flooding is loosely classified as inland, riverine, or coastal.

Inland flooding, also known as “urban flooding” or “flash flooding,” can be caused by intense, short-term rain or by moderate rainfall over several days, which can overwhelm existing drainage infrastructure. Other factors that affect the dynamics of this type of flood include slope, width, and vegetation in place along the watercourse banks. The slope that a flash flood traverses has a definite relationship to the overall speed in which the water will travel. The incline on which the water moves affects the width of the flooding area. Generally, the faster the water moves, the narrower that channel will be created, since the water digs the channel deeper as it flows. When water flows over shallower slope, it tends to spread out more, decreasing its potential to cause mass damage but still considered dangerous. Finally, the type of vegetation located along the flood’s path can prevent further erosion of the channel banks. A structure that lies along a flood channel with no surrounding vegetation is at risk of having its foundation undercut, which can cause structural damage, or in some cases, a building’s complete collapse. Riverine or aluvial, flooding occurs when excessive rainfall over an extended period of time causes a river to exceed its capacity. Typical causes of flooding, both inland and riverine, include tropical cyclonic systems, frontal systems, and isolated thunderstorms combined with other environmental variables such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. The rate of onset and duration of flooding events depends on the type of flooding (typical flood or flash flood). The spatial extent of a flooding event depends on the amount of water overflow but can usually be mapped because of existing floodplains.

As depicted in the following illustration, a floodplain is a flat or nearly flat land adjacent to a river or stream that experiences occasional or periodic flooding environment, topography, ground saturation, soil types, Floodplains, or Special Flood Hazard Areas (SFHAs), are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. The sediments (rock and debris) that build up over time from the floodplain’s floor. Floodplains also include a floodway, which consists of the water channel and adjacent areas that carry flood flows and the flood fringe, which are areas covered by the flood but do not experience a strong current.

Illustration 2: Characteristics of a Floodplain

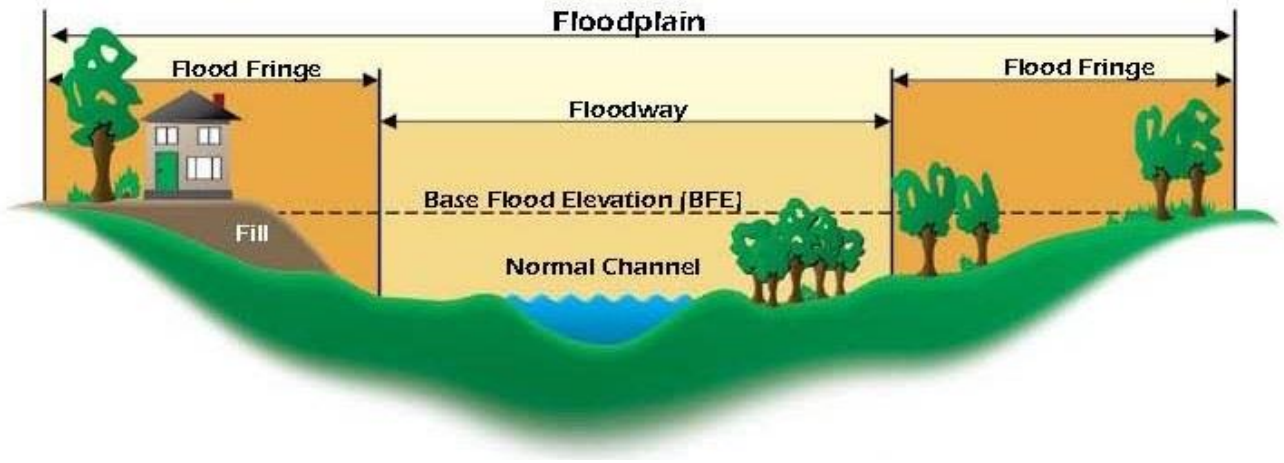


Illustration Source: www.co.mille-lacs.mn.u

In its common usage, floodplains refer to areas inundated by the 100-year flood, i.e., the flood that has a 1% chance of being equaled or exceeded in any given year and the 500-year flood, i.e., the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP).

The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters, and businesses and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance and flood insurance.

The adverse impacts of flooding can include structural damage; agricultural crop loss; the death of livestock; loss of access to critical facilities due to roads being washed out or overtopped; unsanitary conditions resulting from materials such as dirt, oil, solvents, and chemicals being deposited during the recession; infestations of disease-carrying mosquitoes; mold and mildew, which pose a severe health risk to small children and the elderly; and temporary backwater effects in sewers and drainage systems. Raw sewage is a breeding ground for bacteria, such as E.coli and other disease-causing agents. A boil order may need to be issued to protect people and animals from contaminated water.

Of equal concern is the long-term psychological effect that flooding has on the people impacted by it. They must contend with the loss of life, property, livelihood, etc., as they cope with the aftermath. The clean-up can take months. The cost to restore a home may be too much, especially for the unprepared or uninsured. Plus, there is the looming fear that it may flood again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Unfortunately, the risks from future floods are significant, given expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and climate change. Because of this, flooding may intensify in many regions across the country, even in areas where total precipitation is projected to decline. According to the FEMA, water, and flooding account for about 40% of the Presidential declared disasters in the United States.

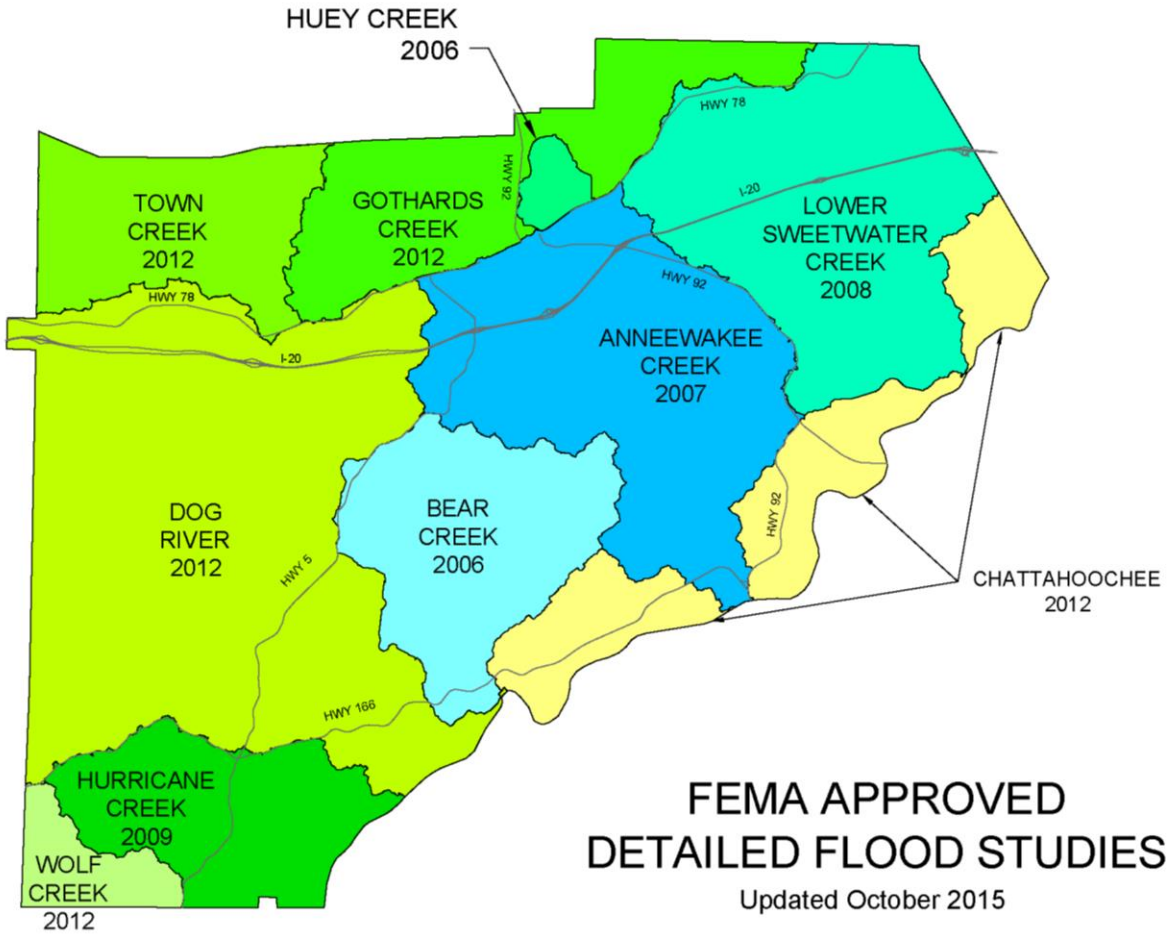
4.2.2 – Location & Extent

In Georgia, flooding is greatly dependent upon precipitation amounts and is highly variable across the state. Georgia's climate is primarily affected by latitude, proximity to the Atlantic Ocean and the Gulf of Mexico, and topography. Certain seasons are more prone to present flooding based on the likelihood of excessive precipitation. Typically, the wet seasons are winter, early spring, and midsummer, and the drier seasons are fall and late spring. However, this varies across the state, with the northern portion receiving maximum precipitation amounts during the winter as a result of frontal systems. In contrast, central and coastal Georgia receive maximums in the mid-to-late summer as a result of tropical cyclones and convective thunderstorm activity.

Douglas County encompasses 201 square miles and is located in northwest Georgia, approximately 15 miles west of the City of Atlanta. The incorporated communities within the County's boundaries are the cities of Douglasville (the County seat), Austell and Villa Rica, of which the last two jurisdictionally fall under Cobb and Carroll Counties, respectively, and are not included in this plan update. Paulding County borders Douglas County to the north and northwest; Carroll County borders Douglas County to the west and southwest; and Cobb County borders Douglas County to the northeast. The Chattahoochee River constitutes the boundary of Fulton County, from northeast to southwest of Douglas County. All of the planning area is located within the Chattahoochee River drainage basin. Mud Creek and Gothard's Creek drain in the northwestern portion of Douglas County.

The Dog-River Mobley Creek watershed lay in the western portion of Douglas County. The Anneewakee watershed drains in the central portions of the County, and Sweetwater Creek flows in the eastern part of the County. Flooding from Sweetwater Creek occurs during periods of heavy rain. During a typical flood event, as little as 2-4 inches of rain in 24 hours can jeopardize the creek's banks and overflows generally cause damage in the Austell and Lithia Springs areas. Due to upstream geographical conditions, flood crest often is not obtained for up to 48-72 hours after the rain event. Flooding on the Chattahoochee River is usually a much slower event and can be caused by rain as far north as Helen, GA, as it makes its way down the river for eventual discharge into the Gulf of Mexico. Various floods from both water bodies have occurred in Douglas County in recent memory. In 1916, flood waters from Sweetwater Creek crested at 20.0 feet above flood stage. In 2005, flood waters from the Sweetwater Creek reached a new record high of 21.8 feet after two tropical storms combined producing up to 10 inches of rain in only 48 hours. The damage was estimated at $6,000,000.

Map 10: Douglas County, GA FEMA Approved Detailed Flood Study, 2015

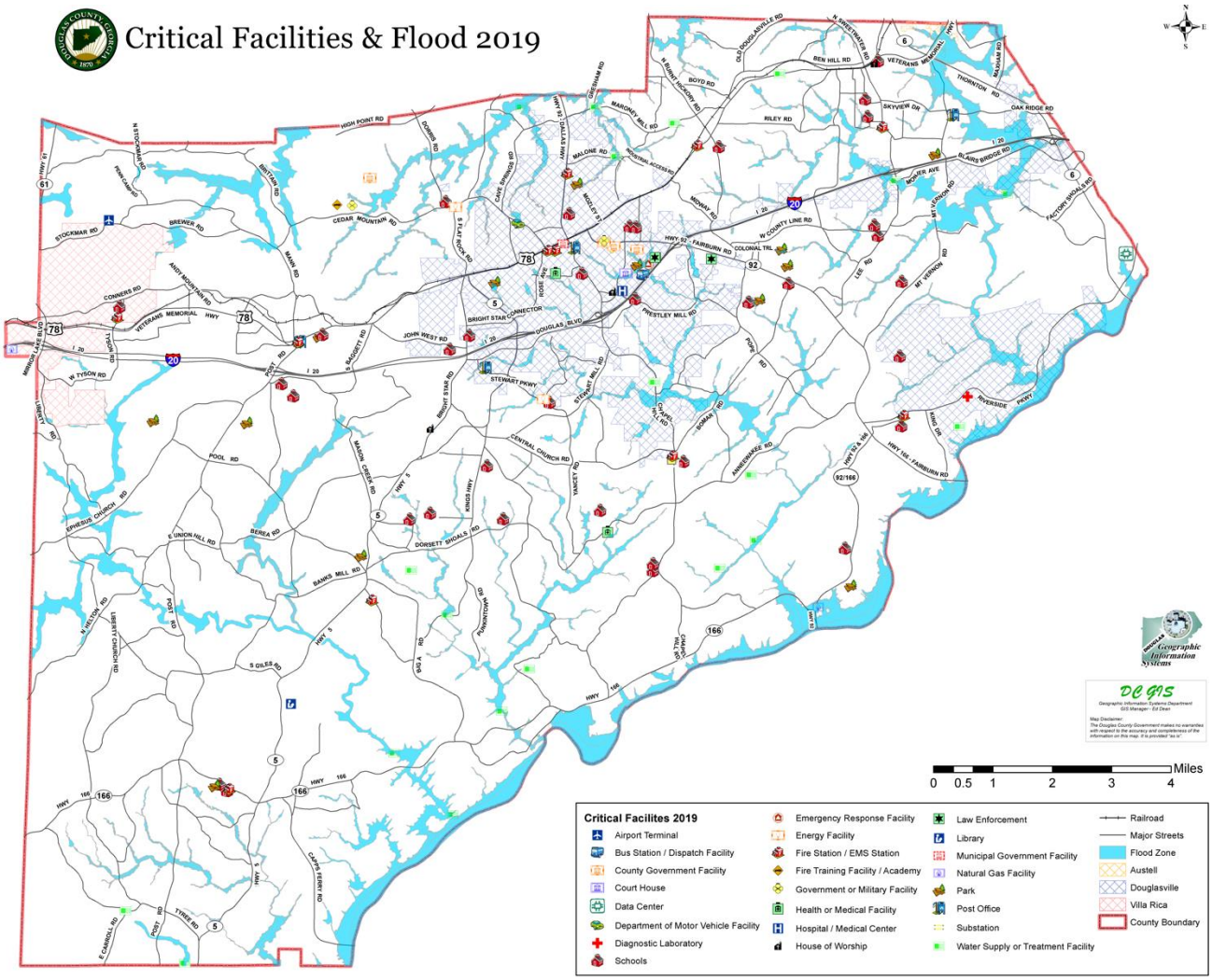


Map Source: Douglasville-Douglas County Water and Sewer Authority (DDCWSA), www.ddcwsa.com

As stated in the previous MJHMP update, Douglas County and the City of Douglasville are a part of the National Flood Insurance Program (NFIP). Douglas County and the City of Douglasville have their flood insurance rate maps (FIRMs) updated regularly. Douglas County (CID number 130306) had its initial FIRMs dated January 2, 1980. The City of Douglasville (CID number 130305) had its initial FIRMs dated June 25, 1982.

The FEMA Community Status Book Report for Communities Participating in the NFIP still indicates the digital FIRMs for Douglas County and the City of Douglasville were updated on March 4, 2013.

Map 11: Douglas County, GA – Critical Facilities and Floodplain Map



Map Source: Douglas County, GA GIS Department

Map 11 illustrates flooding sources, the most current Special Flood Hazard Areas (SFHAs), and flood insurance rate zones developed by FEMA for Douglas County, effective March 4, 2013. SFHAs represent the areas subject to inundation by the 100-year flood event. Structures located within the SFHA have a 26 percent chance of flooding during the life of a standard 30-year mortgage.

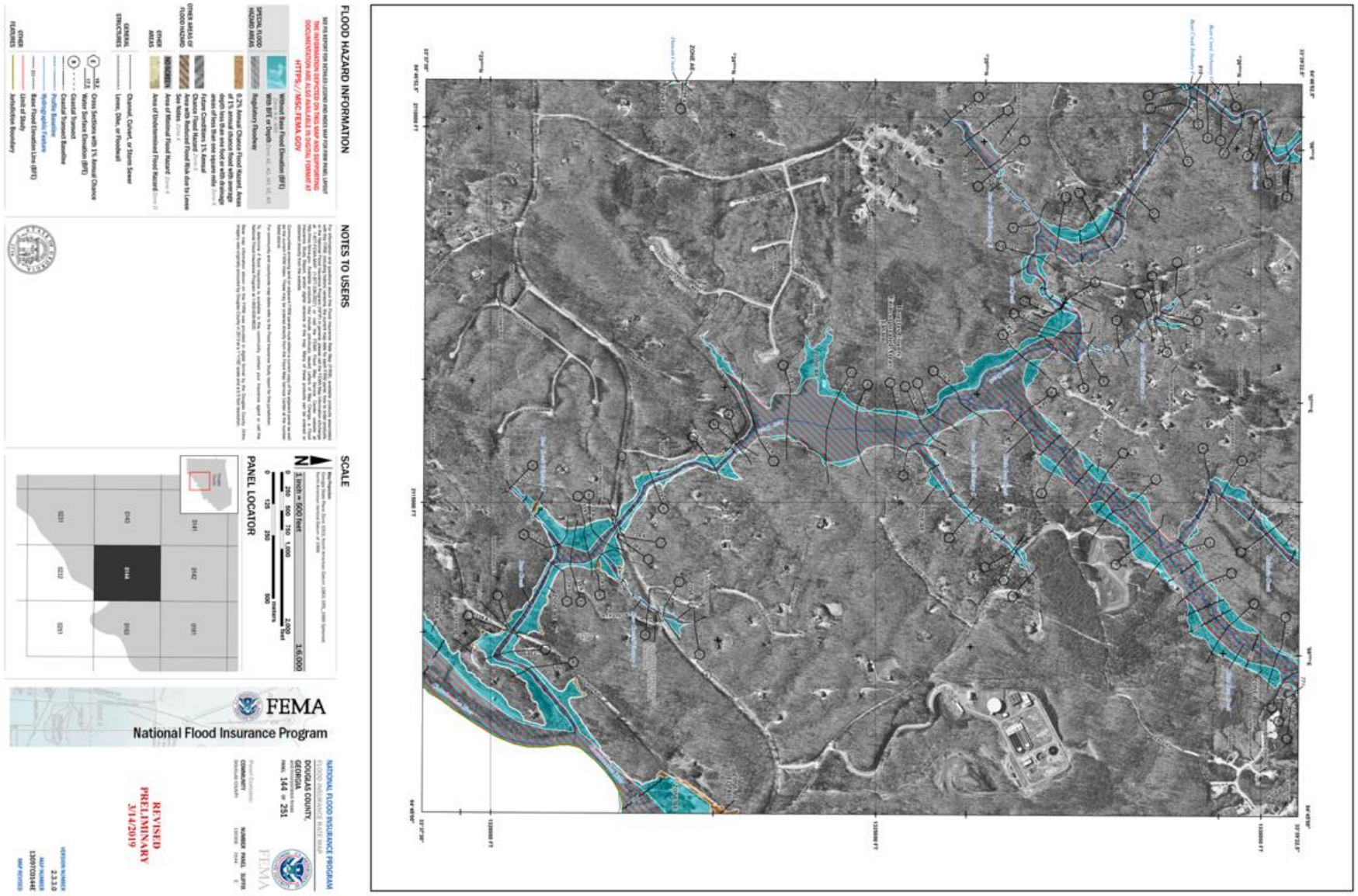
The following table explains the Floodplain Insurance Rate Map (FIRM) flood zone classifications associated with Map 12 on the proceeding pages.

Table 16: Flood Zone Classifications

Flood Zone Classifications	
Zone	**Description**
A	An area inundated by 1% annual chance flooding, for which no BFEs have been determined. (100-Year Floodplain)
AE	An area inundated by 1% annual chance flooding, for which BFEs have been determined. (100-Year Floodplain)

Note: For the following FEMA National Flood Hazard Layer (NFHL) maps, the A and AE zones have been combined as they are both considered 100-year floodplain.

Map 12: FEMA FIRM Map - Douglas County, GA



Map Source: FEMA

4.2.3 – Previous Occurrences

Based on information obtained from NOAA/NCEI, only three incidents of flooding (flash flooding) occurred in Douglas County between January 1, 2015, and April 1, 2020. NOAA/NCEI details of the events are provided below:

December 24, 2015, Lithia Springs and Winston, Flash Flooding – Persistent, deep, and strong southwesterly upper-level flow across the eastern U.S. resulted in an extremely moist and moderately unstable atmosphere over north and central Georgia. A stalled frontal boundary and a series of short waves in the southwesterly upper flow resulted in multiple rounds of heavy rain, and strong to severe thunderstorms, with widespread flash flooding, damaging thunderstorms winds, hail, and an isolated tornado. In Lithia Springs, a United States Geological Survey (USGS) stream gauge on the Sweetwater Creek near the Interstate 20 bridge near Austell reached flood stage of 10 feet. The creek crested at 10.9 feet. Minor flooding occurred in the woodlands and fields upstream and downstream from the gauge. Portions of a paintball playing field and athletic fields in the Woodrow Wilson Park on Mount Vernon Road flooded. In Winston, a USGS stream gauge on the Dog River at Bill Arp Road or Georgia Highway 5 near Fairplay reached flood stage at 13 feet. The river crested at 13.9 feet. Minor flooding occurred in the woodlands and natural flood plain upstream and downstream from the gauge. Several roads and culverts were washed out on tributaries leading to the river. There were no injuries or deaths associated with the event, and no damage was reported.

May 16, 2018, Lithia Springs, Flash Flooding –Isolated flash flooding occurred as a result of a line of thunderstorms stretching from the Atlanta metro area into the Florida panhandle. Abundant atmospheric moisture, with precipitable water values among the highest reported in mid-May over the area, produced high rainfall amounts over western metro Atlanta as storms trained over the area. Flash flooding resulted in the closure of Mt. Vernon Road at Woodrow Wilson Park and Marsh Avenue in Lithia Springs. Radar estimates indicate between 3 and 4 inches of rain occurred in several hours. There were no injuries or deaths associated with the event, and no damage was reported.

February 6, 2020, Winston, Flash Flooding –A line of thunderstorms ahead of a strong cold front moved into northwest Georgia in the pre-dawn hours and swept across north and central Georgia through the morning into the afternoon producing numerous reports of damaging thunderstorm winds and an isolated tornado. Storms along the front also produced heavy rainfall, ranging from 1.5 to 4 inches, with higher amounts up to 6 inches, particularly over north Georgia. These rainfall amounts produced flash flooding over north and central Georgia. The Emergency Manager reported high water conditions closing Cedar Mountain Road and Brittain Road due to Waterfall Branch and Mud Creek. Radar estimates indicate that 2 to 4 inches of rain occurred, falling on already wet soils and producing flash flooding. There were no injuries or deaths associated with the event, and no damage was reported.

In previous years, specifically 2009, there was one flooding event recorded in the City of Douglasville. Numerous emergency management sources, as well as local law enforcement, newspapers, broadcast media, and National Weather Service surveys, confirmed that record and catastrophic flash flooding began across Douglas County during this time frame. Repeated rounds of thunderstorms with heavy rain tracked from southwest to northeast. Flash flooding was observed in most parts of the Douglas County during this time frame. Up to 6 inches of rain fell in this area on already saturated ground. Rain continued overnight beyond this time frame, with some parts of the county receiving nearly 22 inches by the afternoon of the 21st. Hundreds of homes and businesses were impacted before the flooding subsided, with many totally

destroyed. Dozens of roads and bridges were washed out as well, including some major roads such as Georgia Highway 166. No injuries, 7 deaths, and $20,000,000 of property damage were reported.

4.2.3A – Probability of Future Events, Flooding, Inland

Douglas County and its participating jurisdiction(s) can each expect a flash flood event with 50.00% probability per year, or 0.50 events per year, as indicated in Table 17 (below). This number is based on historical events. As such, and according to Table 10: Probability Categories, inland flooding is **likely** for Douglas County and its participating jurisdiction(s).

Table 17: Probability of Future Events, Inland Flooding

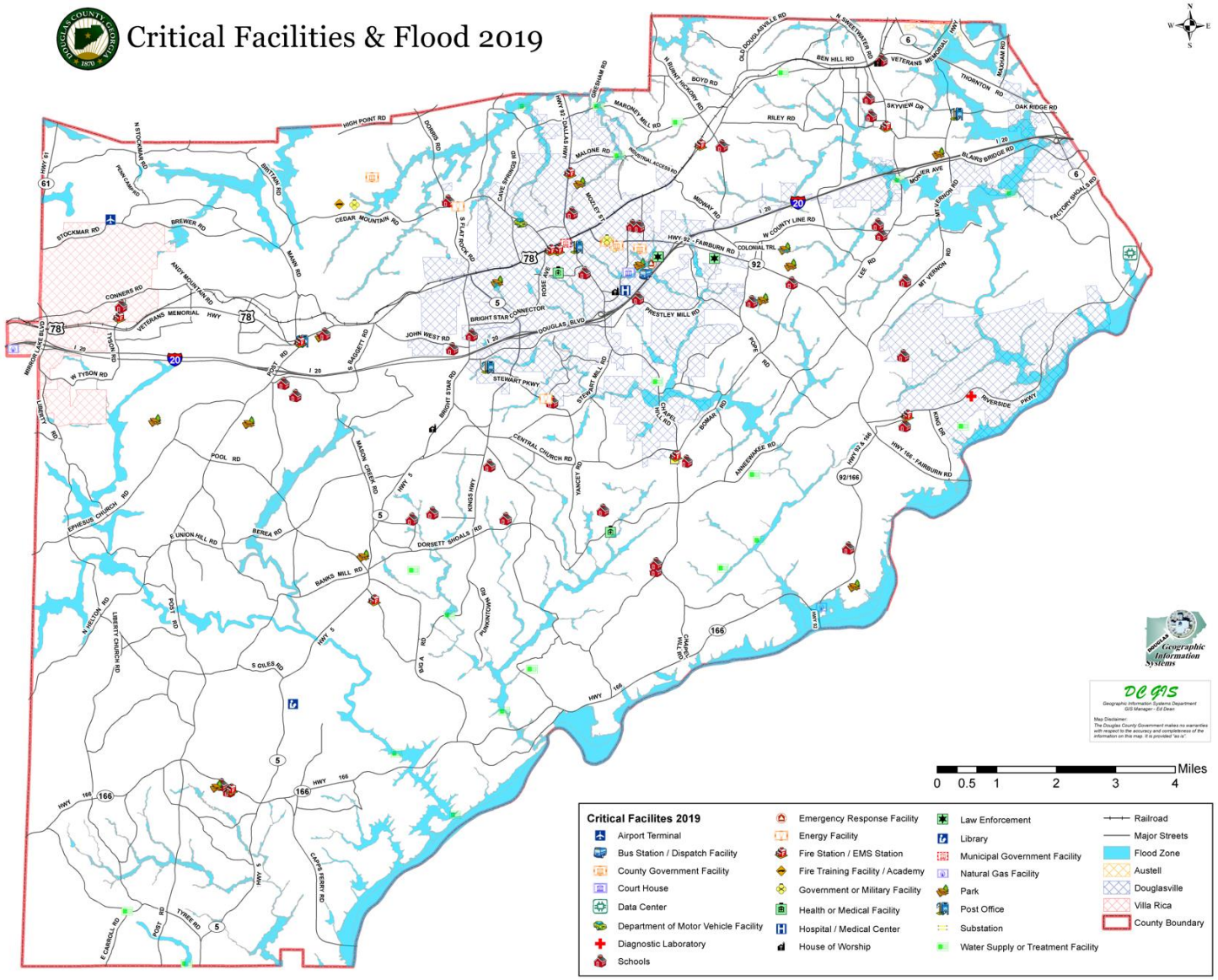
Probability of Future Events, Inland Flooding	
Event Year	**Event Count**
2015	1
2016	0
2017	0
2018	1
2019	0
2020	1
Total Recorded Events =	3
Total Years =	6
Yearly Probability =	**50%**

Data Source: NOAA/NCEI Storm Events Database

4.2.4 – Vulnerability & Impact

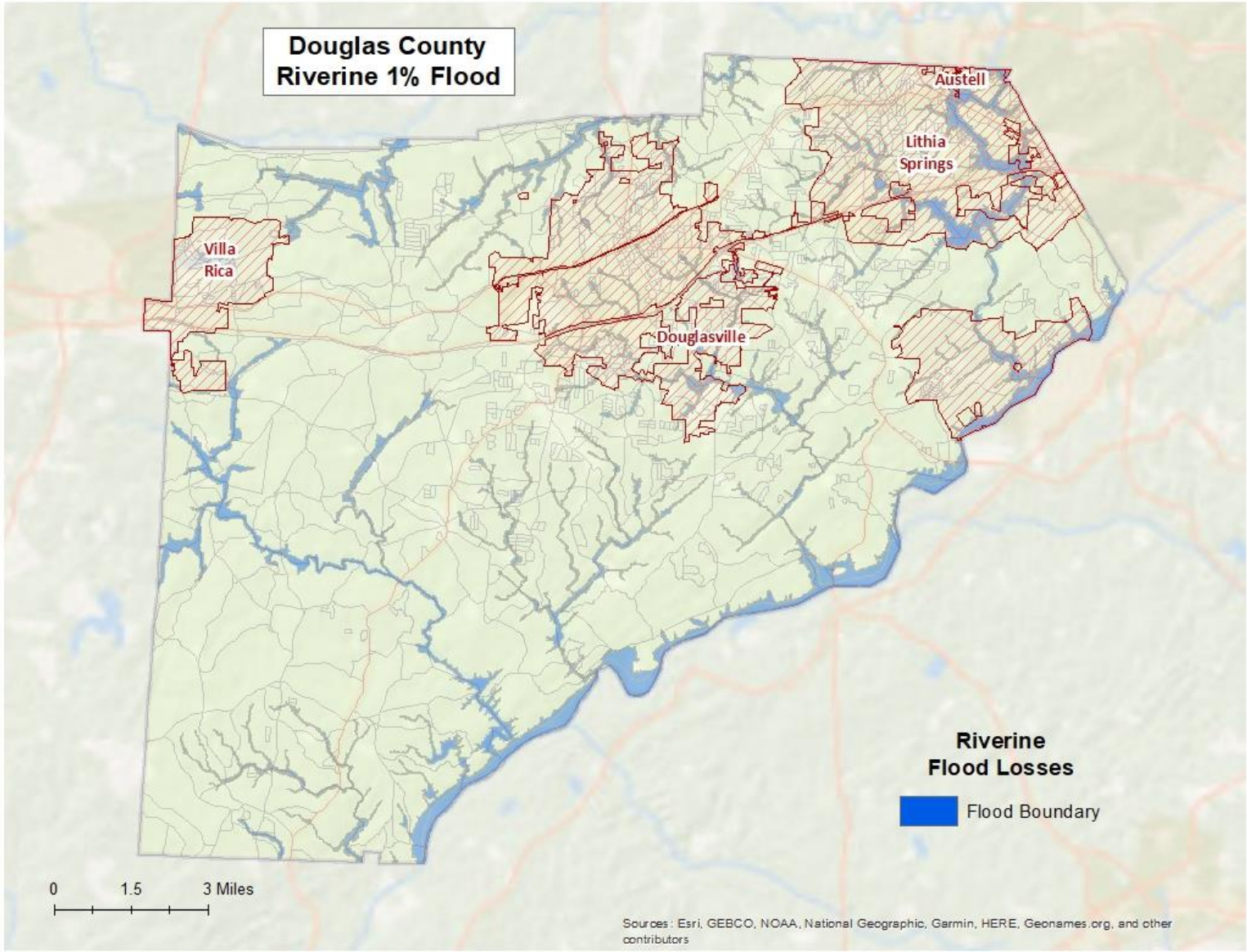
Based on Maps 11 and 12, and the future probability identified in Section 4.3.3.A, Douglas County is exposed to 100-year floodplains. The likelihood of flooding is equal throughout each participating jurisdiction, and as depicted in Section 4.3.3A, at 0.50 events per year. Again, according to Table 10: Probability Categories, inland flooding is considered **likely** for Douglas County and its participating jurisdiction(s). The maps on the following pages, mainly Maps 14-17, were included in the Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan produced by GEMA in partnership with the University of Georgia, Carl Vinson Institute of Government.

Map 13: Douglas County, GA, Critical Facilities & Flood Map, 2019 (includes SFHA Type Flood Zones)



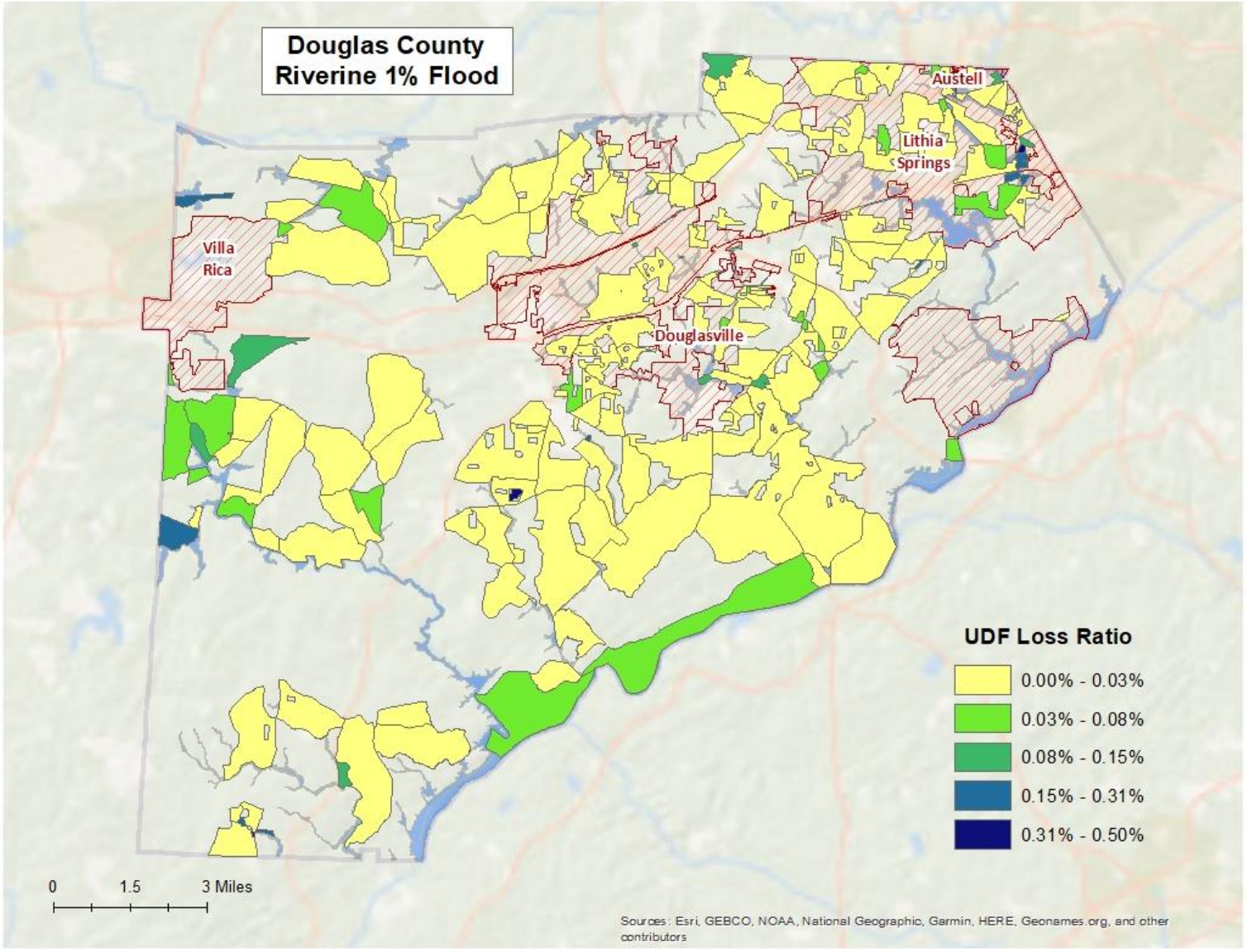
Map Source: Douglas County, GA, GIS Department

Map 14: Douglas County, Riverine 100-yr Flood



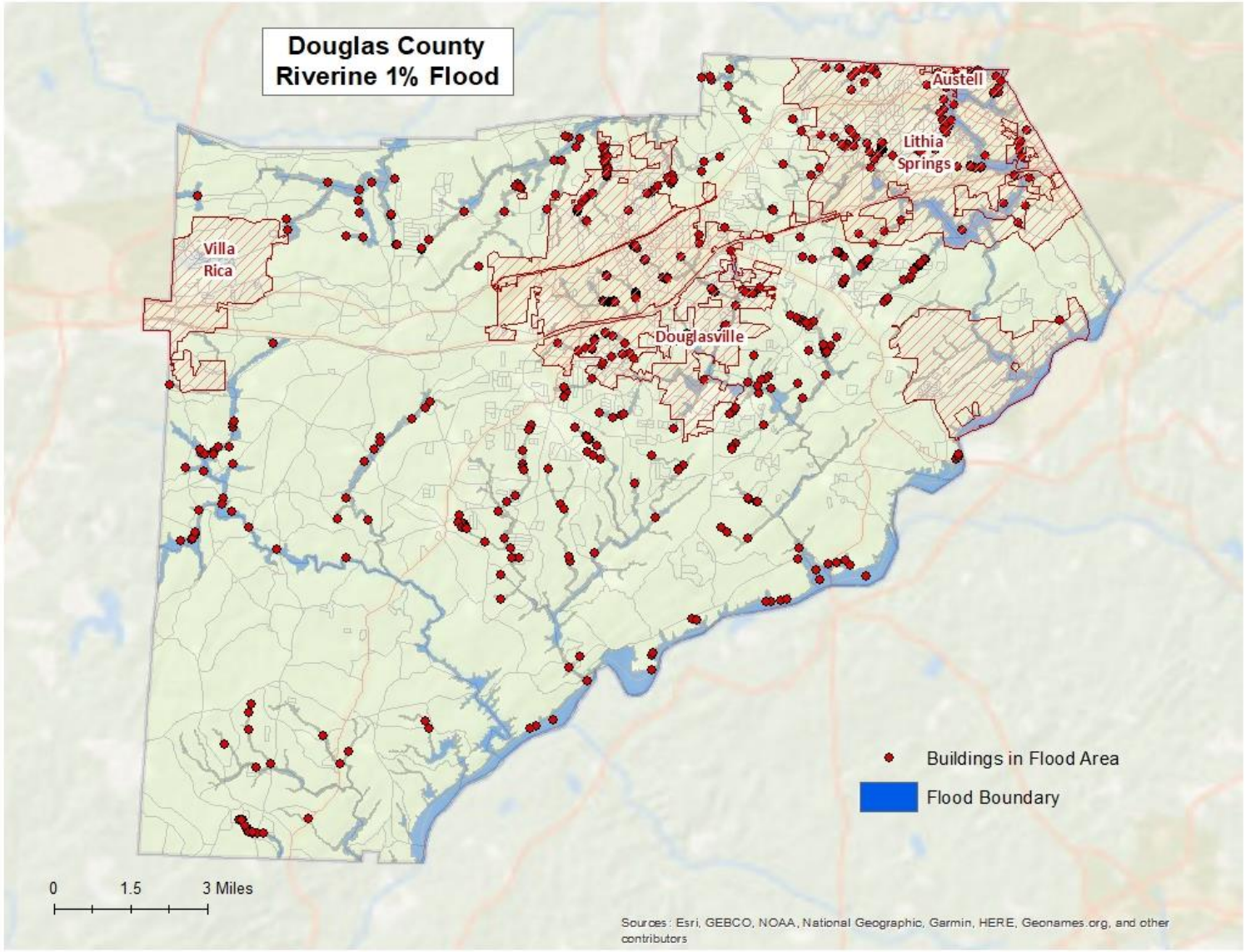
Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

Map 15: Douglas County Riverine 100-yr Flood Loss Ratio by 2010 Census Block



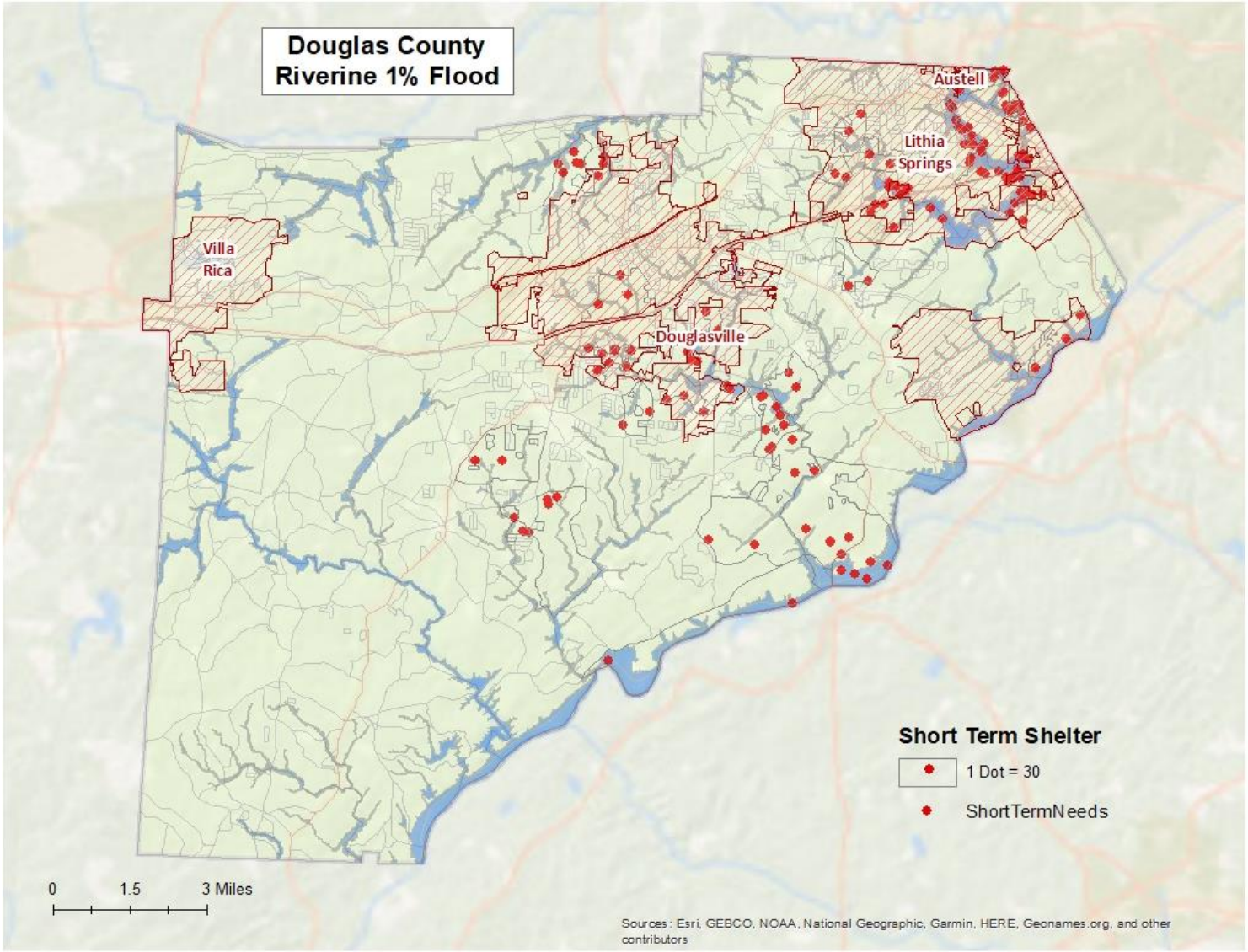
Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

Map 16: Douglas County Riverine 100-yr Flood with Critical Facilities



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

Map 17: Douglas County, Riverine 100-yr Flood, Short-Term Shelter Needs



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

Vulnerability of Facilities, Critical Facilities Inventory

A separate analysis was performed outside of HAZUS® to determine critical facility locations relative to the SFHAs. Using a Geographic Information System (GIS), DFIRM flood zones were overlaid on the critical facilities location data. Maps 13-16 show critical facility locations and 100-year flood depths within Douglas County. An essential facility may encounter many of the same impacts as other buildings within the flood boundary.

These impacts can include structural failure, extensive water damage, and loss of facility functionality. The analysis identified no essential facility that was subject to damage in Douglas County. This information is from the hazard risk analysis provided by the University of Georgia, Carl Vinson Institute of Government.

Shelter Requirements

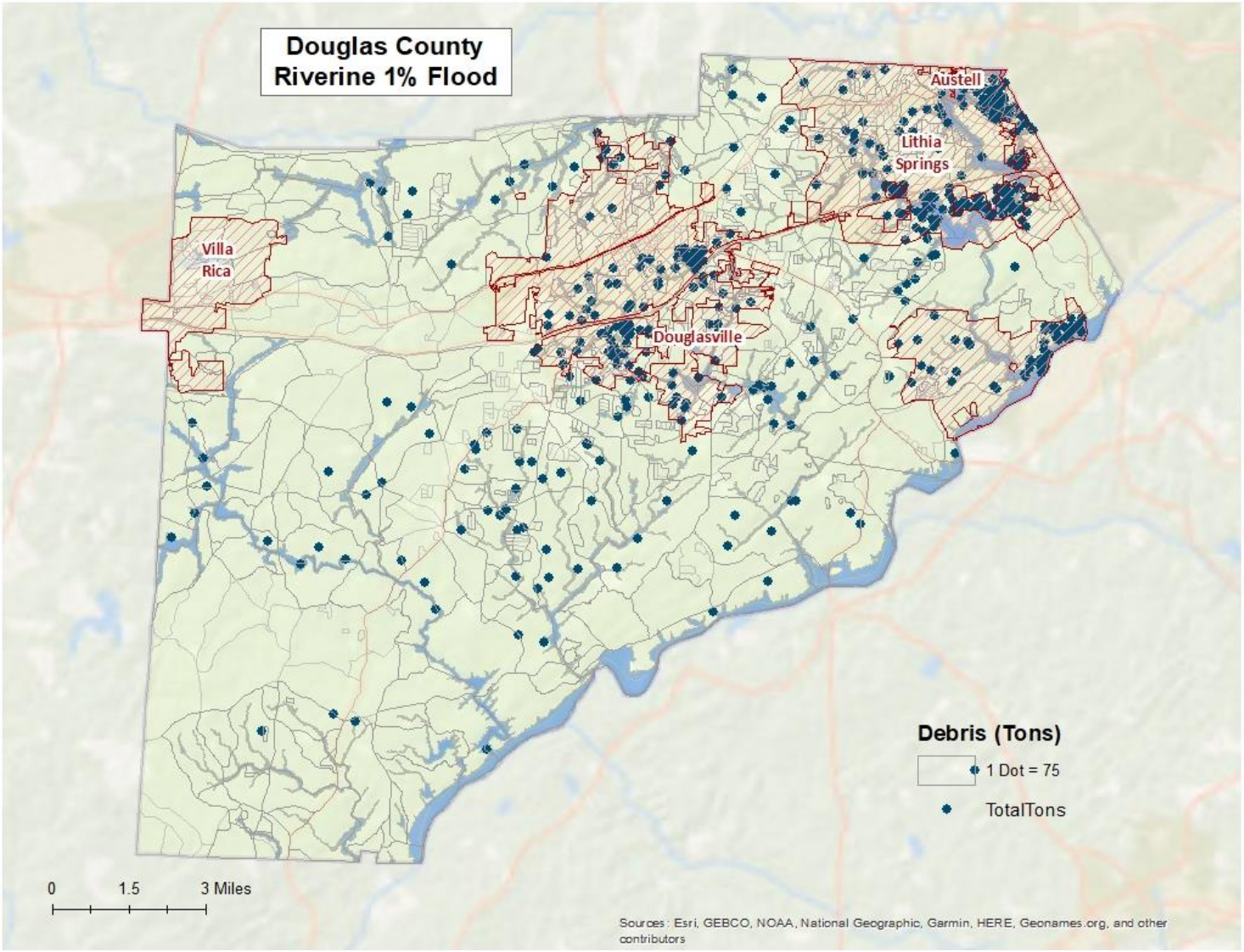
HAZUS® estimates the number of households expected to be displaced due to flooding and the potential for evacuation. HAZUS® also estimates the number of displaced people who will require accommodations in temporary public shelters. Displaced households represent 8,485 individuals within the planning area, of which 6,495 may require short-term publicly provided shelter. This information is from the Hazard Risk Analysis provided by the University of Georgia, Carl Vinson Institute of Government.

Building-Related Losses

Building losses are broken into two categories: direct building and business interruption. Direct building losses are the estimated costs to repair or replace damage to the building and its contents. Business interruption losses are losses associated with the inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

Severe flooding has the potential to inflict significant damage in Douglas County. Analysis by the University of Georgia, Carl Vinson Institute of Government, estimates that 39,427 tons of debris may be generated from a 100-year riverine 1% flood. Smaller floods caused by heavy rains and inadequate drainage capacity will occur more frequently than 100-year floods and continue to be problematic for the County. Fortunately, damage from them will not be nearly as costly.

Map 18: Douglas County Riverine 100-yr Flood, Debris Weight (Tons)



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

Flooding can cause minimal damage or complete destruction to facilities, taking them offline for days to years depending upon the resources available after an event.

The average flash flood event in Douglas County has a cost of $0. Douglas County and its participating jurisdiction(s) have incurred $0 in property damage from flash flooding from 2015 to present.

Douglas County's critical structures are valued at $10,715,696,000. Since flash flooding threatens the entire planning area, all structures are considered exposed and vulnerable.

Table 18: Douglas County Riverine 1% Building Losses

Occupancy	Total Buildings in the Jurisdiction	Total Buildings Damaged in the Jurisdiction	Total Building Exposure in the Jurisdiction	Total Losses to Buildings in the Jurisdiction	Loss Ratio of Exposed Buildings to Damaged Buildings in the Jurisdiction
Austell					
Commercial	6	2	$356,274	$5,033	1.41%
Industrial	30	1	$3,348,687	$14,564	0.43%
Douglasville					
Religious	65	1	$33,063,686	$44,754	0.14%
Commercial	882	11	$462,619,782	$174,401	0.04%
Residential	9,035	110	$2,151,552,083	$14,402,584	0.67%
Industrial	191	1	$142,480,525	$1,054,518	0.74%
Lithia Springs					
Commercial	312	10	$55,015,412	$311,634	0.57%
Residential	4,017	58	$734,059,204	$2,942,782	0.40%
Government	13	1	$18,573,101	$41,664	0.22%
Industrial	143	5	$99,890,748	$1,043,395	1.04%
Occupancy	Total Buildings in the Jurisdiction	Total Buildings Damaged in the Jurisdiction	Total Building Exposure in the Jurisdiction	Total Losses to Buildings in the Jurisdiction	Loss Ratio of Exposed Buildings to Damaged Buildings in the Jurisdiction
Unincorporated					
Commercial	496	12	$99,212,182	$274,195	0.28%
Government	23	2	$30,932,584	$642,500	2.08%
Industrial	235	5	$158,612,943	$98,328	0.06%
Residential	29,644	249	$5,597,668,127	$18,355,663	0.33%
County Total					
	45,092	**468**	**$9,587,385,337**	**$39,406,015**	

Data Source: Hazard Risk Analysis Supplement for the Douglas County MJHMP

Vulnerability of Population

If evacuation orders are not heeded, or floodwaters rise quickly enough, residents within the planning area can be swept away by floodwater currents, become trapped on rooftops or other points of high elevations, and even sustain injury or death. Depending upon the conditions, this will expose them to the elements and deprive them of basic needs and services.

As previously described in the Vulnerability of Facilities, Critical Facilities Inventory, still water that is long-lasting and slow to drain, will encourage the growth of mold and other bio-hazardous material, rendering a facility unusable. Extra care, assessment, and sanitization are required before residents can re-inhabit a facility, or they may face serious health concerns. Long-term care facilities housing vulnerable populations can take longer to evacuate.

Additionally, the potential presence of mold after a flood requires extra care to be taken before Douglas County's population can re-inhabit a long-term care facility.

Douglas County has 0 recorded fatalities from flash flood events in the last five years. Still, of the total population (145,331) of the planning area, all are considered vulnerable and at-risk to the hazard of flooding.

Vulnerability of Systems

Critical facilities and infrastructure can be rendered unusable or permanently destroyed, producing a significant impact on a jurisdiction's ability to conduct its day-to-day operations. Considerable damage to residential and/or commercial structures can irrevocably damage a community and its economy by creating economic hardship. If a chemical facility is severely impacted, stored chemicals can potentially wash away with the floodwater and have detrimental effects on the local environment.

4.2.4A – Critical Facilities & Infrastructure

All critical facilities and infrastructure are at risk to flash flooding since it can indiscriminately affect the entire planning area. Through the hazard risk analysis provided by the University of Georgia, Carl Vinson Institute of Government, no essential facility is subject to damage in the floodplain. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

With its growing population and continued urbanization, all of Douglas County is at risk of some type of flooding (riverine, flash, or urban). This is especially true for future development within the County's many 100-year and 500-year floodplains, or SFHAs. New construction in unmapped areas prone to flooding may further increase vulnerabilities and potential losses. However, Douglas County's current land-use regulations require the consideration of flood hazards during the development review process.

4.3.4C – Unique & Varied Risk

In Douglas County, flash flooding can affect the entire planning area or only a portion, or portions, of it. Unfortunately, there is no accurate method of predicting the location or extent of a flash flood's impact—namely, whether it will affect one participating jurisdiction, any number of-, or all participating jurisdictions.

Additionally, it is not possible to predict any varying probability between the participating jurisdictions, except for varying risk as it is proportionate to a participating jurisdiction's demographics. Logically, participating jurisdictions with a greater population are at a higher risk than participating jurisdictions with a lower population.

Although this plan addresses vulnerability to flooding, without the possibility of being able to calculate all components of risk at a jurisdictional level, each jurisdiction's individual risk to the hazard is not possible to calculate. Based on the 100-year riverine flood map, Douglas County is at risk for a 100-year riverine flood.

Table 19: Unique & Varied Risk

Unique & Varied Risk	
Jurisdiction	**Risk Characteristics**
Douglas County	Parts of the jurisdiction are in a 100-yr floodplain.
City of Douglasville	Parts of the jurisdiction are in a 100-yr floodplain.

4.2.4D – Repetitive Loss Structures

There are no repetitive loss, NFIP-insured structures within Douglas County or the City of Douglasville.

4.2.5 – HAZUS® Models

HAZUS® 2.2SP1 and data compiled from GEMA was used to perform an analysis for Douglas County. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance riverine flood event (100-Year Flood).

4.2(SW) – Severe Weather

Photo Source: weather.gov

4.2.1 – Hazard Description

Meteorologists generally define severe weather as any aspect of the weather that poses risk to life and/or property and requires the intervention of authorities. Severe weather can happen at any time, and in any part of the country, and may present itself in a variety of ways. Severe weather usually applies to local, intense, and often damaging storms such as thunderstorms, hailstorms, and tornadoes, but can also describe more widespread events such as tropical systems. This section provides general and historical information about three specific severe weather elements: Thunderstorms, Lightning, and Hail.

Thunderstorms: Thunderstorms form when warm, moist air near the Earth's surface is forced upward through some catalyst (convection or frontal weather system). As the air rises, it cools, condenses, and forms cumulonimbus clouds than can reach up to 40,000 feet in altitude. When the rising air reaches its dew point, water droplets (rain) and ice (hail) form and begin falling the long distance through the clouds towards the ground. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at the Earth's surface, resulting in strong, oftentimes damaging winds. The collision of the water and ice particles in the cloud(s) form a large electrical field, discharging as dangerous cloud-to-ground or ground-to-cloud lightning.

There are four ways in which thunderstorms can organize: single cell, multi-cell cluster, multi-cell lines (squall lines), and supercells. The average single-cell thunderstorm develops rapidly, is approximately 15 miles in diameter, and lasts less than 30 minutes at a single location. Multi-cell clusters and multi-cell lines, which can also form relatively quickly, can travel for distances exceeding 600 miles. Supercells are usually associated with severe weather phenomena. Regardless of the type of thunderstorm, warm, humid conditions are most favorable for their development.

A thunderstorm is classified as "severe" by NWS when it contains one or more of the following: hail one inch or greater, winds gusting in excess of 50 knots (57.5 mph), and/or a tornado. In these instances, Severe Thunderstorm Watches or Severe Thunderstorm Warnings will be issued by the national/local weather authorities.

A Severe Thunderstorm Watch is issued by NOAA's Storm Prediction Center when conditions are favorable for severe thunderstorms. A watch can cover parts of a state or several states. A Severe Thunderstorm Warning, on the other hand, is issued by local NOAA NWS Forecast office meteorologists and is specific to a designated area. Warnings, which can cover parts of counties or even several counties, mean severe weather has been reported by spotters or indicated by radar and that there is a serious threat to life and property.

According to NOAA, many hazardous weather events are associated with thunderstorms. Under the right conditions, rainfall from thunderstorms causes flash flooding, which kills more people each year than hurricanes, tornadoes, or lightning. Lightning is responsible for many fires around the world each year and

causes fatalities. Hail up to the size of softballs damages cars and windows, and kills livestock caught out in the open. Strong (up to more than 120 mph) straight-line winds associated with thunderstorms knock down trees, power lines and mobile homes. Tornadoes (with winds up to about 300 mph) can destroy all but the best-built man-made structures. Tornadoes are addressed in Section/Chapter 3.

Lightning: Lightning is one of the more dangerous weather hazards in the United States. The NWS describes lightning as a giant spark of electricity in the atmosphere or between the atmosphere and the ground. As the rapid discharge between positive and negative regions of a thunderstorm, lightning flashes are composed of a series of strokes (with an average of about four). The length and duration of each lightning strike vary, but typically average around 30 microseconds. People and objects can be directly struck by lightning, or damage can occur indirectly when the current (up to 100 million volts of electrical potential) passes through or near them.

Per the NWS, lightning strikes the U.S. about 25 million times a year, killing an average of 51 people and accounting for hundreds of injuries including serious burns. Interestingly, lightning is hotter than the surface of the sun and can reach temperatures around 50,000° Fahrenheit. Lightning is also responsible for millions of dollars of property damage annually, including damage to buildings, communications systems, powerlines, and electrical systems. Moreover, lightning causes forest and brush fires, as well as deaths and injuries to livestock and other animals.

According to the National Lightning Safety Institute (NLSI), lightning triggers more than 26,000 fires in the U.S. each year. The Institute estimates property damage, increased operating costs, production delays, and lost revenue from lightning and secondary effects to be $6-7 billion dollars/year.

Hail: Hail, which is associated with thunderstorms, forms when updrafts carry raindrops into extremely cold areas of the atmosphere and form ice. The frozen precipitation falls to the ground when it becomes heavy enough to overcome the strength of the updraft. Hailstones can range from the size of a pea to the size of a grapefruit, and they can span a variety of shapes, though most are spherical. They are usually less than two inches in diameter and can fall at speeds of 120 mph.

The largest recorded hailstone in the U.S. was nearly as big as a volleyball and fell on July 23, 2010, in Vivian, South Dakota. It was eight inches in diameter and weighed almost two pounds.

On average, hail causes nearly $1 billion in damage in the U.S. each year to crops and property including automobiles, aircraft and structures. According to the NOAA's Severe Storms database, there were 6,045 major hailstorms in 2017 resulting in $1.8 billion in property and crop damage. Hail also poses a safety threat to both humans and animals. In fact, NOAA estimates that 24 people in the U.S. are injured each year with some injuries significant enough to send them to the hospital.

4.2.2 – Location & Extent

Severe weather is a common occurrence across the U.S., including the State of Georgia. According to SHELDUS™/NCEI data referenced in the Georgia Hazard Mitigation Strategy Standard and Enhanced Plan (March 18, 2019 – March 17, 2024), an average of 331 severe weather events occurred across the State between 1952 and 2017. These events in total caused 990 injuries, 168 fatalities, and more than $1.2 billion in damages. Over the period from 1997 to 2017, the historic occurrence jumped to 499 severe weather events per year, which equates to a significant chance of a severe weather occurrence in any given year.

Severe weather is not spatially confined to any particular location in Georgia. Therefore, the entire State of Georgia, including Douglas County, is equally at risk of severe weather, namely thunderstorms, lightning, and hail. This is especially true during the spring and summer months when the atmosphere is most likely to be unstable. However, severe weather can happen at any time of year.

Given the ever-present risk of severe weather, Douglas County is likely to experience numerous adverse impacts, including damage to utilities, residential and commercial buildings/property, and agricultural losses. There is also a risk of fire due to lightning strikes. According to the Vaisala U.S. National Lightning Detection Network, from 2008-2017, the State of Georgia averaged approximately 641,790 cloud-to-ground lightning flashes per year. Eight lightning-related deaths were reported during the period placing Georgia in the top ten; however, it is only in the top 30 when comparing lightning-related deaths to the State of Georgia's population.

There have also been reports of hail measuring up to 2.75 inches in diameter in Georgia. Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people, resulting in significant financial and personal losses.

While most severe weather events are limited in terms of their impact, duration and spatial extent, the hazard remains one of the most common in the State of Georgia, and subsequently, for the entire planning area.

Table 20: Lightning Activity Intensity Levels

Lightning Activity Intensity Levels	
LAL Level	**Description**
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms: Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud-to-ground strikes in a 5-minute period.
LAL 3	Widely scattered thunderstorms: Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud-to-ground strikes in a 5-minute period.
LAL 4	Scattered thunderstorms: Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud-to-ground strikes in a 5-minute period.
LAL 5	Numerous thunderstorms: Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud-to-ground strikes in a 5-minute period.

Table 21: Modified NOAA/TORRO Hailstorm Intensity Scale

Modified NOAA/TORRO Hailstorm Intensity Scale				
Code	**Intensity Category**	**Diameter (Inches)**	**Approximate Size**	**Typical Damage Impacts**
H0	Hard Hail	0 - 0.33	Pea	No damage
H1	Potentially Damaging	0.33 - 0.60	Marble/Mothball	Slight damage to crops
H2	Potentially Damaging	0.60 - 0.80	Dime/Grape	Significant damage to crops
H3	Severe	0.80 - 1.20	Nickel to Quarter	Severe damage to crops, damage to glass and plastic, paint and wood scored
H4	Severe	1.20 - 1.60	Half Dollar	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.60 - 2.00	Silver Dollar to Golf Ball	Damage to tiled roofs, significant risk of personal injury
H6	Destructive	2.00 - 2.40	Egg	Aircraft bodywork dented; brick walls pitted
H7	Very Destructive	2.40 - 3.00	Tennis Ball	Severe roof damage, risk of serious injuries to persons not protected
H8	Very Destructive	3.00 - 3.50	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.50 - 4.00	Grapefruit	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected
H10	Super Hailstorms	4.00 +	Softball and up	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected

4.2.3 – Previous Occurrences

Based on information obtained from NOAA/NCEI, the following incidents of severe weather (i.e., thunderstorm wind, lightning, and hail) occurred in Douglas County between January 1, 2015, and April 1, 2020. Details of the events are provided below:

Thunderstorms, Douglas County – According to its 2015 MJHMP, Douglas County experienced 105 severe thunderstorm events between 1957 and 2014. This, on average, is about two severe thunderstorm events per year (1.84/yr). NOAA/NCEI does not have a specific classification for thunderstorms. In order to paint a picture of historical occurrences for this event type, heavy rain, and thunderstorms (wind events) events were compiled for Douglas County from January 1, 2015, to April 1, 2020. According to NOAA/NCEI, there were no heavy rain events that occurred in this time period for Douglas County.

Thunderstorm winds, however, turned up a few events. NOAA/NCEI reports 19 thunderstorm wind events in Douglas County during this particular timeframe.

Lightning, Douglas County – There were only 3 reported lightning events in Douglas County, and they affected the cities of Douglasville and Lithia Springs. According to NOAA/NCEI, these events caused $30,000 in property damage.

Hail, Douglas County – Douglas County reported 2 hail events from January 1, 2015 – April 1, 2020, according to NOAA/NCEI. No damage, injuries, or deaths were reported from these hail events.

4.2.3A – Probability of Future Events, Severe Weather

The following table provides a summary of the severe weather events recorded by NOAA/NCEI for Douglas County through the aforementioned period.

Table 22: Probability of Future Events, Severe Weather

Probability of Future Events, Severe Weather			
Event Year	**Event Count**		
	Hail	**Lightning**	**Thunderstorm Wind**
2015	-	-	1
2016	-	1	1
2017	1	2*	6
2018	-	-	7*
2019	1	-	4
2020	-	-	1
Total Recorded Events =	2	3	20
Total Years =	6	6	6
Yearly Probability =	**33.3%**	**50%**	**333%***

Data Source: NOAA/NCEI Storm Events Database
**The severe weather event occurring on June 22, 2018, though shown as one event, actually impacted two locations (Midway and Big A) within Douglas County.*
**The severe weather event occurring on May 28, 2017, though shown as one event, actually impacted two locations (Douglasville and Lithia Springs).*
**Douglas County and its participating jurisdiction(s) can expect a thunderstorm event with a 333% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probably is not the only predictor of future occurrences. The qualitative chance of a thunderstorm impacting the planning area is highly likely.*

The following narratives provide more specific details on severe weather event records included in the NOAA/NCEI database from January 1, 2015, to April 1, 2020.

July 21, 2015, Winston, Thunderstorm Wind – Once again Georgia found itself stuck under persistent northwesterly upper-level flow for several days. A series of short waves combined with strong daytime heating to produce isolated to scattered severe thunderstorms each day, mainly in the afternoon and evening hours. The Douglas County 911 Center and the Douglasville Police Department reported trees and power lines blown down in the Douglasville area. Trees reported down along I-20 between Post Road and Highway 5 on Knollwood Circle. Power lines were reported down at Fairburn Road and Durelee Lane.

There were no injuries or deaths associated with the event, and $10,000 worth of property damage was reported.

June 17, 2016, McWhorter, Thunderstorm Wind – A deepening upper-level trough over the southeastern U.S. combined with a cold front moving across the state resulted in widespread severe thunderstorms across North and Central Georgia during the afternoon and evening. The Douglas County Emergency Manager reported several trees and power lines blown down in the southern portion of the county around Highway 166 and Phillips Mill Road. There were no injuries or deaths associated with the event, and $8,000 worth of property damage was reported.

August 2, 2016, Douglasville, Lightning – A moist and unstable airmass over the region combined with strong daytime heating to produce isolated severe thunderstorms each day. The Douglas County Emergency Manager reported a house fire caused by a lightning strike on Royal Plume.

March 1, 2017, McWhorter, Thunderstorm Wind – A moderately unstable atmosphere ahead of a strong cold front, combined with a passing upper-level trough and strong shear to produce scattered severe thunderstorms with damaging winds and large hail across North Georgia. This system also managed to produce an isolated tornado. The Douglas County Emergency Manger reported a few trees and some power lines blown down on Capps Ferry Road. There were no injuries or deaths associated with the event, and $6,000 worth of property damage was reported.

March 10, 2017, Douglasville Pinewood AR, Thunderstorm Wind – A strong shore wave and associated cold front produced a line of strong to severe thunderstorms that swept across north Georgia during the early morning hours. Despite only marginal instability, strong low and mid-layer shear helped to produce scatter reports of damaging thunderstorm winds and an isolated reported of large hail. The Douglas County Emergency Manager reported numerous trees and power lines blown down across the norther and eastern portion of the county. Locations include Bakers Bridge Road at Sweetwater Church Road, Highway 120 at Chapel Hill Road, Lee Road at County Line Road, Brookmont Parkway at Brookhollow Drive, Dallas Highway at Lincoln Street, Fairburn Road, North Helton Road at Watkins Mill Road, Woodcreek Way at Dogwood Way, and many other locations. Many homes and business had damage from falling trees. There were no injuries or deaths associated with the event, and $250,000 worth of property damage was reported.

April 5, 2017, Winston, Hail – A strong short-wave storm, the second in three days, rotated through a large and deep upper-level trough over the eastern U.S. A deep surface low and strong cold front moved through the State of Georgia combining with moderate instability and slow low-level shear to produce another round of widespread severe weather across north and central Georgia, including several tornadoes.

****May 28, 2017, Douglasville/Lithia Springs, Lightning*** – A series of short waves traversing the region through the west to southwesterly upper-level flow, combined with a stalled frontal boundary across north and central Georgia, leading to several days of unsettled weather with numerous reports of wind damage and isolated reports of large hail each day. Douglas County Emergency Management reported a house fires caused by a lightning strike on Forest Hill Drive and Joanna Street.

May 28, 2017, McWhorter, Thunderstorm Wind – A series of short waves traveling the region through the west to southwesterly upper-level flow, combined with a stalled frontal boundary across north and central Georgia, led to several days of unsettled weather with numerous reports of wind damage and

isolated reports of large hail each day. The Douglas County Emergency Manger reported trees blown down across the county from north of Fairplay to east of Douglasville. Location include Highway 5 at Sweetwater Drive and Lee Road at Old Lee Road. There were no injuries or deaths associated with the event, and $5,000 worth of property damage was reported.

June 15, 2017, Fairplay, Thunderstorm Wind – A very moist and unstable air mass in place across the area, combined with strong daytime heating and a mid-level trough sweeping through the region, resulted in numerous strong to severe thunderstorms across north and central Georgia. The Douglas County Emergency Manager reported trees and power lines blown down across the central part of the county from southeast of Villa Rica to south of Douglasville. Locations included West union Hill Road just east of Ephesus Church Road, Jason Industrial Parkway at Bankhead Highway, Highway 5 at Wenona Street, Baldwood Drive at Kings Highway, and on Jim's Court. There were no injuries or deaths associated with the event, and $15,000 worth of property damage was reported.

July 25, 2017, Bill Arp, Thunderstorm Wind – With a very moist air mass persisting across the region, a stalled frontal boundary across north Georgia produced scattered reports of damaging winds and very heavy rainfall. Isolated flash flooding occurred, particularly where rainfall amounts topped four (4) inches. The Douglas County Emergency Manger reported trees blown down on W. Lake Way and around the intersection of Banks Mill Road and Daniel Mill Road. There were no injuries or deaths associated with the event, and $4,000 worth of property damage was reported.

November 18, 2017, Fairplay, Thunderstorm Wind – Despite very limited instability, a strong short wave and associated cold front resulted in a narrow band of showers and thunderstorms which swept through the region during the evening resulting in isolated reports of damaging winds across portions of north Georgia. The Douglas County 911 Center reported a tree blown down near the intersection of Cole Road and Ephesus Church Road. There were no injuries or deaths associated with the event, and $.50,000 worth of property damage was reported.

March 19, 2018, Fairplay, Thunderstorm Wind – Widespread severe thunderstorms broke out across central and north Georgia during the evening hours of March 19th, through the early morning hours of the 20th as a warm front lifted north across the region ahead of a strong storm system developing across the lower Mississippi Valley. Numerous reports of trees and power lines blown down were received from the Douglas County Emergency Manager and the 911 Center. Trees were reported on North Helton Road, Harvest Hill, and on Oakland Drive where one tree fell onto a house. Power lines were blown down along Corn Crib Loop South. There were no injuries or deaths associated with the event, and $50,000 worth of property damage was reported.

June 1, 2018, Douglasville, Thunderstorm Wind – A series of fast moving upper-level short waves moving southeast out of the Ohio Valley brought two distinct rounds of thunderstorms into north Georgia. Numerous reports of damaging thunderstorm winds were received with isolated reports of flooding. The Douglas County Emergency Manager reported power lines blown down at the intersection of Thompson Street and Lincoln Street. There were no injuries or deaths associated with the event, and $1,000 worth of property damage was reported.

****June 22, 2018, Midway/Big A, Thunderstorm Wind*** – Midway: A deep, closed upper-level low over the center of the country resulted in widespread thunderstorms across north and central Georgia. Numerous reports of damaging thunderstorm winds were received. Broadcast media reported a tree down onto and

blocking parts of 1-20 about two (2) miles west of the Lee Road exit. There were no injuries or deaths associated with the event, and $2,000 worth of property damage was reported. Midway: A deep, closed upper-level low over the center of the country resulted in widespread thunderstorms across north and central Georgia. Numerous reports of damaging thunderstorm winds were received. Dispatch reported a tree down along Hwy 166 at Big A Road. Time estimated from radar. Storm damage was part of a continuous path into Fulton County. There were no injuries or deaths associated with the event, and $2,000 worth of property damage was reported.

June 28, 2018, Winston, Thunderstorm Wind – Thunderstorms, associated with another in a series of short waves traversing the region in a persistent northwesterly upper-level flow pattern resulted in widespread reports of damaging wind gusts across north Georgia through the morning hours into central Georgia during the afternoon. Isolated flash flooding resulted from high rainfall rated and training storms. The Douglas County Emergency Manager reported several trees blown down from Winston to east of Fairplay. There were no injuries or deaths associated with the event, and $7,000 worth of property damage was reported.

July 6, 2018, Lithia Springs, Thunderstorm Wind – A mid-level short wave moving slowly across the region, combined with a very moist and somewhat unstable airmass to produce isolated to scattered severe thunderstorms each afternoon into the evening hours. The Douglas County Emergency Manager reported a tree blown down onto a mobile home in the Douglas Estates Mobile Home Park. There were no injuries or deaths associated with the event, and $10,000 worth of property damage was reported.

August 9, 2018, Midway, Thunderstorm Wind – A series of weak short waves moving through a generally zonal upper-level pattern, combined with strong daytime heating each day to produce scattered strong to severe thunderstorms across north and central Georgia. The Douglas County Emergency Manager reported several trees blown down in the eastern end of the county. One tree was blown down onto I-20 westbound near North County Line Road blocking multiple lanes of traffic. There were no injuries or deaths associated with the event, and $8,000 worth of property damage was reported.

June 24, 2019, Fairplay, Thunderstorm Wind – A strong short wave lifting northeast out of the lower Mississippi Valley, combined with a very warm and moderately unstable air mass over the region, resulted in widespread thunderstorms across north and central Georgia with numerous reports of damaging thunderstorm wind gusts across the area. The Douglas County Emergency Manager reported several trees blown down across the southern end of the county from the Fairplay area to Chapel Hill. There were no injuries or deaths associated with the event, and $8,000 worth of property damage was reported.

July 5, 2019, Midway, Thunderstorm Wind – Despite weak upper-level ridging across the region, ample moisture and a moderately unstable atmosphere produced scattered afternoon and evening thunderstorms with a few isolated reports of severe weather. Heavy downpours accompanied these storms, producing rainfall amounts to three (3) to five (5) inches, with isolated higher amounts. Flash Flooding occurred in Walton County where a localized six (6) inches occurred over a short period of time. A report was received over social media of a tree blown down around the intersection of I-20 and Highway 92. There were no injuries or deaths associated with the event, and $1,000 worth of property damage was reported.

July 20, 2019, Lithia Springs, Thunderstorm Wind – A broad, weak upper-level trough lingered over the eastern United States through the last few days of the month. A series of weak short waves combined with moderated instability to produce isolated to scattered severe thunderstorms each day, mainly during the

afternoon and evening hours. The Douglas County Emergency Manager reported several tress and power lines down around the Lithia Springs area, between Temple Street and North Sweetwater Road and Brenda Lane. A tree was also reported down on an hour off Linda Drive. Time estimated from radar. There were no injuries or deaths associated with the event, and $25,000 worth of property damage was reported.

August 3, 2019, Winston, Thunderstorm Wind – A persistent, weak upper-level trough and stationary frontal boundary over the region combined with strong afternoon heating to produce isolated strong to severe thunderstorms over parts of north Georgia. The Douglas County Emergency Manager reported trees and power lines blown down near the intersection of Mann Road and Poppy Drive. A single tree was also reported down near Dorsett Shoals Road, west of Chapel Hill. There were no injuries or deaths associated with the event, and $4,000 worth of property damage was reported.

January 11, 2020, Douglasville, Thunderstorm Wind – A strong cold front associated with a deep upper-level trough moved through the region. A line of strong to severe thunderstorms ahead of the cold front swept into northwest Georgia during the afternoon and progressed southeastward across north and central Georgia through the late afternoon into the evening before weakening and pushing into South Georgia and the Carolinas during the early morning hours. Numerous reports of damaging thunderstorm winds and a few isolated tornadoes were received. The Douglas County Emergency Manager reported trees and power lines blown down from northwest to Douglasville to near Chapel Hill. There were no injuries or deaths associated with the event, and $10,000 worth of property damage was reported.

Most recently, on April 12, 2020, many residents in the Atlanta-Metro area, including those in Douglas County were told to take precautions to protect themselves from severe weather that was expected in the overnight hours. Channel 2 Action News' meteorologists said that the threat for severe storms across North Georgia had increased steadily throughout the day. Most of the area was at a high risk of strong tornadoes and damaging winds in addition to the threat of flash flooding. (https://www.ajc.com/news/local/sunday-weather-traffic-heavy-storms-possible-tornadoes-expected-easter/NNqIJ07dauxaf29qOsjRgK/).

The likelihood of severe weather occurring in Douglas County is **likely** for hail and lightning event, respectively, and **highly likely** for a thunderstorm wind event. However, for a combined likelihood of a severe weather event, it is **highly likely** for the entire planning area.

4.2.4 – Vulnerability & Impact

Thunderstorm Wind and Heavy Rain Impacts

Douglas County and its participating jurisdiction(s) have recorded 20 thunderstorm wind and heavy rain events since 2015; and of these events, the range of magnitude was between 45 and 65 MPH with an average of 50 MPH. Based on the Beaufort Scale (as indicated) Douglas County and its participating jurisdiction(s) can expect 3.33 thunderstorm wind events per year ranging from Beaufort Scale 8 – "Fresh Gale" to Beaufort Scale 10 – "Whole Gale."

Beaufort Scale

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

Lightning Impacts

Since 2015, Douglas County has recorded only three lightning-related events/impacts. The planning area is still vulnerable to lightning strikes, but without any historical precedent, there is no reasonable way to predict a range or magnitude.

Hail Impacts

Douglas County has recorded two hail events since 2015, of which the range of magnitude was between 0.75 and 1.00 inches in diameter with an average of 1 inch. Based on the hailstorm average and future probability in Table 22, Douglas County and its participating jurisdiction(s) can expect 0.33 'potentially damaging' hail events each year, or with 40 percent probability.

Vulnerability of Facilities

Structural vulnerability to severe weather, specifically thunderstorm wind, lightning, and hail, is the same throughout the entire planning area. Wind events create flying debris that can significantly damage infrastructure and buildings. Strong enough wind can cause structural damage to older, less well-constructed buildings, even toppling or leveling them. FEMA Code 361 "Tornado Safe Room" will provide more-than-sufficient protection and resistance to any form of severe storm as they are designed and constructed above the standard metrics of a severe thunderstorm. Lightning can strike anything, and a single bolt has the potential to damage electrical infrastructure or ignite a fire. Hail can be costly by damaging rooftops, outdoor equipment, and windows.

The average hail event in Douglas County and its participating jurisdiction(s) is valued at $0, while the existing range of a single incident has been from $0 to $5,000. The NWS in Douglas County has recorded only three lightning events/impacts. These strikes caused $30,000 worth of property damage in the planning area.

The average severe weather event in Douglas County and its participating jurisdiction(s) costs $208,034, while the existing range of a single incident has been from $1,000 to $250,000.

Douglas County and its participating jurisdiction(s)' critical structures are valued at $10,715,696,000. Since severe weather can threaten the entire planning area equally, all structures are considered exposed.

Vulnerability of Population

Douglas County's vulnerability to severe weather is the same throughout the planning area. In the absence of proper shelter, hail, in particular, can cause serious injury to unprotected persons. As long as Douglas County and its participating jurisdiction(s)' citizens stay indoors and away from windows, they will be protected against hail injury or death. Similarly, they can avoid being struck by lightning by staying indoors. Although lightning may strike a structure sheltering people, it is improbable that the strike itself will directly injure or kill a sheltered person. If a structure can maintain its integrity during high-speed winds, it will protect people from wind injury or death. However, old or poorly constructed facilities are not a good shelter as flying debris can easily break windows or cause structural damage. Either of these instances have the potential for severe injuries or kill anyone taking shelter in an older, less well-constructed building.

Douglas County and its participating jurisdiction(s) have a total population of 145,331 in 53,033 housing units, all of which are highly vulnerable and at risk to severe weather events.

Historically, there have been no fatalities or injuries recorded from severe weather events within the planning area.

Vulnerability of Systems

Douglas County and its participating jurisdiction(s)' assets and systems' vulnerability to severe weather is the same throughout the planning area. Systems, in this case, being regular day-to-day operations of businesses and citizens in the county. Systems also include electrical, water, and gas systems that are in the County.

Severe weather events can destroy and damage multiple structures and points of infrastructure. They have the potential to significantly impact a community's power grid, compounding the effects of other hazards such as extreme heat, tornadoes, and winter storms. Hail damage is typically superficial and does not hamper a community's assets, systems, or activities. Lightning strikes can destroy or damage a community asset, but since they are typically isolated and rarely hit anything, it is unlikely to impact a more extensive system.

4.2.4A –Critical Facilities & Infrastructure

All critical facilities and infrastructure within Douglas County are equally at risk since severe weather indiscriminately affects the entire planning area. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Considering the entire planning area is at risk of severe weather, increased development and population growth can reasonably translate to increased damage due to the hazard. Douglas County's previous MJHMP (2015) indicates that land use and development trends have a negligible influence on the vulnerability of the community. There are various characteristics of structures like roof profile, type and strength of windows, and nature of the structural system, making them more (or less) vulnerable to the effects of high winds. To date, modern building codes are instrumental in ensuring that structures can withstand all but the most extreme weather events.

4.3.4C – Unique & Varied Risk

Severe weather, chiefly thunderstorm wind, lightning, and hail, can affect a portion or all of the planning area. Unfortunately, there is no accurate method of predicting the location or extent of a severe weather event's impact—namely, if it will affect one participating jurisdiction, or up to any number or other participating jurisdiction(s).

Additionally, it is not possible to predict varying probability between the participating jurisdiction(s) except for varying risk, as it is proportionate to a participating jurisdiction(s)' demographics. Logically, a participating jurisdiction with a greater population is at higher risk than one with a smaller population.

Although this plan addresses vulnerability to severe weather, it is near impossible to calculate all components of risk at a jurisdictional level. To predict unique and varied risks for Douglas County and its participating jurisdiction(s), one needs a comprehensive catalog of wind resilience ratings, hail impact ratings, and grounding capacity for all infrastructure. Such information is not available at this time.

4.2.4D – Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

Not applicable.

4.2(SWW) – Severe Winter Weather

4.2.1 – Hazard Description

Photo Source: Weather.gov (Over 10 inches of snow accumulated in the Birdstone Subdivision in Acworth, GA)

A winter storm encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

This plan defines winter storms as a combination of the following winter weather effects as defined by NOAA and NWS.

Cold Wave/Extreme Cold: A cold wave is a weather phenomenon that is distinguished by a cooling of the air. Specifically, as described by NWS, a cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. As evidenced by past events across the U.S., extreme cold can cause impact to human life and property.

Ice Storm: An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater.

Heavy Snow: This generally means snowfall accumulating to 4 inches or more in depth in 12 hours or less; or snowfall accumulating to 6 inches or more in depth in 24 hours or less. In forecasts, snowfall amounts are expressed as a range of values, e.g., "8 to 12 inches." However, in heavy snow situations where there is considerable uncertainty concerning the range of values, more appropriate phrases are used, such as "...up to 12 inches..." or alternatively "...8 inches or more." A blizzard, on the other hand, is a storm with "considerable falling or blowing snow" and winds in excess of 35 mph and visibilities of less than 1/4 mile for at least three hours.

Winter Storm: A winter storm comes in the form of heavy snow, heavy freezing rain, or heavy sleet. Such hazardous storms may also include extremely low temperatures and increased wind.

Interestingly, NWS refers to winter storms as “deceptive killers.” People are at greater risk to dangerous injuries, including frostbite and hypothermia due to the wind and cold. The majority of deaths caused by winter storms are from vehicle accidents due to ice and snow. Heart attacks brought on by overexertion from shoveling or clearing snow also increase during and after storms.

Aside from the inherent dangers of severe winter weather, rising temperatures and the melting of ice and snow can cause fast surface water runoff and potentially flash flooding.

Fortunately, significant winter storms form well in advance and can, therefore, be anticipated by weather experts. However, like other large storm fronts, the severity of winter storms is not as easily predicted. Snow and ice accumulations, as well as wind speed, will inevitably vary by location.

4.2.2 – Location & Extent

The State of Georgia has an extensive history of severe winter weather. The Georgia Hazard Mitigation Strategy Standard and Enhanced Plan (March 18, 2019 – March 17, 2024) states that within Georgia, the impacts of winter storms are often contained within the northern part of the State. In January 2000, for example, the combination of a storm front, colder temperatures, and mid-tropospheric moisture posed a significant threat to the safety and well-being of Georgia residents, particularly those in the northern portions of the State. As many as 500,00 utility customers lost power throughout the area, and several injuries and car accidents were reported as a result of freezing rain and snow. The governor of Georgia declared a state of emergency for 39 counties, and a federal disaster declaration covered 34 Georgia counties, including Douglas County.

NOAA and its National Centers for Environmental Information (NCEI) produces the Regional Snowfall Index (RSI) for significant snowstorms that affect the eastern two-thirds of the United States. The RSI ranks snowstorm impacts on a scale from 1 to 5. This scale is compared to the Fujita scale for tornadoes or the Saffir-Simpson Scale for hurricanes. The RSI is a regional index that has a separate index for each of the six NCEI climate regions in the eastern two-thirds of the nation. The State of Georgia resides in the southeastern climate region, where a December 2017 snowstorm was categorized as a Category 2.

Table 23: NOAA RSI Categories for Southeast Region

Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	180.0+	Extreme

Data Source: Georgia Hazard Mitigation Strategy – Standard and Enhanced Plan, March 18, 2019-March 17, 2024, and https://www.ncdc.noaa.gov/snow-and-ice/rsi/

Winter storms can range from a moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow, and freezing temperatures that last several days. Douglas County has recorded winter storm events in the past. Therefore, the potential for winter storms is uniform for the entire planning area, meaning all people, assets, and critical facilities have the same degree of exposure to the hazard.

4.2.3 – Previous Occurrences

The NOAA/NCEI database has a specific classification for Winter Storms and Winter Weather. In Douglas County's previous MJHMP (2015), the hazard was categorized as "Severe Winter Weather" and included historical occurrences by the following event types: heavy snow, winter weather, and winter storms. These same event types were considered for this plan update for the period, January 1, 2015 – April 1, 2020. According to NOAA/NCEI, there were no heavy snow events that occurred in this period for Douglas County. Winter weather and winter storms, however, turned up a few events. NOAA/NCEI reported one winter weather event and three winter storm events in Douglas County.

Winter Weather, Douglas County – There was only one reported winter weather event in Douglas County, and it affected the City of Douglasville. According to NOAA/NCEI, this event caused $0 in property damage.

Winter Storm, Douglas County – Douglas County reported three winter storm events from January 1, 2015 – January 31, 2020, according to NOAA/NCEI. No damage, injuries or deaths were reported from these winter storm events.

4.2.3A – Probability of Future Events, Severe Winter Weather

The following table provides a summary of the severe winter weather events recorded by NOAA/NCEI for Douglas County through the aforementioned period.

Table 24: Probability of Future Events, Severe Winter Weather

Probability of Future Events, Severe Winter Weather			
Event Year	**Event Count**		
	Heavy Snow	**Winter Weather**	**Winter Storms**
2015	-	-	-
2016	-	1	-
2017	-	-	2
2018	-	-	1
2019	-	-	-
2020	-	-	-
Total Recorded Events =	-	1	3
Total Years =	5	5	5
Yearly Probability =	**0%**	**20%**	**60%**

Data Source: NOAA/NCEI Storm Events Database

The following provides more specific details on the severe winter weather event records included in the NOAA/NCEI database:

January 22, 2016, Douglasville, Winter Weather – Very cold air remained entrenched across the southeastern states as a deep surface low developed in the lower Mississippi Valley and swept northeast across the southern Appalachians. A wintry mix of some freezing rain and sleet, but mostly snow, covered north Georgia with snow flurries extending as far south as Central Georgia. Strong pressure gradient winds associated with this low-pressure system produced northwest winds 20 to 25 MPH with gusts of 30 to 40 MPH across north and central Georgia during the day on the 23rd. An observer reported .3 inches of snow northeast of Douglasville.

January 6, 2017, Douglasville, Winter Storm – During the afternoon of January 6th through the morning of January 7th, a fast moving but strong storm system swept across the southeastern U.S. A cold airmass across north and central Georgia combined with rich moisture dawn north from the Gulf of Mexico to produce a mixture of rain, sleet, freezing rain, and snow across north and portions of central Georgia. The Douglas County Emergency Manager and the public reported around a quarter of an inch of freezing rain.

December 8, 2017, Douglasville, Winter Storm – With cold air in place across the southeastern U.S, a deep upper-level trough and associated surface low brought an extended period of moderate to heavy snow across parts of north Georgia beginning the morning of December 8th and continuing through the early morning of December 9th. The snowfall spread south and east overnight on the 8th into the morning of the 9th, bringing light to moderate snowfall amounts to the remainder of north Georgia and portions of central Georgia. From the Atlanta metropolitan area northward and westward, many roads became impassable for several hours to over 2 days. Numerous trees and power lines were damaged or downed by the weight of the heavy, wet snow with many customers without electricity for hours if not days. Between 4 and 9 inches of snow were estimated across the County. Reports from observers and the Douglas County Emergency Manager included 5 inches east of Douglasville, 8 inches south of Douglasville and 8 inches near Winston.

January 16, 2018, Douglasville, Winter Storm – A strong surface low and cold front associated with a large and deep upper-level trough, brought light to moderate snow to much of north central Georgia from the afternoon of January 16th through the morning of January 17th. With most of the precipitation post-frontal, temperatures were well below freezing (lower to mid-20's) as the snow occurred. This resulted in widespread icy and snow-packed roadways across the area, especially those that were not pre-treated by the Georgia Department of Transportation (GDOT) or Public Works. Reports were received from the Douglas County Emergency Manager and over social media of one to two inches of snow accumulations across the County.

The likelihood of each separate severe winter weather event occurring in Douglas County is **unlikely** for a heavy snow event**, likely** for a winter weather event, and **highly likely** for a winter storm event. However, the combined likelihood of a severe winter weather event is **likely** for the entire planning area.

4.2.4 – Vulnerability & Impact

According to NOAA/NCEI, no heavy snow events occurred in Douglas County during the referenced period, January 1, 2015 – April 1, 2020. Winter Weather and Winter Storms, however, turned up a few occasions (one winter weather event and three winter storm events) in the planning area. Based on the future probability in Table 24, Douglas County can expect 0.60 winter storms per year, or 60% probability, which could impact the planning area in the form of light to moderate snow, accumulated ice, extreme and prolonged cold temperatures, or any combination of the three.

Vulnerability of Facilities

Structural vulnerability to winter storms is the same throughout Douglas County and its participating jurisdiction(s). Heavy snow accumulation can cause roofing to collapse on old or poorly constructed facilities. Ice storms will coat a facility's exterior but are unlikely to cause anything more than superficial damage. Prolonged, frigid temperatures can cause significant damage to poorly insulated or heated facilities. The cold temperatures can cause a facility's water pipes and plumbing systems to freeze. As the water in these systems turns to ice, it expands and eventually will cause pipes to burst.

Severe winter storms, especially those with heavy icing, can generate numerous downed trees and limbs requiring cleanup of the resulting debris. Staff from the Public Services and Recreation & Parks departments have to be diverted from other projects, which creates a delay in scheduled projects.

Douglas County's previous MJHMP indicates that the cost of managing this debris is not included in the County's budget. Currently, the County's contingency fund will be used to initiate debris/snow clean up following a severe winter weather event within the planning area.

Vulnerability of Population

Douglas County and its participating jurisdiction(s)' populations are equally vulnerable to the adverse effects of severe winter weather. During a winter storm event, residents of Douglas County and the City of Douglasville are at risk from prolonged cold temperatures, especially if they are not sheltered in adequately heated structures or are unable to reach shelter. Some structures are dependent on electricity for their heating, making them vulnerable if a winter storm causes a power outage.

Additionally, if a winter storm restricts travel, people may become immobile on roadways and be at the mercy of their vehicle's gas supply. Exposure from winter storms in any of these cases can lead to frostbite and hypothermia. Both conditions, if untreated, can lead to death.

Douglas County has a total population of 145,331 in 53,033 housing units, all of which are vulnerable and at-risk to the hazard of Severe Winter Weather. Historically, there have been zero recorded fatalities and zero injuries relating to winter storms across the planning area.

Vulnerability of Systems

Douglas County's asset and system vulnerability to winter weather are the same throughout the planning area. Winter storms have the potential to create havoc on roadways (primary, secondary, and rural), impacting travel from decreased speeds to traffic jams. This is especially true in the highly congested Atlanta-Metro area, where travel may be dangerous, if not impossible. Additionally, ice storms and snow accumulation can directly bring down power lines or bring down vegetation onto power lines. From these scenarios, Douglas County can suffer power outages, making it difficult to heat structures (residential, commercial, municipal, etc.) and exposing citizens to prolonged cold temperatures.

4.2.4A –Critical Facilities & Infrastructure

All critical facilities and infrastructure are equally at risk since severe winter weather can indiscriminately affect the entire planning area. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Currently, development projects continue within the planning area. All new buildings must be designed and constructed to meet current building code requirements, including snow loads in Douglas County and the City of Douglasville. The effects of severe winter weather is not influenced by land use and development trends.

4.2.4C – Unique & Varied Risk

Severe winter weather has the potential to affect the entire planning area. Unfortunately, there is no accurate method of predicting the location or extent of a winter weather system's impact. If one affects the planning area, it will most likely affect the entire planning area. Logically, locations with the planning area with a larger population are at a higher risk.

Although this plan addresses vulnerability to severe winter weather events, it is not possible to calculate all components at a jurisdictional level due to the lack of information.

4.2.4D Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

Not applicable.

4.2(T) – Tornado

4.2.1 – Hazard Description

Photo Source: Surprise Douglas County, GA, Tornado, March 7, 2008, weather.gov

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust. Tornadoes are usually born in "supercell" thunderstorms and present certain physical signs that include a dark, greenish sky, large hail, and a powerful train-like roar.

Tornadoes have the potential to produce winds in excess of 200 mph and can be very expansive –some in the Great Plains have exceeded two miles in width. According to the NWS, the widest tornado ever recorded in the U.S. was 2.6 miles wide, and it occurred on May 31, 2013, in El Reno, Oklahoma. Sadly, it claimed the lives of eight people, all of whom were in vehicles, and left a path of destruction ($40-$50 million in damage). The costliest tornado on record hit Joplin, Missouri, on May 22, 2011, resulting in $2.8 billion in damage. It killed 158 people and injured more than a thousand others.

As evidenced by past events, tornadoes can cause all kinds of damage to buildings, infrastructure, and property. Tornadoes have been known to lift and move objects weighing more than three tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common.

Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be hurled at buildings with enough force to penetrate windows, roofs, and walls. Most tornado-related injuries or deaths are caused by flying debris.

Violent tornadoes comprise only about two percent of all tornadoes, but they cause 70 percent of all tornado deaths and may last an hour or more. While tornado forecasters cannot provide the same kind of warning that hurricane watchers can, they can do enough to help save lives. Today the average warning time for a tornado alert is 13 minutes.

Until 2007 the Fujita Tornado Scale ranked the severity of tornadoes. The Fujita scale assigned a numerical F value, F0 through F5, based on the wind speeds and estimated damage. Since 2007 the U.S. switched over to the Enhanced Fujita Scale. The altered scale adjusted the wind speed values per F level and introduced a rubric for estimating damage. An EF0 tornado could lightly damage structures to the extent they would become unsafe to use until repaired. An EF1 or larger tornado could destroy the entire neighborhood, town, or city or damage any number of structures to the point where they would be unusable for at least a year.

4.2.2 – Location & Extent

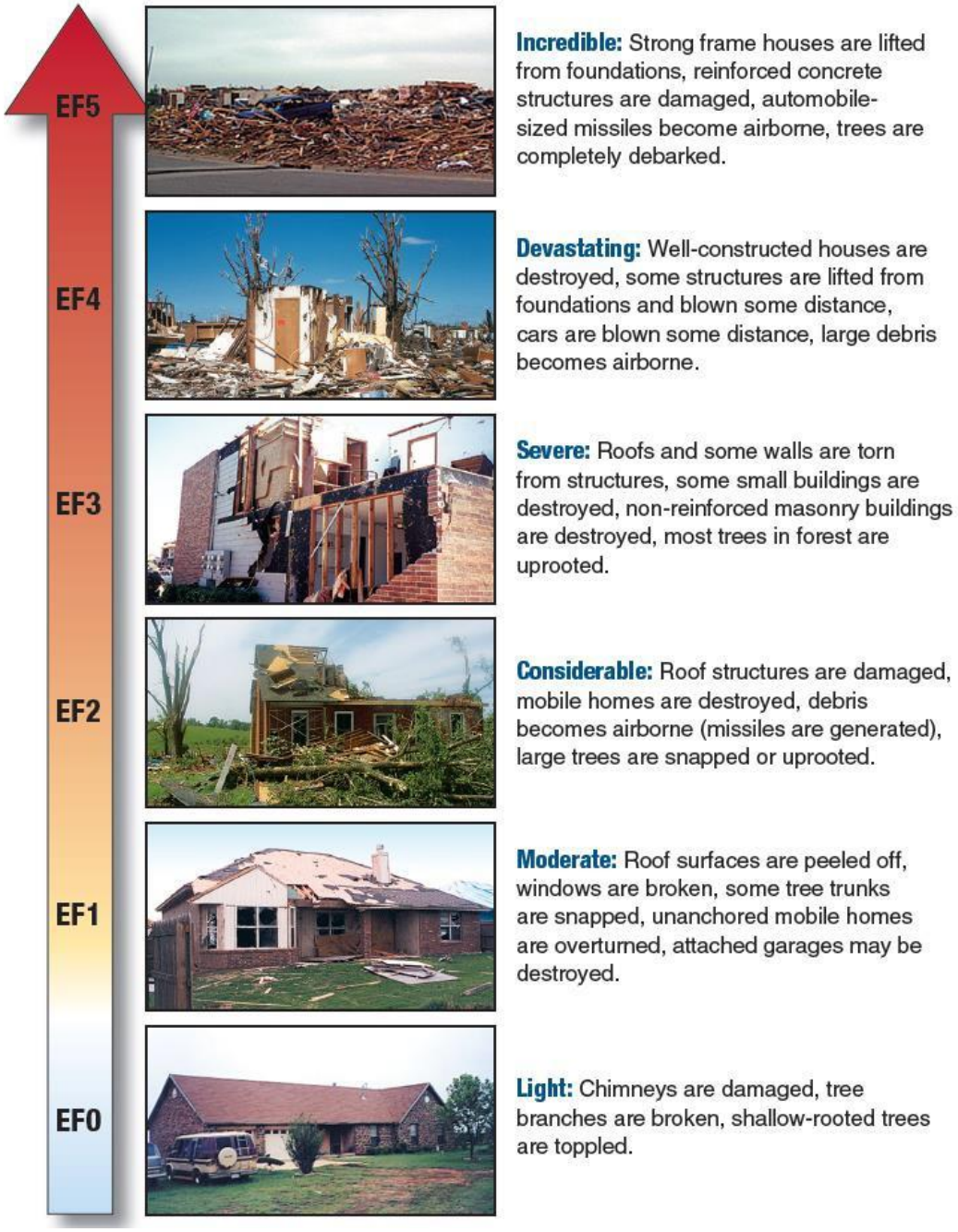
Tornadoes are nature's most violent storms, and they are Georgia's No. 1 weather-related killer. They can strike anywhere in Douglas County and its participating jurisdiction(s), placing the entire planning area at risk. Therefore, the County should expect to experience tornadoes measuring at least EF0 to EF1 on the Enhanced Fujita (EF) Scale, referenced below, but also be prepared for a rare EF3 or worse.

Fujita Scale		EF Scale	
Fujita Scale	**3-Second Gust Speed (mph)**	**EF Scale**	**3-Second Gust Speed (mph)**
F0	45-78	EF0	65-85
F1	79-117	EF1	86-109
F2	118-161	EF2	110-137
F3	162-209	EF3	138-167
F4	210-261	EF4	168-199
F5	262-317	EF5	200-234

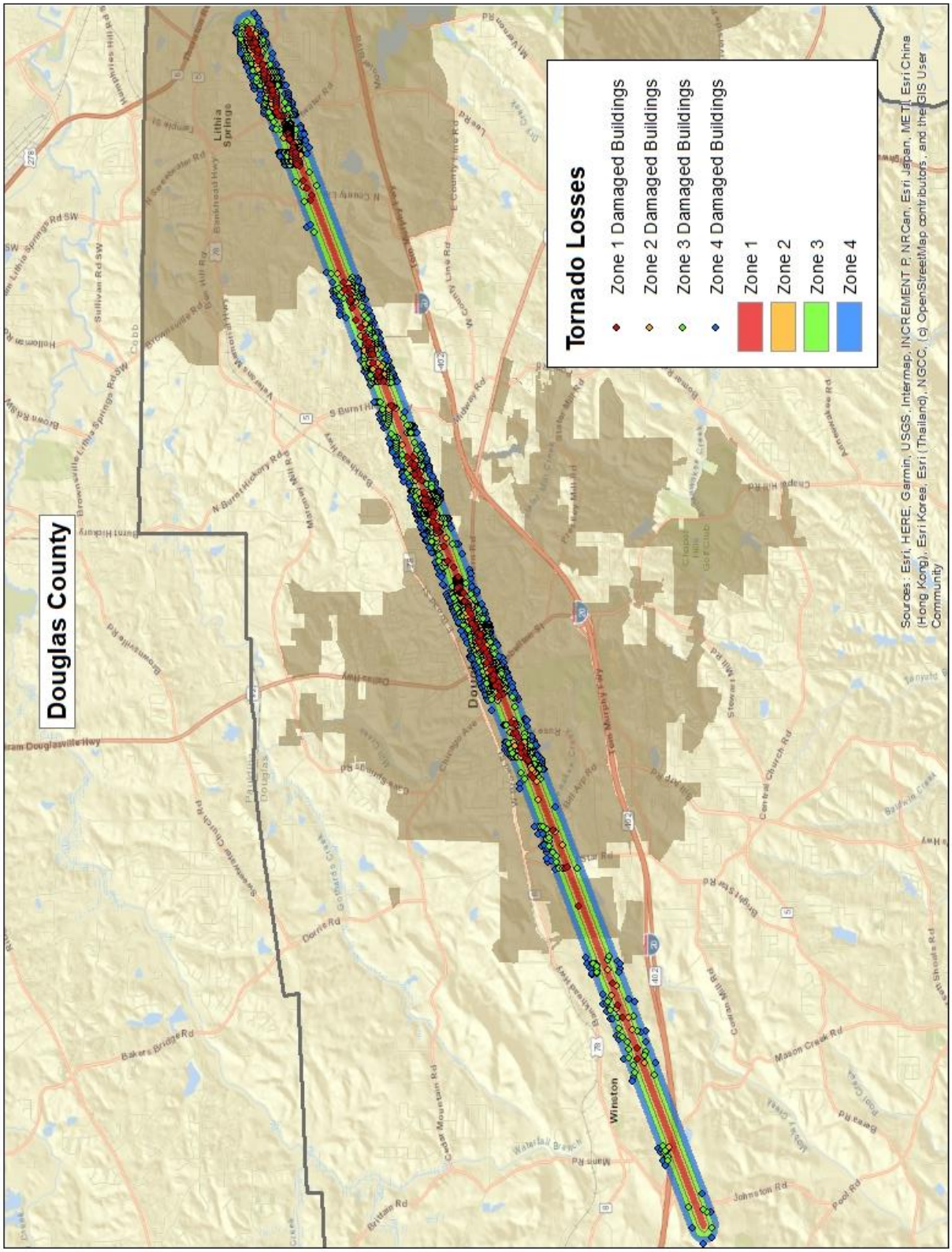
Tornadoes are a real threat to Douglas County and its participating jurisdiction(s). This includes the County's entire population (now estimated at 145,331) and all critical facilities, buildings (commercial, residential, etc.) and infrastructure. While all assets are considered at risk from the hazard, a particular tornado would only cause damage along its specific track. Historically, most tornadoes have crossed through the central part of Douglas County, which is its highest population center.

Destruction, ranging from minor to catastrophic, is dependent upon the intensity, size, and duration of the twister(s). Structures made of light materials such as mobile homes are most susceptible to damage. The following illustration shows the level of loss/damage associated with each tornado category of the EF scale.

Illustration 3: Enhanced Fujita Scale, Damage



Map 19: Douglas County, Tornado



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

4.2.3 – Previous Occurrences

As recorded in Douglas County's previous mitigation plan (2015), there were no new tornado events since the 2010 HMP update. NOAA/NCEI reports eight incidences of tornadoes occurred between 1950 and 2014. Since that time, NOAA/NCEI recorded zero tornadoes in Douglas County from January 1, 2015, to April 1, 2020.

4.2.3A – Probability of Future Events, Tornadoes

Douglas County and its participating jurisdiction(s) can expect a tornado with a probability of 0% per year, or 0.0 tornadoes per year. The likelihood of a tornado happening in the planning area is **unlikely.**

Table 25: Probability of Future Events, Tornadoes

Probability of Future Events, Tornadoes	
Event Year	**Event Count**
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
Total Recorded Events =	0
Total Years =	6
Yearly Probability =	**0%**

Data Source: NOAA/NCEI Storm Events Database

4.2.4 –Vulnerability & Impact

The NWS recorded one tornado in the planning area since 1995. The range of magnitude was between EF0 and EF1, with an approximate average of an EF1. Based on the Enhanced Fujita Scale and the future probability in Table 24, Douglas County and its participating jurisdiction(s) can expect no tornadoes per year.

Vulnerability of Facilities

Douglas County's vulnerability to tornadoes is the same throughout the planning area. Most tornadoes are in the EF0 – EF2 class. Building to modern wind standards and state codes provides significant protection from these hazard events; however, a community in the direct path of a violent, high scale tornado can do little to prevent significant property damage. Designing buildings to protect against extreme wind speeds, such as those associated with an EF4 or EF5, is extraordinarily challenging and cost-prohibitive. Anything less than a FEMA Code 361 compliant structure is susceptible to significant damage or destruction.

There are 3,435 mobile homes in Douglas County. This is important to note because these structures are much more vulnerable to tornadoes than a house built of, for example, brick. Mobile homes also do not fall under FEMA Code 361. Therefore, they are not fortified against potential tornadoes.

Douglas County and its jurisdiction(s)' critical structures are valued at $10,715,696.000. Since tornadoes threaten the entire planning area equally, all municipal structures are considered exposed and vulnerable. The analysis done by the University of Georgia, Carl Vinson Institute of Government, estimates approximately 1,773 buildings could be damaged, with an estimated building loss of nearly $86 million. Please refer to the tables below for a breakdown of these values by facility type.

Table 26: Estimated Building Losses by Occupancy Type, Tornado

Estimated Building Losses by Occupancy Type, Tornado		
Occupancy Classification	**Buildings Damaged**	**Building Losses**
Residential	1,486	$ 66,601,210
Commercial	193	$ 4,752,418
Industrial	40	$ 1,963,639
Religious	28	$ 905,804
Education	6	$ 10,958,441
Government	20	$ 1,173,885
Total	**1,091**	**$ 86,355,397**

Data Source: FEMA's HAZUS® CDMS Database

Vulnerability of Population

Douglas County and its participating jurisdiction(s)' vulnerability to tornadoes is the same throughout the planning area. An EF4 or EF5 tornado has the potential to level some locations and unfortunately, injure or kill everyone in them, while being able to do nearly the same in the larger ones. Even a lesser magnitude tornado can claim the lives of Douglas County citizens as it rips off the roofs and walls of structures while launching airborne missiles born from debris.

Douglas County has a total population of 145,331 in 53,033 in housing units, all of which are highly vulnerable and at-risk to tornadoes.

Vulnerability of Systems

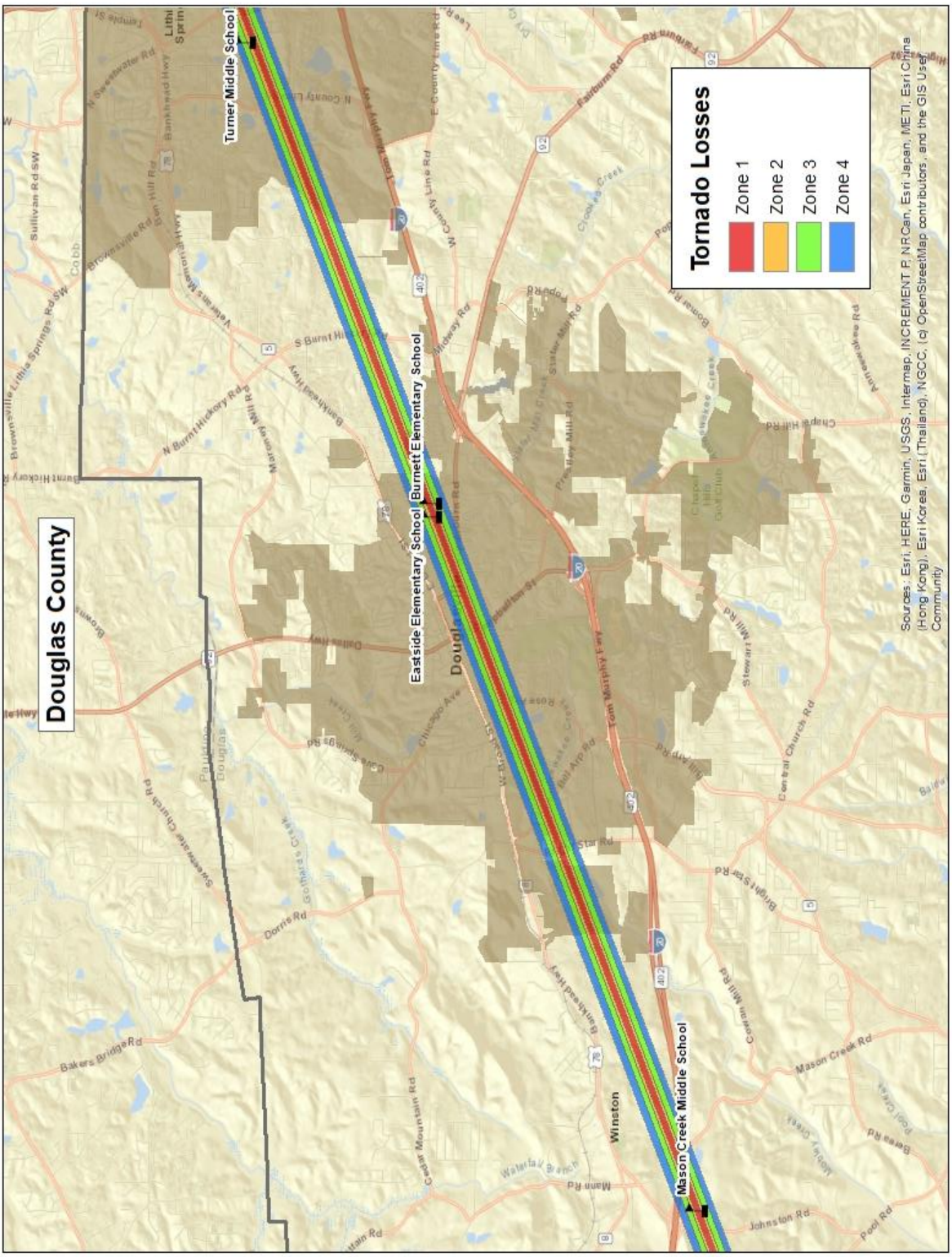
Douglas County and its participating jurisdiction(s)' community assets and systems' vulnerability to tornadoes is equal throughout the planning area. A small magnitude tornado will not significantly damage a community of its systems, such as power lines or water stations. Still, a more massive magnitude tornado can impact a community for weeks, months, or years, and even eradicate a town or city. Significant damage to Douglas County and its participating jurisdiction(s) would affect the community's economy and increase its social vulnerability.

According to the Hazard Risk Analyses Supplement to the Douglas County Joint Hazard Mitigation Plan, which was developed by the University of Georgia, Carl Vinson Institute of Government/GEMA, an EF 3 Tornado Essential Facility Damage scenario showed four essential facilities (schools) located in the tornado path. These schools, with enrollment information provided by the Georgia Department of Education (October 2019), include the following:

- Mason Creek Middle School's enrollment was approximately 862 students,
- Burnett Elementary School's enrollment was approximately 392 students,
- Eastside Elementary School's enrollment was approximately 493 students and,
- Turner Middle School's enrollment was approximately 824 students.

Depending on the time of day a twister strikes, as depicted in Maps 19-21, significant injury and loss of life could occur within the planning area. Also, arrangements would have to be made for the education of students in other locations if these schools are damaged or destroyed by tornadoes.

Map 20: Douglas County, Modeled Essential Facility Damage



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

4.2.4A – Critical Facilities & Infrastructure

All critical facilities and infrastructure are equally at risk since tornadoes indiscriminately affect the entire planning area. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Like in Douglas County's previous MJHMP (2015), there are specific efforts focused on minimizing the impacts of tornadoes inside the planning area. As examples, the County has been working on initiatives to build/increase storm shelters, expand tornado warning systems, and harden structures to minimize wind/debris-induced damages.

4.2.4C – Unique & Varied Risk

Tornadoes can affect a portion, or all, of the planning area. Unfortunately, there is no accurate method of predicting the location or extent of a tornado's impact. Further, it is not possible to predict any varying probability between the participating jurisdiction(s) except for varying risk as it is proportionate to a participating jurisdiction(s)' demographics. Logically, the participating jurisdiction(s) with more significant populations are at a higher risk than those with smaller populations. Due to the lack of storm shelters within the County, Douglas County EMA works to educate the public and encourage their preparation efforts for a tornado event by purchasing a weather radio.

Although this plan addresses vulnerability to severe storms, without the possibility of being able to calculate all components of risk at a jurisdictional level, each jurisdictions' risk to tornadoes is not possible to calculate.

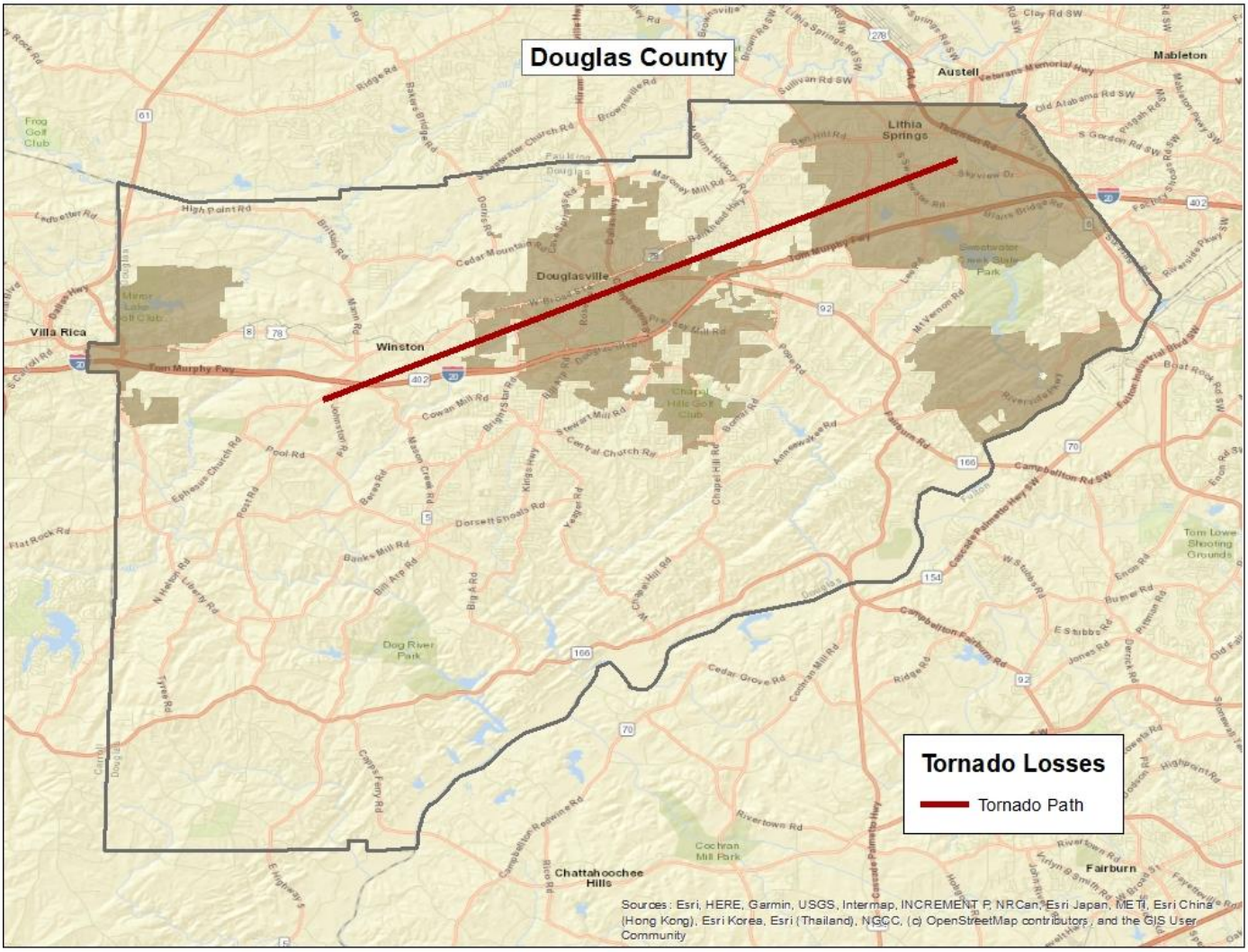
4.2.4D – Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

An EF3 tornado was modeled in Maps 19-21 using HAZUS® 2.2SP1. The map depicts the potential path of destruction across the planning area.

Map 21: Hypothetical EF3 Tornado Path within Douglas County



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

4.2(WF) – Wildfire

4.2.1 – Hazard Description

Photo Source: Douglas County Extends Outdoor Burning Ban, NewsandViewsUSA.com

The National Weather Service (NWS) defines a wildfire as "any free-burning, uncontainable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment." Wildfires can occur naturally from a lightning strike; by human accident from a non-fully extinguished campfire; and on rare occasions, by human actions, or arson. The threat of wildfire increases in areas prone to intermittent drought, or that are generally arid and dry. Regardless of how they begin, wildfires have the ability to consume large areas including infrastructure, property, and resources.

There are three general types of wildfires—ground, surface, and crown. Ground fires, often referred to as underground or subsurface fires, occur in deep accumulations of organic matter such as humus, peat and similar dead vegetation that are dry enough to burn. These fires move very slowly and become difficult to fully extinguish or suppress. Occasionally, during prolonged drought, ground fires can smolder all winter underground and then emerge at the surface again in the spring. Surface fires burn only surface litter and duff, including leaves and fallen branches, and are the easiest of all fires to extinguish. Crown fires, on the other hand, are the most intense and most difficult to maintain. They burn trees up their entire length, and usually occur where there are strong winds, steep slopes, and a heavy fuel load (e.g., densely wooded forests).

With more people making their homes in wooded settings near forests and remote mountain sites, the threat of wildfire is steadily on the rise. This is because the demographic change is expanding the size of the area where structures and other human development meet or intermingle with undeveloped wildland, otherwise known as the wildland-urban interface (WUI). The WUI creates an environment in which fire can move readily between structure and vegetation fuels, often resulting in massive fires, or conflagrations, that may lead to widespread evacuations.

A wildfire risk assessment can determine the level of risk of a particular location. The "boundary" WUI is characterized by areas of development where homes, especially new subdivisions, press against public and private wildlands, such as private or commercial forest land, or public forests or parks. There is a clearly-defined boundary between the suburban fringe and the rural countryside. WUI areas deemed as "intermix" are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just starting to transition from rural to urban land use. "Island" WUI areas, also called occluded interface, are plots of undeveloped wildland, such as remnant forests and parks, within predominately urban or suburban locales.

Aside from damaging or destroying property, or worse, claiming lives, wildfires put off dense smoke that can affect air quality and pose a serious health risk. This is especially true for the elderly or those, young and old, who have breathing conditions such as asthma or Chronic Obstructive Pulmonary Disorder (COPD). Experts agree that smoke inhalation is the number one cause of death related to fires.

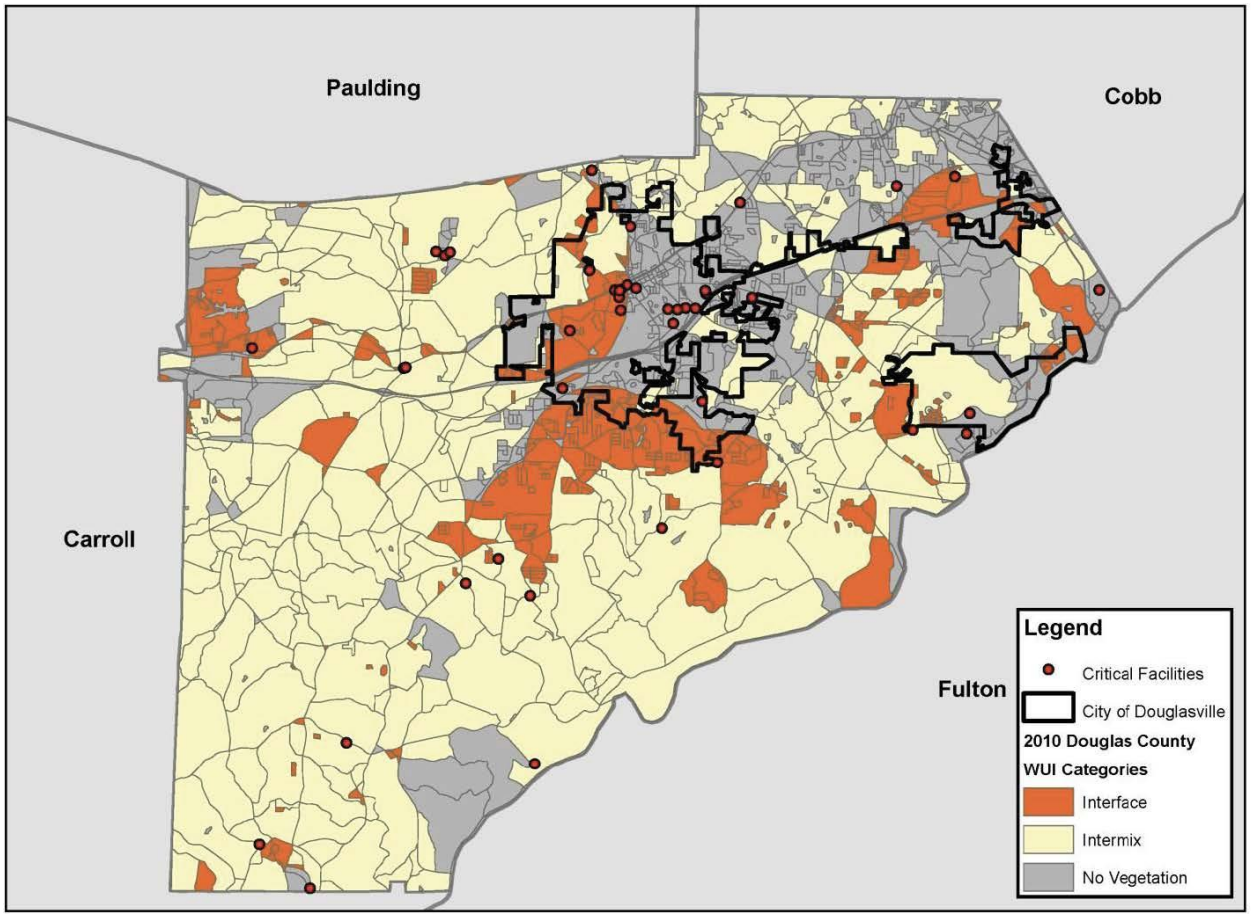
Wildfires are also notorious for spawning secondary hazards long after the original fire is extinguished. Such hazards include flash flooding, debris flow and landslides. All result from fire consuming the vegetation that provides precipitation interception and infiltration as well as slope stability.

Fire services can mitigate wildfires by regularly engaging in preventative burns and proactive land use measures. Homeowners and business owners can also do their part by taking precautionary efforts, such as following local fire-related ordinances; removing leaves, limbs and other debris from property; and creating a defensible space around structures. Among those emphasizing the need for such preemptive actions is Firewise USA™, a national recognition program that provides instructional resources to inform people how to adapt to living with the risk of wildfire.

4.2.2 – Location & Extent

As mentioned in the Georgia Hazard Mitigation Strategy Standard and Enhanced Plan, effective March 18, 2019 – March 17, 2024, all of Georgia, is prone to wildfire, especially during drier seasons (which vary across the State). This is primarily due to the presence of abundant and quick-burning wildland fuels, including coniferous, deciduous, and mixed forests; shrub-land; grasslands/herbaceous; and woody and emergent wetlands. Mentioned in its MJHMP update (2015), Douglas County and its participating jurisdiction(s) has a threat of wildfire within the planning area.

Map 22: Douglas County, Wildfire Urban Interface (WUI) Map



Map Source: Douglas County GIS – Douglas County, GA 2015 Multi-Jurisdictional Hazard Mitigation Plan

The preceding map shows the increased wildfire threat (marked in orange) within the planning area. Smaller interface areas are distributed throughout the northeast and northwest of Douglas County along the periphery of the cities of Austell and Villa Rica. The actual urban areas are mostly without vegetation and are seen to be low risk to wildfire. The rest of Douglas County is marked as an intermix area (marked in pale yellow on the map), indicating a low wildfire risk.

Per the Georgia Forestry Commission, debris-burning is Georgia's number one cause of wildfires. It accounts for over 50 percent of all wildfires in the state. Debris-burning is categorized into different types: yard leaf piles, agricultural, forestry site preparation, construction land clearing, and escaped prescribed burning. A significant cause of debris-burn wildfires is when citizens or visitors consume in a location not permitted with weather that will only increase the fire. By not obtaining a permit and burning with improper weather conditions, citizens or visitors would not know the proper areas or time of the year to burn material. The Commission has a wildfire prevention initiative to reach debris-burners and educate them on proper debris-burning techniques.

The National Interagency Coordination Center (NICC), the focal point for coordinating the mobilization of resources for wildland fire and other incidents throughout the United States, reported that 14,236 acres burned in Georgia in 2018. Additionally, the Insurance Information Institute ranked Georgia as number four on its ‘Top Ten States for Wildfires Ranked by Number of Fires and By Number of Acres Burned’ in 2018. Georgia is listed behind Texas, California, and North Carolina, respectively, with 2,572 fires reported in the state. None of these fires occurred in Douglas County.

4.2.3 – Previous Occurrences

Douglas County’s previous MJHMP (2015) states that the National Climatic Data Center, or NCDC, (now the NOAA/NCEI database), documented only one significant fire in the planning area since 1950. It occurred on March 9, 2004, in the South Villages and Carrington subdivisions in Villa Rica. According to the Douglas County Fire Department, since January 6, 2010, there were 22 wildfires in the County, 18 of which were classified as “forest, woods, or wildland fire” and 4 as “brush or brush and grass mixture fire.” There have been no reported injuries or deaths from wildfires in Douglas County and its participating jurisdiction(s). At the time of the 2015 MJHMP update, the Douglas County Community Wildfire Protection Plan (CWPP) was being prepared by the County.

While Douglas County is at low risk of wildfire, NOAA/NCEI recorded no such events across Douglas County and the City of Douglasville from January 1, 2015, to April 1, 2020.

4.2.3A – Probability of Future Events, Wildfire

For Douglas County, the rare incidence of wildland fires every year, and the probability of the planning area experiencing a wildland fire is categorically determined to be **occasional.** This is due to 1) the probability of many more wildfires that are relatively minor and extinguished quickly or otherwise burn out themselves, and 2) the fact that the CWPP remained in an indeterminate period during this MJHMP update.

4.2.4 – Vulnerability & Impact

Given the data deficiency described in Section 4.2.3A, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances, to be severe. DCEMA will seek out the data to support this finding and will update this portion of the MJHMP as soon as possible.

Vulnerability of Facilities

A wildfire burning near a jurisdiction may cover it in soot, cause secondary fires from traveling coals, or directly engulf facilities, burning them to the ground. Facilities can be protected by creating defensible spaces or buffer zones, maintaining a fuel-free environment, and/or modifying structures to prevent the growth of a wildfire.

As previously mentioned, Douglas County and its participating jurisdiction(s)' critical structures are valued at $10,715,6969,000.

Vulnerability of Population

The greatest vulnerability of a jurisdiction(s)' population is the inability to properly evacuate in an emergency situation. In particular, the population can be caught off guard due to slow or improper warning systems, erratic weather conditions, etc., and become trapped in a rapidly growing wildfire.

Douglas County and its participating jurisdiction(s) have a total population of 145,331 in 53,033 housing units that are at risk to wildfires. This information should be taken into consideration when trying to understand how many citizens will potentially be displaced from their homes due to the hazard.

No injury or death has occurred in Douglas County or its participating jurisdictions as a direct result of wildfire.

Vulnerability of Systems

In the event a wildfire begins to burn and grow, evacuation routes may become blocked by the fire or by other people attempting to evacuate. The impingement of the local transportation system makes appropriate warning and information sharing paramount in mitigating wildfire risk for Douglas County and its participating jurisdiction(s).

4.2.4A –Critical Facilities & Infrastructure

Wildfires have the potential to affect the entire planning area. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

As indicated in its previous MJHMP (2015), population growth in the Douglas County is pushing housing development further into natural forested areas where the majority of wildfires occur.

Douglas County and its participating jurisdiction(s) are continuously increasing due to people looking to move out of the City of Atlanta and into the suburbs. With this continuous population increase comes the increasing size of the wildland-urban interface (WUI). The expansion of the WUI in recent years has significant implications for wildfire management and its impact on Douglas County and its participating

jurisdictions. The duration of wildfire within the WUI depends on weather conditions, how dry it is, the availability of fuel to spread, and the capabilities of responders to contain and extinguish the fire. The WUI (as referenced in Map 22) creates an environment in which fire can move readily between structural and vegetation fuels. Its expansion has increased the likelihood that wildfires will threaten structures and people within the County.

Fortunately, Douglas County has an opportunity to influence the wildland fire safety of new developments significantly. New development must be planned and constructed to provide for public safety in the event of a wildland fire emergency. It is equally essential for the citizens of Douglas County to work together to minimize the risk.

4.2.4C – Unique & Varied Risk

Wildfires have the ability to affect all, or a portion, of the entire planning area. Drought conditions, also identified as a hazard in the plan, can add to this risk. The table below reflects the risk characteristics within the planning area.

Table 27: Unique & Varied Risk

Unique & Varied Risk	
Jurisdiction	**Risk Characteristics**
Douglas County	Low and medium risk WUI identified
City of Douglasville	Low and medium risk WUI identified

4.2.4D Repetitive Loss Structures

Not applicable.

4.2.5 HAZUS® Models

Not applicable.

4.2(W) – Wind

Photo Source: WSBTV.com, Wind Damage in Douglas County

4.2.1 – Hazard Description

Naturally occurring, wind is simply moving air that is caused by differences in air pressure within the Earth's atmosphere. Air under high pressure moves toward areas of low pressure. The greater the difference in pressure, the faster the air flows.

NOAA/NCEI divides wind into several types including High Wind, Strong Wind, Thunderstorm Wind, Tornado, and Hurricane. For the purposes of this risk assessment, the Wind Hazard will include data from High Wind, Strong Wind, and Thunderstorm Wind only. Tornado Wind is addressed as individual hazards in 4.3 (T) Tornado.

The definitions of the three wind types addressed in this section, 4.3 (W) Wind, come from the NOAA/NCEI Storm Data Preparation document:

High Wind: Sustained, non-convective winds of 40 mph or greater lasting for one hour or longer, or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.

Strong Wind: Non-convective winds gusting less than 58 mph, or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.

Thunderstorm Wind: Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury, or damage.

Downbursts, including dry or wet microbursts or macrobursts, are classified as Thunderstorm Wind events. In some cases, the downburst may travel several miles from the parent thunderstorm, or the parent thunderstorm may have dissipated.

A gustnado is a small and usually weak whirlwind that forms as an eddy in thunderstorm outflows. It does not connect with any cloud-base rotation and is not a tornado. Since their origin is associated with cumuliform clouds, gustnadoes are classified as Thunderstorm Wind events.

Unlike other hazards with loss estimation tools such as HAZUS®, there are no widely-used tools for predicting or assessing risks or potential losses due to wind events. To assess wind hazards, communities may need to rely on historical wind hazards as documented in local or regional hazard mitigation plans, or as made available through various and oftentimes third-party data sources.

4.2.2 – Location & Extent

Wind events (High Wind, Strong Wind, and Thunderstorm Wind) are typical in Georgia. In fact, NOAA/NCEI recorded 656 of them for the state in 2017 alone. Thus, the entirety of Douglas County, including all assets located within the county, can be considered at risk. This includes its entire population (presently 61,386), all critical facilities, buildings (commercial, residential, etc.), and infrastructure.

Wind observations or measurements are required for determining the probability of wind damage and the estimation of wind energy. To help with the planning, design, and construction of buildings for residential and commercial purposes, as well as mitigation efforts, the American Society of Civil Engineers (ASCE) calculates Average Hazard Wind Scores. The wind speeds correspond with the assigned hazard score with values ranging from one to five, as shown in the following table.

Table 28: ASCE Average Hazard Wind Score(s)

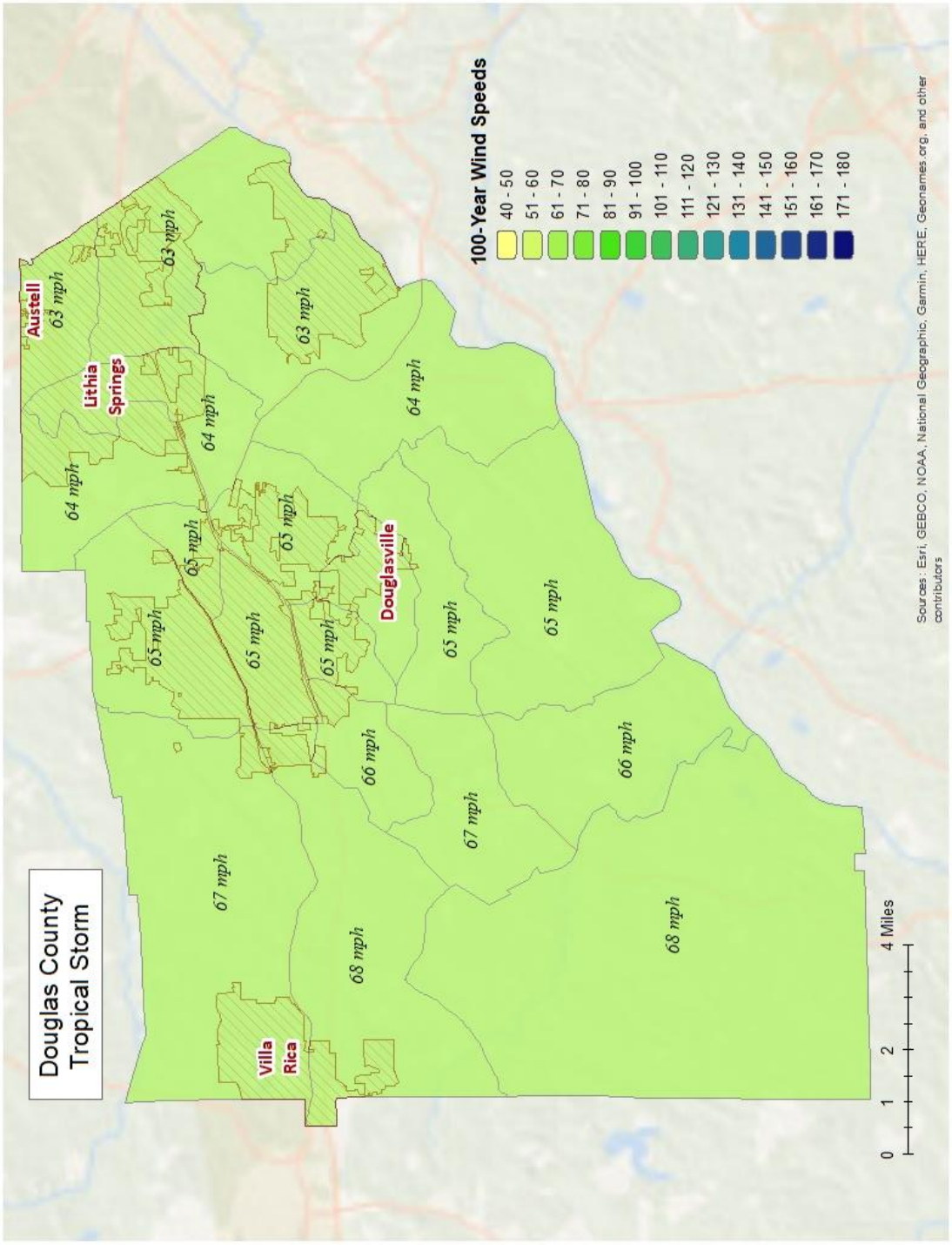
ASCE Average Hazard Wind Scores	
Wind Score(s)	**Wind Speeds (mph)**
1	<90
2	91-100
3	101-110
4	111-120
5	>120

As documented in the Georgia Hazard Mitigation Strategy Standard and Enhanced Plan (March 18, 2019 – March 17, 2024), Douglas County has an average ASCE wind score of 1 with wind speeds < 90 MPH. Winds associated with strong to severe thunderstorms contribute significantly to the rating. Potential impacts from localized wind events include, but are certainly not limited to the following:

- Significant debris generation
- Residential and commercial property loss
- Economic impact from business interruption or loss of tourism
- Agricultural loss
- Displaced residents requiring temporary shelter
- Loss of critical infrastructure function, including roads blocked by debris, downed powerlines, and interruption of communication services

It is important to note how climate change affects the intensity and frequency of wind events (and their potential impacts). It is uncertain and is being studied intensively. For Georgia, until the impacts are better understood, the anticipated intensity and frequency of wind events will likely remain close to historical averages. However, damage to life and property will likely increase due to population and financial growth across the state, including Douglas County.

Map 23: Douglas County, Wind Speeds by Storm Category



Map Source: GEMA, Hazard Risk Analysis, Supplement to the Douglas County Joint Hazard Mitigation Plan

4.2.3 – Previous Occurrences

As recorded by NOAA/NCEI, Douglas County, the City of Douglasville, and surrounding areas experienced the following wind events between January 1, 2015 and April 1, 2020.

Table 29: Wind Events, Douglas County, GA, NOAA/NCEI Database

Location	Date	Event Type	Injuries/ Deaths	Property Damage	Crop Damage
Winston	07/21/15	Thunderstorm Wind	0/0	10.00K	0.00K
McWhorter	06/17/16	Thunderstorm Wind	0/0	8.00K	0.00K
McWhorter	03/01/17	Thunderstorm Wind	0/0	6.00K	0.00K
Douglasville Pinewood AR	03/10/17	Thunderstorm Wind	0/0	250.0K	0.00K
McWhorter	05/28/17	Thunderstorm Wind	0/0	5.00K	0.00K
Fairplay	6/15/17	Thunderstorm Wind	0/0	15.00K	0.00K
Bill Arp	07/25/17	Thunderstorm Wind	0/0	4.00K	0.00K
Fairplay	11/18/17	Thunderstorm Wind	0/0	0.50K	0.00K
Fairplay	03/19/18	Thunderstorm Wind	0/0	50.00K	0.00K
Douglasville	06/01/18	Thunderstorm Wind	0/0	1.00K	0.00K
Midway*	06/22/18	Thunderstorm Wind	0/0	2.00K	0.00K
Big A	06/22/18	Thunderstorm Wind	0/0	2.00K	0.00K
Winston	06/28/18	Thunderstorm Wind	0/0	7.00K	0.00K
Lithia Springs	07/06/18	Thunderstorm Wind	0/0	10.00K	0.00K
Midway	08/09/18	Thunderstorm Wind	0/0	8.00K	0.00
Fairplay	06/24/19	Thunderstorm Wind	0/0	8.00K	0.00K
Midway	07/05/19	Thunderstorm Wind	0/0	1.00K	0.00K
Lithia Springs	07/20/19	Thunderstorm Wind	0/0	25.00K	0.00K
Winston	08/03/19	Thunderstorm Wind	0/0	4.00K	0.00K
Douglasville	01/11/20	Thunderstorm Wind	0/0	10.00K	0.00K
Total – 20 Thunderstorm Wind Events			**0/0**	**426.50K**	**0.00K**

Data Source: NOAA/NCEI Storm Events Database
**Douglas County and its participating jurisdiction(s) can expect a thunderstorm event with a 400% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probably is not the only predictor of future occurrences. The qualitative chance of a thunderstorm impacting the planning area is highly likely.*
** The Thunderstorm Wind Event on 6/22/18 impacted two locations, Midway and Big A, within the planning area.*

The following provides more specific details from NOAA/NCEI on the wind (thunderstorm) events that resulted in $426,500 of property damage in Douglas County during the aforementioned period:

March 10, 2017, Douglasville – A strong short wave and associated cold front produced a line of strong to severe thunderstorms that swept across north Georgia during the early morning hours. Despite only marginal instability, strong low and mid-layer shear helped to produce scatter reports of damaging thunderstorm winds and an isolated report of large hail. Douglas County Emergency Management reported numerous trees and power lines blown down across the northern and eastern portion of the county. Locations include Bakers Bridge Road at Sweetwater Church Road, Highway 120 at Chapel Hill Road, Lee Road at County Line Road, Brookmont Parkway at Brookhollow Drive, Dallas Highway at Lincoln Street,

Fairburn Road, North Helton Road at Watkins Mill Road, Woodcreek Way at Dogwood Way, and many other locations. Many homes and business had damage due to falling trees. No injuries were reported. Property damage for this storm-related incident was $250,000.

March 19, 2018, Douglasville/Fairplay – Widespread severe thunderstorms broke out across central and north Georgia during the evening hours of March 19th, lasting through the early morning hours of the 20th as a warm front lifted north across the region ahead of a strong storm system developing across the lower Mississippi Valley. Numerous reports of trees and power lines blown down were received from the Douglas County Emergency Manager and the 911 center. Trees were reported down on North Helton Road, Harvest Hill, and on Oakland Drive where one tree fell onto a house. No injuries were reported. Power lines were blown down along Corn Crib Loop South. Property damage estimate for this wind storm event was $50,000.

July 30, 2019, Lithia Springs – A broad, weak upper-level trough lingered over the eastern United States through the last few days of the month. A series of weak short waves combined with moderate instability to produce instability to produce isolated to scattered severe thunderstorms each day, mainly during the afternoon and evening hours. The Douglas County Emergency Manager reported several trees and power lines down around the Lithia Springs area, between Temple Street and North Sweetwater Road and Brenda Lane. Property damage for this event was $25,000.

4.2.3A – Probability of Future Events, Wind

Given the high incidence of wind events every year in Douglas County, the probability of the planning area experiencing a wind-related event is categorically determined to be **highly likely**. Based on the previous occurrence, there is a yearly probability of 333%, or 3.33 thunderstorm wind events per year.

Table 30: Probability of Future Events, Wind

Probability of Future Events, Wind			
Event Year	**Event Count**		
	High Wind	**Strong Wind**	**Thunderstorm Wind**
2015	-	-	1
2016	-	-	1
2017	-	-	6
2018	-	-	7*
2019	-	-	4
2020	-	-	1
Total Recorded Events =	0	0	20
Total Years =	6	6	6
Yearly Probability =	**0%**	**0%**	**333%**

Data Source: NOAA/NCEI Storm Events Database
**The event occurring on June 22, 2018, though shown as one, actually impacted two locations (Midway and Big A) within Douglas County.*
**Douglas County and its participating jurisdiction(s) can expect a thunderstorm event with a 333% probability each year, or 3.33 events. This number was derived by dividing the number of recorded events by the year range used. Calculating future probably is not the only predictor of future occurrences. The qualitative chance of a thunderstorm impacting the planning area is highly likely.*

4.2.4 – Vulnerability & Impact

Wind is a regular aspect of normal weather conditions in the planning area. However, the hazard being explained is an abnormal gust or length of time of the wind. The wind is also not more susceptible to one part of Douglas County than any other, therefore, it can (and does) affect the entire planning area. If the wind is strong enough, it can adversely affect any building, system, or person in any location within the County.

Vulnerability of Facilities

Structural vulnerability to the wind is the same throughout Douglas County and its participating jurisdiction(s). Strong enough wind can cause structural damage to older, less well-constructed buildings, even toppling or leveling them. Mobile homes tend to be more susceptible to wind damage.

Vulnerability of Population

As long as the structure can maintain its integrity during high-speed winds, it will protect people from wind-related injury or death. However, old, or poorly constructed, facilities are not good shelters, and mobile homes are more susceptible to wind damage than new and well-constructed homes. Wind can break windows or cause structural damage, causing people to be displaced from their homes for an extended period of time.

Vulnerability of Systems

Wind events can destroy and damage structures and points of infrastructure. They have the potential to significantly impact a community's power and communications grid, compounding the effects of the hazard. Cell and electricity towers can be knocked over in the case of high wind speeds.

4.2.4A –Critical Facilities & Infrastructure

All critical facilities and infrastructure are equally at risk since wind events indiscriminately affect the entire planning area. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Douglas County's previous MJHMP (2015) indicates that land use and development trends have a negligible influence on the vulnerability of the community. There are, however, various characteristics of structures like roof profile, the type and strength of windows, and the nature of the structural system, that make them more (or less) vulnerable to the effects of high wind. To date, modern building codes are very effective in ensuring that structures can withstand all but the most extreme weather events.

From January 1, 2015, to April 1, 2020, Douglas County experienced 20 wind events and sustained relatively minimal property damage—$426.45K. It is imperative for Douglas County to build, bolster, and maintain safe and secure communities. Improved and consistent building codes have been considered as a critical measure to mitigate such property losses by FEMA.

4.2.4C – Unique & Varied Risk

Wind events have historically affected all of the planning area. Therefore, Douglas County is equally at risk for having to mitigate and respond to wind events.

4.2.4D – Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

The Wind Damage Assessment in Map 23 was developed using HAZUS® 2.2SP1. The map depicts wind-based losses across the planning area.

4.2(DF) – Dam Failure

4.2.1 – Hazard Description

A dam is a barrier across flowing water that obstructs, directs, or slows down the flow, often creating a reservoir, lake, or impoundment. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously. Dams commonly come in two types, embankment (the most common) and concrete (gravity, buttress, and arch), as well as sizes. They also serve a number of purposes and provide essential benefits, including drinking water, irrigation, hydropower, flood control, and recreation.

Photo Source: Dog River Reservoir and Dam, Douglasville – Douglas County Water and Sewer Authority – ddcwsa.com

Large or small, dams have a powerful presence that is frequently overlooked until a failure occurs. Dams fail in two ways: 1) a controlled spillway release done to prevent full failure, or 2) the partial or complete collapse of the dam itself. In each instance, an overwhelming amount of water, and potentially debris, is released. Dam failures are rare, but when they do occur, they can cause loss of life and immense damage to property, critical infrastructure, and the environment.

Possible reasons for dam failure include but are not limited to:

- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer, or design error
- Internal erosion, especially in earthen dams
- Earthquakes
- Terrorism

There are three classifications of dam failure: 1) hydraulic, 2) seepage, and 3) structural. Following is an explanation of each these failure classifications:

1. Hydraulic: This failure is a result of an uncontrolled flow of water over and around the dam structure as well as the erosive action on the dam and its foundation. The uncontrolled flow causing the failure is often classified as wave action, toe erosion, or gullying. Earthen dams are particularly

susceptible to hydraulic failure because earthen materials erode more quickly than other materials, such as concrete and steel. This type of failure constitutes approximately 40% of all dam failures.

2. Seepage: Seepage is the velocity of an amount of water controlled to prevent failure. This occurs when the seepage occurs through the structure to its foundation, where it begins to erode within. This type of failure accounts for approximately 4% of all dam failures.

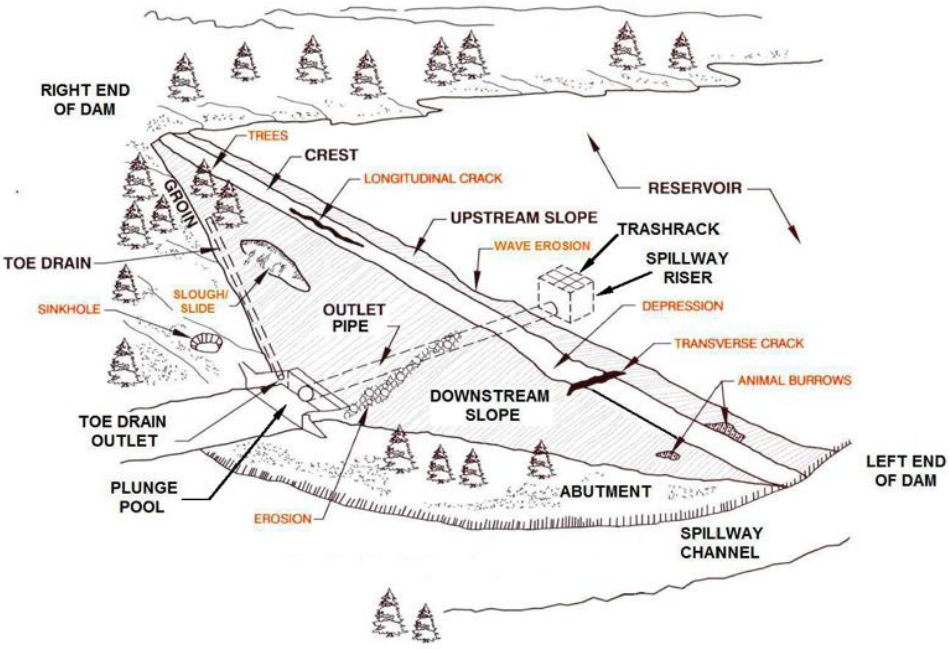
3. Structural: A failure that involves the rupture of the dam or the foundation by water movement, earthquake, or sabotage. When weak materials construct dams (large, earthen dams) are the primary cause of this failure. Structural failure occurs with approximately 30% of dam failures.

There are now approximately 90,000 dams nationwide with an average age of 56 years. A high number of these dams have received less than favorable Dam Safety Action Classification (DSAC) ratings from the U.S. Army Corps of Engineers (USACE). In fact, as of 2016, the federal government said there were approximately 15,000 U.S. dams classified as having high-hazard potential (HHP), meaning that their failure could result in loss of life. The worst dam failure in the United States occurred in 1889 in Johnstown, Pennsylvania, when over 2,200 people died, with many more were left homeless.

According to USACE, dams are unique components of the U.S. infrastructure in that most dams are privately owned. Dam owners are solely responsible for keeping their dams safe and financing maintenance, repairs, and upgrades. The vast majority of dams are regulated for safety by state and federal governments, much the same way as are bridges, food, drugs, factories, etc. States regulate the vast majority of dams in the U.S. (about 80%). The federal government regulates the remaining number.

4.2.2 – Location & Extent

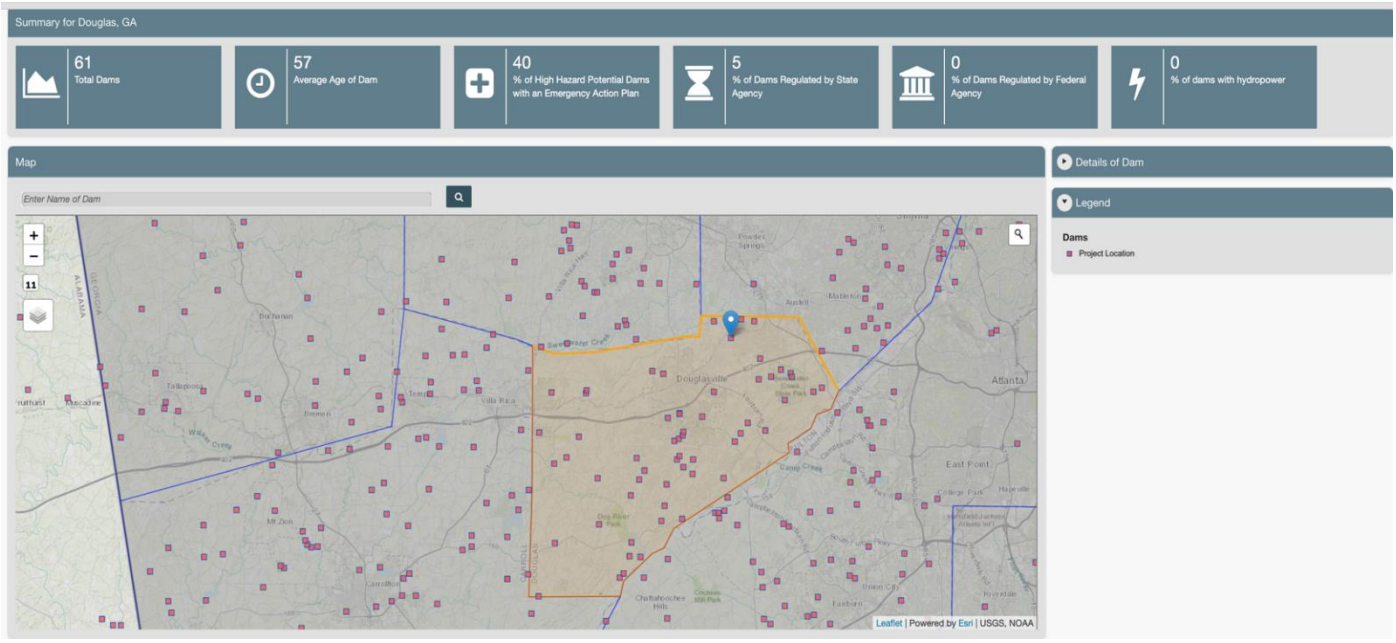
Across the State of Georgia, there are roughly 5,000 dams holding back natural and manmade bodies of water, including lakes, rivers, ponds, etc. The following drawing, obtained from the Georgia Safe Dams Program, shows the characteristics of a typical embankment dam. Common deficiencies are presented in orange.



The National Inventory of Dams indicates that there are 61 total dams in Douglas County. Of these dams, the average age is 57 years, and of equal or greater concern, 40 percent are considered high-hazard potential. Given these numbers, the possibility of dam failure, and subsequently high-velocity flooding, clearly exists within the planning area.

A dam failure within Douglas County and its participating jurisdiction(s) could result in significant loss of life and damage to structures, roads, utilities, crops, and livestock. Economic losses could also result from a lowered tax base, lack of utility profits, disruption of commerce and governmental services, and extraordinary public expenditures for food relief and protection.

Map 24: Douglas County, Summary of Dams – Interactive Map



Map Source: National Inventory of Dams (https://nid.sec.usace.army.mil/ords/f?p=105:113:17101308337412::NO:::)

The location of dam maps and database for Douglas County and the City of Douglasville is maintained by the Douglasville-Douglas County Water Sewer Authority (DDCWSA). Also, Georgia's Safe Dam Program, which is regulated by the Georgia Environmental Protection Division, is a part of the Georgia Safe Dams Act, O.C.G.A. Secs. 12-5-370 et seq (https://epd.georgia.gov/watershed-protection-branch/safe-dams-program). This program is responsible for developing and maintaining an inventory of dams, classifying dams, and ensuring the compliance of all regulated dams. A dam considered under this Act is a structure that must either be at least 25 feet tall (vertical height) or store at least 100 acre-feet (volume) at maximum storage.

Dams in the State of Georgia are ranked by "Dam Hazard Classification," which is determined by the potential for infrastructure and property damages downstream if a dam failure were to occur. Current Dam Hazard Classifications are:

- Category I Dam: Indicates the probable loss of life determined by the Georgia Safe Dam Program. This dam classification has specific rules and regulations that must be applied to its design and

operation. A Category I dam is permitted is required and is regulated by the Georgia Environmental Protection Division (EPD).

- Category II Dam: Those dams where no occupied structures have been identified to be in the dam failure zone. With these dams, the Safe Dam Program is responsible for working with dam owners on their compliance with the Act and corresponding rules where necessary, taking enforcement actions against the owner who do not comply with the Act and Rules.

Following is the current (2020) Dam Inventory produced by Georgia's Safe Dam Program.

Table 31: Inventory of Douglas County, GA Dams as of April 19, 2020

Dam Name	Dam Hazard Classification	State ID
Mill Glen Lake Dam	I	048-004-00351
Mill Glen Lake Dam	I	048-004-00351
Mill Glen Lake Dam	I	048-004-00351
Mill Glen Lake Dam	I	048-004-00351
Mill Glen Lake Dam	I	048-004-00351
Mirror Lake Dam	I	048-025-02827
Mirror Lake Dam	1	048-025-02827
Plantation Subdivision Lake Dam	I	048-072-05532
166 Lake Dam	II	048-060-06075
Arbor Place Mall Storm Water Management Pond #1 Dam	II	048-066-05186
Arbor Place Mall Stormwater Management Pond #2 Dam	II	048-067-05187
Austin Lake Dam North	II	048-014-02788
Austin Lake Dam South	II	048-015-02789
Austin Lake Dam South	II	048-015-02789
Austin Lake Dam South	II	048-015-02789
Austin Lake Dam South	II	048-015-02789
Basket Creek Dam	II	048-035-02833
Battle Lake Dam	II	048-046-04243
Battle Lake Dam	II	048-046-04243
Battle Lake Dam	II	048-046-04243
Battle Lake Dam	II	048-046-04243
Bear Creek Reservoir Lake Dam	II	048-039-03927
Bear Creek Water Treatment Plant	II	048-070-05418
Big Lake Dam	II	048-061-04885
Camp Lake Dam	II	048-013-04113
Cedar Lake Dam	II	048-033-02832
Chapel Hills Lake Dam	II	048-055-04776
Coursey Lake Dam	II	048-016-02759
Crystal Lake Dam	II	048-038-02967
DDCWSA Reject Lake Dam	II	048-069-05279

Table 31: Inventory of Douglas County, GA Dams as of April 19, 2020 – Cont'd.

Dam Name	Dam Hazard Classification	State ID
DDCWSA Reuse Lake Dam	II	048-068-05278
Dog River Reservoir Dam	II	048-048-04519
Douglasville Lake Dam	II	048-043-00154
Echo Lake Dam	II	048-051-04731
Flyblow Creek Lake Dam	II	048-034-02848
Flyblow Creek Lake Dam	II	048-034-02848
Foxhall Farms Lake Dam No. 3	II	048-058-04882
George H Sparks Reservoir Dam No. 1	II	048-003-00169
George H Sparks Reservoir Dam No. 2	II	048-040-03972
George H. Sparks Reservoir Dam No. 3	II	048-042-03974
George H. Sparks Reservoir Dam No. 4	II	048-041-03973
Gerrell Lake Dam	II	048-050-04730
Gerrell Lake Dam	II	048-050-04730
Green Lake Dam	II	048-030-02790
Green Lake Dam	II	048-030-02790
Groover's Lake Dam	II	048-001-00080
Hay Lake Dam North	II	048-032-02831
Hudson Lake Dam	II	048-026-02828
Inner Harbour Lake Dam	II	048-017-05702
Jacks Hill Lake Dam	II	048-012-02521
Johnson Lake Dam	II	048-037-02850
Johnson Lake Dam	II	048-037-02850
Lake Greystone Dam	II	048-053-04733
Lake Sarah Glenn Dam	II	048-008-01840
Lake Sarah Glenn Dam	II	048-008-01840
Lake Sarah Glenn Dam	II	048-008-01840
Leatherwood Lake Dam	II	048-018-02760
Lunker Lake Dam	II	048-056-04880
Moccasin Lake Dam	II	048-036-02849
Noland Lake Dam	II	048-029-02846
Pine Lake Dam	II	048-009-01841
Saddle Lake Dam	II	048-057-04881
Shawnee Lake Dam	II	048-006-00570
Sims Lake Dam	II	048-027-02829
Strickland Lake Dam	II	048-031-02847
Thurman Lake Dam	II	048-023-02845
Thurman Lake Dam	II	048-023-02845

Data Source: Georgia Safe Dams Program

As mentioned in Douglas County's previous MJHMP update, the potential severity of a dam failure depends on the following factors:

- the size of the dam,
- the nature of the failure
- the velocity of the floodwater released,
- the density of the built environment and populations downstream
- the volume of water impounded by the dam

Currently, there is still not a standard scale to describe the extent of a dam failure based on severity and the geographic location of the dam.

4.2.3 – Previous Occurrences

As with Douglas County's previous MJHMP update (2015), various sources were reviewed to identify information, and data sources from the Environmental Protection Division verified to align with County data. Records still show no history of past dam failure in or near the planning area. There is no single, comprehensive source of open-source information about a dam failure in the State of Georgia. Though some private dam may have been breached, no records have been found to indicate an emergency response related to it. The probability of a dam failure event occurring within the planning area is reduced due to the continued monitoring and compliance of the Georgia Safe Dam Program.

4.2.3A – Probability of Future Events, Dam Failure

Calculating future probability is not the only predictor of future occurrences. In the last five years, Douglas County and its participating jurisdiction(s) do not have any documented cases of dam failure and incidences. Though the County has experienced occurrences that were listed in its MJHMP update (2015), the likelihood of a dam failure event happening in the planning area is considered **occasional**.

4.2.4 – Vulnerability & Impact

Douglas County and its participating jurisdiction(s) have recorded no incidences of dam failure since the last mitigation plan update in 2015. Still, a dam failure could have a tremendous impact on the planning area, including the environment, much like a flood event.

Vulnerability of Facilities

Facilities during a dam failure will have a similar vulnerability to a flood event in the planning area. As mentioned in the Flooding, Inland section of this plan update, critical facilities and infrastructure can be rendered unusable or permanently destroyed, producing a significant impact on a jurisdiction's ability to conduct day-to-day operations. Also, like a flood, a dam failure can cause considerable damage to residential and/or commercial structures that can irrevocably damage a community and its economy by creating economic hardship.

Douglas County and its participating jurisdictions' critical structures are valued at $10,715,696,000.

Vulnerability of Population

The greatest vulnerability of a jurisdiction's population is the inability to predict a dam failure due to it being uncontrollable by humans. Douglas County and its participating jurisdiction(s) have a total population of 145,331 in 53,033 housing units that would be at risk for a dam failure in the planning area.

It is important to note that no injuries or deaths have occurred in Douglas County or its participating jurisdictions as a direct result of dam failure.

4.2.4A –Critical Facilities & Infrastructure

All critical facilities and infrastructure within the planning area are equally at risk of a dam failure incident. This is especially true for homes, businesses, and critical facilities that are in close proximity to a dam. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

As indicated in its previous MJHMP update (2015), public awareness, education, and outreach to the residents of Douglas County and its participating jurisdiction(s) on dam safety should be implemented as mitigation measures within the community. Dam failure should be included in emergency action plans for not only local government but also critical facilities that are geographically located near a dam.

4.2.4C – Unique & Varied Risk

As dams continue to age, there is an increased potential of failure due to undesirable woody vegetation on the embankment, deteriorating concrete, and other structural factors that can cause issues over time. A failure could cause widespread flooding, putting the entire planning area at risk, particularly those living near dam. Fortunately, with the Georgia State Dam Program providing monitoring and compliance of the dams within the Douglas County, the probability of failure is **unlikely**.

Table 32: Unique & Varied Risk

Unique & Varied Risk	
Jurisdiction	**Risk Characteristics**
Douglas County	Low risk with continued maintenance on dams within the planning area

4.2.4D Repetitive Loss Structures

Not applicable.

4.2.5 HAZUS® Models

Not applicable.

4.2(HM) – Hazardous Materials

Photo Source: Ready.gov

4.2.1 – Hazard Description

A hazardous material (HazMat) is any item or agent—biological, chemical, physical—with potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Hazardous materials can be present in any form: gas, solid, or liquid; environmental or atmospheric conditions can influence them if they are uncontained. A release of hazardous materials can be caused by a spill, leak, fire, explosion, pipeline break, transportation accident, or human action, resulting in contamination of people and/or property.

The U.S. Occupational Safety and Health Administration (OSHA) defines a hazardous material as any substance or chemical posing a health hazard, or physical hazard, including: chemicals that are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents that act on the hematopoietic system; agents that damage the lungs, skin, eyes, or mucous membranes; chemicals that are combustible, explosive, flammable, oxidizers, pyrophoric, unstable-reactive or water-reactive; and chemicals that, in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke that may have any of the previously mentioned characteristics.

Hazardous materials are so widely used, transported, and stored, often in large quantities, that a spill or other event could happen nearly anywhere in the U.S. The effects may involve a local site or many square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or be gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material. Accidents involving the transportation of hazardous materials could be just as catastrophic as those associated with stored chemicals, possibly more so, since the location of a transportation accident is not predictable.

The U.S. Department of Transportation (DOT) divides hazardous materials into nine major hazard classes. A hazard class is a group of materials that share a common major hazardous property, i.e., radioactivity, flammability, etc. These hazard classes include:

- Class 1—Explosives
- Class 2—Compressed Gases
- Class 3—Flammable Liquids
- Class 4—Flammable Solids; Spontaneously Combustible Materials; Dangers When Wet Materials/Water-Reactive Substances
- Class 5—Oxidizing Substances and Organic Peroxides
- Class 6—Toxic Substances and Infectious Substances
- Class 7—Radioactive Materials
- Class 8—Corrosives

- Class 9—Miscellaneous Hazardous Materials/Products, Substances, or Organisms

The U.S. DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA), which focuses on advancing the safe transportation of energy and other hazardous materials across the country, continually collects and shares information on the size, frequency, and impacts of hazardous materials releases occurring in transit. This includes incidents happening in transit storage, as well as during loading and unloading. Between January 1, 2015 and December 31, 2018, PHMSA recorded the following number(s) of transportation-related HazMat events in the U.S.: 16,858 in 2015; 18,286 in 2016; 17,482 in 2017; and 19,839 in 2018.

Certain incidents involving hazardous materials, whether in transit, stored, in use, or produced, are reported to the federally established National Response Center (NRC). Staffed 24 hours a day by U.S. Coast Guard officers and marine science technicians, the NRC is the designated federal point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the U.S. and its territories. Reports to the NRC activate the National Contingency Plan and the federal government's response capabilities. The NRC maintains reports of all releases and spills in a national database. In 2018, it logged 25,600 incidents nationwide.

Eight of the most common hazardous materials that first responders, HAZMAT teams, and perhaps the NRC's On-Scene Coordinator are likely to encounter in the event of an industrial accident or transportation-related incident are: carbon dioxide, chlorine, fireworks, gasoline, argon, sulfuric acid, propylene, and liquified petroleum gas (LPG). The "List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Section 112(r) of the Clean Air Act" is available from the U.S. Environmental Protection Agency (EPA).

While it is nearly impossible to eliminate HazMat incidents altogether, there are many precautions industries can take to stay safe in the event of industrial or accidental (i.e., transportation-related) spillage. The same holds true for the communities located in close proximity to these industries, as well as the highways, railroads, pipelines, and air/water transportation systems they routinely use to move hazardous materials. Through a better understanding of the hazardous materials common to a particular area, along with specifics on how best to react if and when an incident occurs, risks can ultimately be minimized, and remediation simplified.

4.2.2 – Location & Extent

While it is nearly impossible to eliminate HazMat incidents altogether, there are many precautions industries can take to stay safe in the event of industrial or accidental (i.e., transportation-related) spillage. The same holds true for the communities located in close proximity to these industries, as well as the highways, railroads, pipelines, and air/water transportation systems they routinely use to move hazardous materials. Through a better understanding of the hazardous materials common to a particular area, along with specifics on how best to react if and when an incident occurs, risks can ultimately be minimized, and remediation simplified.

According to 2018 Preliminary Toxics Release Inventory (TRI) data, of the nation's 21,612 toxics-releasing facilities, 700 are located in the state of Georgia. In fact, the State ranks number 22 out of 56 states/territories based on total releases per square mile. Of those 700 facilities reporting toxic release

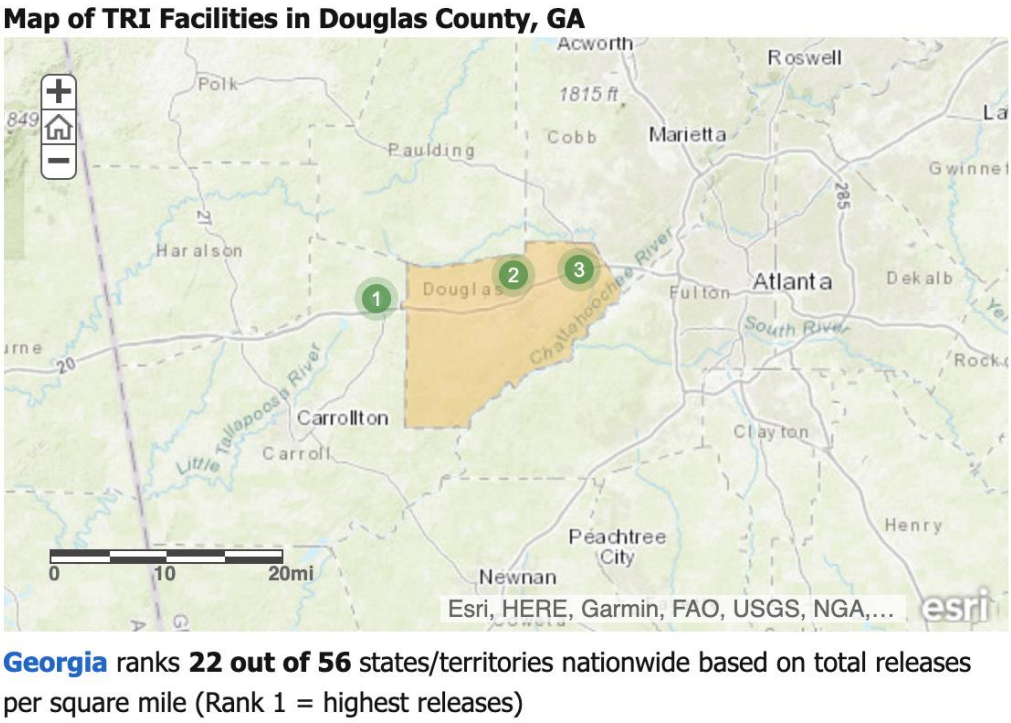
information in Georgia, six are located in Douglas County and more specifically, the City of Douglasville. The presence of these sites within and near Douglas County, along with the routine transportation of hazardous materials, contribute to the HazMat risk. The following quick facts for Douglas County (2018) are provided by TRI.

Table 33: TRI Facilities, Douglas County, GA

Facilities	Douglas County, GA	United States
Number of TRI Facilities:	6	21,612
Total Production-Related Waste Managed:	884.5 thousand lbs.	32.1 billion lbs.
Total On-site and Off-site Disposal or Other Releases:	13.0 thousand lbs.	3.8 billion lbs.
Total On-site:	13.0 thousand lbs.	3.3 billion lbs.
• Air:	13.0 thousand lbs.	606.0 million lbs.
• Water:	0 lbs.	195.1 million lbs.
• Land:	0 lbs.	2.5 billion lbs.
Total Off-Site:	0 lbs.	466.5 million lbs.

Data Source: United States Environmental Protection Agency TRI Explorer

Map 25: TRI Facilities Map, Douglas County, GA



Source: United States Environmental Protection Agency TRI Explorer

Regarding the transport of hazardous materials, there are many avenues for doing so across Douglas County. The Douglas County Comprehensive Transportation Plan states that the only freeway in Douglas County, I-20, spans the entire east-west length of the County, approximately 18 miles long. Obviously, the

interstate supports large volumes of traffic on a regular basis. Along with I-20, the following State Routes are present throughout Douglas County: SR5, SR92, SR6, SR 166, & Hwy 78.

Douglas County and surrounding counties are major corridors for Amtrak®, CSX and Norfolk Southern rail services. The high incidence rate of transportation-related events is the location of the Norfolk Southern Railway intermodal facility in Austell, Georgia. Although this facility is located in Cobb County, the main thoroughfare for access to it is Thornton Road (through Douglas County) to Interstate-20.

Following is a base map showing the major transportation routes and railroads in Douglas County.

Map 26: Georgia Department of Transportation – Douglas County, GA General Highway Map

Map Source: Georgia Department of Transportation

HazMat incidents pose significant risk to humans, animals, or the environment in Douglas County. Depending on the type of hazardous material(s) and the size of the area impacted, the losses could be minor, major, or significant.

Possible Losses to Critical Facilities
Critical functional losses
Structural and contents losses, if an explosion is present
Contamination

Possible Losses to Structures
Inaccessibility
Contamination
Structural and contents losses, if an explosion is present
Business closures and associated business disruption losses

Possible Ecologic Losses
Loss of wildlife
Loss of habitat
Degraded air and water quality

Possible Social Losses
Cancelled activities
Emotional impacts of significant population losses and illness

Adding to the risk of a HazMat incident occurring within Douglas County is the presence of illegal drugs. Home-based labs producing methamphetamines are of particular concern as they involve the mixing of extremely dangerous chemicals. Georgia has the unwanted record of having one of the biggest meth busts on American soil after five men were arrested in fall 2017 for trafficking 30 kilos of the drug, which had a street value of more than $3 million. The Douglas County Sherriff's Office indicates that methamphetamine is now one of the biggest problems facing Douglas County and its participating jurisdiction(s).

Both the Drug Enforcement Administration (DEA) and Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) maintain comprehensive records (now accessible for public view) of the homes and locations of known and closed methamphetamine labs either flagged for mitigation, demolition, or other remediation strategies. Also, the Georgia Bureau of Investigation administers the Authorized Central Storage System (ACS) program. This program began in January 2015 with a new program rolled out in the Spring of 2015 with the sole purpose of the central storage program, hazardous materials storage containers are placed with host agencies throughout the state to consolidate and store materials from clandestine labs. Through participation in the program is not required, agencies are free to make their own arrangement for clandestine lab cleanup but must pay these costs with local funds.

4.2.3 – Previous Occurrences

Given the presence of six TRI facilities in Douglas County (again, all six are located in the City of Douglasville) and the continuous storage, production, use and transportation of hazardous materials across its main thoroughfares, the entire planning area is at risk of a HazMat incident.

Based on information obtained from the Georgia Environmental Protection Division, Public Compliant Search, there were 6 significant transportation-related HazMat (spill) incidences that occurred in Douglas County and its participating jurisdiction(s) between January 1, 2016 and April 1, 2020. Details of the events are provided below:

April 8, 2016, Douglas County/Douglasville, Hazardous Material Spill – A call received from Georgia State Patrol (GSP) stated a TruGreen lawn care truck had overturned and some of the liquid has leaked onto the ground. Trooper stated the driver had been transported and then he placed Douglas County Fire Department Captain on the phone. The Douglas County Captain stated the TruGreen truck was hauling 300 gallons of a mixture of Urea Nitrogen Fertilizer 46-0-0, Riverdale Manor Selective Herbicide and Dimension 2EW Herbicide. The Douglas County Fire Captain removed the safety data sheets from the truck and forwarded them to GSP via picture text. Douglas County Fire Captain stated a wrecker was on site and preparing to upright the TruGreen truck without offloading the product. Captain Shelton stated he would protect the nearest storm drain before the TruGreen truck was uprighted and that he was prepared to contain the spill if the load was lost in the uprighting process. No storm drains or water were impacted. No injuries or deaths and no damage were associated with the event.

August 3, 2016, Douglas County/Fairburn, Hazardous Material Spill – A caller reported that a side-loader released an estimated 50 gallons of hydraulic fluid onto asphalt. The release was contained, absorbents deployed, and Hull's Environmental contacted to remediate. Follow-up investigation reported an email received from GEMA/HSA and confirmed receipt contacted CSX, Otto Angeles that 10-15 gallons were released. Hull’s Environmental was onsite to perform the cleanup. Dry absorbent pads placed. No waterways affected. No injuries or deaths and no damage were associated with the event.

October 2, 2017, Douglas County/Douglasville, Hazardous Material Spill – A caller reported a warehouse fire with containers of Xylenepolyurethane inside. GEMA/HS-SWP confirmed receipt of report from Douglas County FD Battalion Chief, who stated the interior was engulfed in flames and they were applying water to the outside of the structure and two propane tanks to prevent them from overheating. The condition of chemicals housed inside was unknown, but no runoff was observed. GEMA/HS-SWP checked EPlan website and called Custom Bath Works, who was on scene and made aware that a cleanup contractor may have to be hired to recover chemicals from flowing off property and preventing contamination of state waters. Custom Bath Works called back at 15:09, stating that the fire had been extinguished and the only known chemical to not be consumed in the fire and leave the warehouse was a 2,000 gallon container of resin. It had flowed out of a bay door and had already begun hardening in the gravel/grassy area a short distance from the warehouse, therefore containing itself and not flowing off property or potentially impacting any waterways. Following the insurance assessor's visit, the hardened resin and impacted soils was loaded into a roll-off for disposal. No waterways were affected. No injuries or deaths and no damage were associated with the event.

January 1, 2019, and January 4, 2019, Douglas County, Hazardous Material Spill – A caller reported that natural gas released from a meter station. The exact cause of the release was unknown. As of January

4, 2019, the 48-hour PHMSA Update related to this event reported the cause of the release was due to a gasket failure. There were no injuries, deaths, evacuations, or damage associated with the event.

March 24, 2019, Douglas County/Douglasville, Hazardous Material Spill – A caller reported that an individual dumped cleaning fluid into a creek from a van. The caller stated that his neighbor had posted some pictures on Facebook showing the SRP First Class Cleaning van dumping liquids into the stream next to his house on March 23, 2019. A picture was requested of the caller. He was asked if he had witnessed the dumping in the area, and he stated no but that he observed the van parked in the area of the alleged dumping. Law Enforcement (Police, Sheriff, or Code Enforcement) had not been contacted at the time of the call. According to the neighbor's Facebook post, the neighbor was going to contact the Water/Sewer Authority the following day (03/25/2019) to report the incident. Follow-up to the incident report call the next day—Douglas County Code Enforcement was called and a meeting with the complainant was scheduled with the complainant on the same day.

4.2.3A – Probability of Future Events, Hazardous Materials

Like in the 2015 MJHMP update, various sources were reviewed to identify information about toxic releases. Although there is no single, comprehensive source of open-source information about hazardous materials in the state, there are several specific sources that can be queried.

The events that can produce a hazardous material release vary significantly, and therefore future releases are statistically independent of past events. The fact that all releases have a human component that makes prediction difficult. Unfortunately, the short period of recorded and observed historical data that contribute to the risk make it challenging to develop return periods for hazardous material release areas in Douglas County. As stated previously, given the presence of six TRI facilities in Douglas County (again, all six located in the City of Douglasville) and the continuous storage, production, use, and transportation of hazardous materials across its main thoroughfares, the entire planning area is at risk of a HazMat incident.

Douglas County and its participating jurisdiction(s) can expect a HazMat event with a 83% probability per year, or 0.83 events per year, as indicated in the following table. The qualitative chance of a hazardous materials event in Douglas County and its participating jurisdiction(s) is considered **highly likely**.

Table 34: Probability of Future Events, Hazardous Materials

Probability of Future Events, Hazardous Materials	
Event Year	**Event Count**
2015	0
2016	2
2017	1
2018	0
2019	2
2020	0
Total Recorded Events =	5
Total Years =	6
Yearly Probability =	**83%**

Data Source: Georgia Environmental Protection Division, Public Complaint Search – The Complaint Tracking System Public Inquiry Portal (https://cts.gaepd.org/Public)

4.2.4 – Vulnerability & Impact

Hazard materials that are processed correctly and transported safely are not impactful to the community in a negative way. However, hazardous materials could have a significant impact if there was a chemical release or explosion involving chemicals within the planning area. Also, Douglas County has seen an increase in the presence of illegal drugs due to home-based labs producing methamphetamines. The probability of a hazardous materials events in the planning area as depicted in Section 4.3.3A, at 0.83 events per year. Again, according to Table 10: Probability Categories, a hazardous materials incident is considered **highly likely** for Douglas County and its participating jurisdiction(s).

Vulnerability of Facilities

It is next to impossible to predict where a hazardous materials event will happen because it involves the human aspect. However, areas surrounding the train tracks and the plants that produce hazardous waste are naturally more vulnerable to a hazardous material event.

Vulnerability of Population

Depending upon the chemical, if a hazardous material incident were to occur, this could significantly impact the population of Douglas County. Not only are the workers at the hazardous waste sites vulnerable, but so too are the communities around the facilities themselves. Train tracks and even major highways are also vulnerable. Anything from minor irritation to death can occur if certain materials are inhaled or exposed to humans.

Vulnerability of Systems

A hazardous materials event will affect transportation routes in and out of the Douglas County. A train wreck involving a hazardous material event will force the tracks to be shut down. Similarly, a truck wreck on the interstate or other roadways in Douglas County will stop traffic and may require the evacuation of area homes, schools, businesses, etc.

4.2.4A – Critical Facilities & Infrastructure

All critical facilities and infrastructure within the planning area are equally at risk of a HazMat incident. This is especially true for homes, schools, businesses, and critical facilities that are in close proximity to rail transportation and highways, including I-20 and State Roads within the Douglas County. A complete list of critical facilities and infrastructure can be found in Appendix D.

4.2.4B – Land Use & Development Trends

Hazardous materials incidents can have a prominent, direct environmental impact and cause long-term, insidious ecological damage. Water pollution is an immediate concern for direct human consumption, recreation, crop irrigation, and fish and wildlife consumption. Depending on the material, pollutants can bioaccumulate to differing degrees, affecting animals high on the food chain long after a spill. Hazardous material incidents would not likely affect geology, but could significantly impact soils and farmlands, requiring expensive remediation. Unless a spill is directly adjacent, hazardous materials incidents are unlikely to affect historical or archeological sites. In terms of location and extent, when a hazard material incident occurs in Douglas County, there is a chance it will not only involve dirt or surface material but will also include flowing water in ditches, rivers, or small streams. Other potential concerns for spills/leaks are icy road conditions during winter months, sabotage, and terrorism.

4.2.4C – Unique & Varied Risk

Douglas County, as a whole, is vulnerable due to the transportation of hazardous materials by rail and road transportation. As the state highway and railway corridors travel through and around Douglas County, much of Douglas County could potentially be affected by a hazardous spill or radiological event.

4.2.4D – Repetitive Loss Structures

Not applicable.

4.2.5 – HAZUS® Models

Not applicable.

4.3 – Hazard Risk Summary

The following table (Table 35) outlines each participating jurisdictions' general risk to this plan's profiled hazards. The rankings are based on a composite evaluation of this plan's risk assessment, namely, a hazard's probability of occurring in the future, the vulnerability of a jurisdiction to a specific hazard, the intensity of past hazard impacts, and a joint evaluation of local experts and stakeholders.

Table 35: Hazard Risk Summary

Hazard Risk Summary									
Jurisdiction	**Hazard(s)**								
	Drought	**Hazardous Materials**	**Inland Flooding**	**Severe Weather**	**Tornadoes**	**Wind**	**Severe Winter Weather**	**Wildfire**	**Dam Failure**
Douglas County	Highly Likely	Highly Likely	Likely	Highly Likely	Unlikely	Likely	Likely	Occasional	Occasional
The City of Douglasville	Highly Likely	Highly Likely	Likely	Highly Likely	Unlikely	Likely	Likely	Occasional	Occasional

4.4 – Excluded Hazards

Coastal Hazards

Coastal Hazards was excluded from the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update), and was not mentioned as a hazard of concern with this plan update.

Extreme Heat

The State of Georgia Hazard Mitigation Strategy, Standard and Enhanced Plan (March 2019) does not identify Douglas County as being at risk from extreme heat. The hazard, Extreme Heat, was excluded from the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update), and was not mentioned as a hazard of concern with this plan update.

Geological Hazards

The State of Georgia Hazard Mitigation Strategy, Standard and Enhanced Plan (March 2019) does not identify Douglas County as being at risk from geological hazards, including landslides. The USGS's landslide risk database also corroborates this claim. Geological Hazard was excluded from the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update), and was not mentioned as a hazard of concern with this plan update.

Hurricane Wind

The State of Georgia Hazard Mitigation Strategy, Standard and Enhanced Plan (March 2019) does not identify Douglas County as being at risk from hurricane wind. Hurricane Wind was excluded from the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update), and was not mentioned as a hazard of concern with this plan update.

Seismic Hazards

Seismic Hazards was excluded from the 2015 Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update), and was not mentioned as a hazard of concern with this plan update.

***Note**: Human-caused hazards, though identified in the State of Georgia Multi-Hazard Mitigation Plan and Statewide Hazard Assessment, are not included in previous Douglas County Multi-Jurisdictional Hazard Mitigation Plan nor this plan update. These include: Communicable Disease and Terrorism.*

***Note**: Related to Communicable Disease, as of March 2020, the United States is fighting the coronavirus (COVID-19) pandemic. COVID-19 is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus, first identified during an investigation into an outbreak in Wuhan, China. The Georgia Department of Public Health (DPH), in consultation with the Centers for Disease Control and Prevention (CDC), is evaluating patient information received from healthcare providers about potential cases of coronavirus in Georgia. As of March 26, 2020, a State of Emergency that includes a "Shelter in Place" order was declared for Douglas County, GA. This declaration took effect Thursday, March 26, 2020, and ended on Thursday, April 30, 2020. More information about this pandemic can be found on Douglas County's website at https://www.celebratedouglascounty.com/371/Updates.*

4.5 – Special Consideration, Climate Change

Climate change, as described by the National Aeronautics and Space Administration (NASA), is "a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates."

Further, NASA states, "Changes observed in Earth's climate since the early 20th century are primarily driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere, raising Earth's average surface temperature. These human-produced temperature increases are commonly referred to as global warming. Global warming is the long-term heating of Earth's climate system observed since the pre-industrial period (between 1850 and 1900) due to human activities, primarily fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere."

Scientific observations, coupled with climate data records, provide evidence of climate change "key indicators." Among them are global land and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and severity changes in extreme weather such as hurricanes, heatwaves, wildfires, droughts, floods and precipitation; and cloud and vegetation cover changes, to name a few.

Many of the hazards identified within this update to Douglas County's MJHMP are, in one way or another, potentially affected by climate change. These include Drought, Flood (Inland), Severe Weather, Tornado, Wind, and Severe Winter Weather. Climate change can also have an effect on Wildfire, as rising temperatures and drought can create fire tinderboxes.

Health Risks

Certain people are more vulnerable to emerging climate change impacts. Climate change raises health risks for people with existing physical or mental illness, children, and older adults, those who work outdoors, and those living in areas prone to flooding. Climate change can lead to weather events and

conditions that are associated with health hazards such as 1) heat waves, which can cause heat-related illnesses, heat stroke, and other serious health problems, 2) extreme drought and flooding, 3) disruptions to agriculture, i.e., altered growing and storage conditions requiring changes in crop and livestock species or food production practices.

Given the potential for climate change to increase the frequency and magnitude of natural hazards, FEMA encourages states, regions, counties, and municipalities to consider climate change when mitigating hazards.

Section 5 – Mitigation Strategies

5.1 – Mitigation Capabilities

Planning Process
Local Procedures & Resources
Planning Area
Hazard Risk Assessment
Mitigation Strategy
- Mitigation Capabilities
- Floodplain Programs
- Mitigation Goals
- Mitigation Projects
- Mitigation Evaluations & Prioritizations
- Planning Integration

Each type of plan stakeholder provides a set of capabilities, in some cases broad and in some cases narrow, by which they can increase the planning area's resiliency.

County and Municipal Governments

The broadest form of mitigation capabilities come from county and municipal governments. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

Institutional Capability

Douglas County is a whole community that can implement the mitigation strategies identified herein. In addition, the County can promote the mitigation process, further educating the public about the hazards prevalent to the area, as well as the mitigation process necessary to mitigate those hazards.

In an emergency, county/municipality response is an extraordinary extension of responsibility and action, coupled with normal day-to-day activity. Normal governmental duties will be maintained, with emergency operations carried out by those agencies assigned specific emergency functions under the Douglas County Emergency Operations Plan, or EOP.

Political Capability

During the process of developing this MJHMP update, opposition to mitigation measures was not evident from Douglas County, the City of Douglasville, and the many plan stakeholders. The primary limiting factor is funding, which is made more difficult by the current situation in the local, state, and national economy.

Douglas County, through partnerships with the participating agencies, is well-organized and responsive to community needs. Leadership is informed and remains up-to-date on the hazards that threaten the area. Citizens who participated in the public meetings and presentations showed a genuine interest in doing things to promote a safer and more resilient community. All (the governing board, staff, and citizen population) appear willing to promote the economic efficiency and social utility of the mitigation measures contained in this plan, if appropriate funding can be identified.

Technical Capability

Douglas County and its participating jurisdiction(s) have the basic technology needed to mitigate and respond to natural disasters. They are equipped with phone and fax lines and a functional Emergency Operations Center (EOC) in case of disaster. Most key persons are equipped with cell phones, which can act as a backup to landlines in case service is lost. The County is connected to the internet, which is a valuable source of information on approaching hazards and mitigation measures. The County sponsors a website where there is a link to the Douglas County Emergency Management Agency (https://www.celebratedouglascounty.com/188/Emergency-Management). The County's GIS (mapping) services are limited, but until municipal governments fully implement GIS standard services, appropriate

state agencies, like the Georgia Mitigation Information System supported by GEMA, will provide the necessary support.

Fiscal Capability

The stakeholders of this mitigation plan are not unique in the issues felt by small governments to retain the staff and resources necessary to accomplish the strategies necessary to mitigate local hazards. However, they are aware of potential diverse funding sources available to communities for assisting in the fiscal needs required to implement local hazard mitigation plans, including both government and private programs.

While federal and state programs carry out the bulk of disaster relief programs that provide funds for mitigation, local governments can search for alternative funding sources to supplement the local hazard mitigation budget. The participants in the mitigation planning process are aware that before effective mitigation strategies can be applied, stable funding sources and effective incentives must be established on a per project basis to encourage participation by the private and public sectors.

5.1.1 – Authorities & Regulations

General Authority

Georgia State law provides the legal authority for local governments to implement regulatory measures. The basis for much of this authority is the local government power designed to protect public health, safety, and welfare. This authority enables local government to enact and enforce ordinances, and to define and abate nuisances. Hazard mitigation is a form of protecting public health, safety, and welfare, and falls under the general regulatory powers of local government. This also extends to building codes and inspections, land use, acquisition, and floodplain development regulation.

Building Codes and Inspections

Building codes and inspections provide local governments with the means to maintain county structures that are resilient to natural hazards. Douglas County has adopted the following building construction codes within the County (https://www.celebratedouglascounty.com/224/Building-Permits-Inspections). These codes were adopted and amended by the Georgia Department of Community Affairs (https://www.dca.ga.gov/local-government-assistance/construction-codes-industrialized-buildings/construction-codes).

The following table reflects the Douglas County Building Codes as of August 20, 2020

Table 36: Douglas County Building Codes as of August 20, 2020

Douglas County Building Codes	
2020 Georgia State Amendments	International Building Code (IBC), 2018 Edition with 2020 Amendments
International Residential Code (IRC) for One- and Two-Family Dwellings, 2018 Edition with 2020 Amendments	International Fire Code (IFC), 2018 Edition with No Amendments
International Plumbing Code (IPC), 2018 Edition with 2020 Amendments	International Mechanical Code (IMC), 2018 Edition with 2020 Amendments
National Green Building Standard (NGBS), 2009 Edition with 2011 Amendments	International Fuel Gas Code (IFGC), 2018 Edition with 2020 Amendments
International Energy Conservation Code (IECC), 2015 Edition with 2020 Supplements & Amendments	2017 Edition of the National Electrical Code
2015 Edition of the International Property Maintenance Code	International Green Construction Code 2018 Edition
International Swimming Pool and Spa 2018 Edition	International Performance Code for Building and Facilities 2018

Douglas County officials have the primary role of enforcement of the International Building Code (IBC) structural regulations. The Douglas County Building Department also take part in the inspection process for general public safety, construction, and building inspections. They enforce the appropriate codes both at the plan approval stage and the site inspection stage. These codes prescribe minimum standards for building construction, which ensures that new buildings and structures are built to standards that are seismically sound, fire resistant and developed within flood-proofing measures. These codes also require appropriate hazard code updating and compliance when certain thresholds are met for remodel and renovation of existing buildings. These codes also authorize local governments to carry out building inspections to ensure local structures adhere to the minimum state building standards.

The City of Douglasville Building Division of the Community Development Department provides service to Commercial and Residential Development; commercial plan review; and residential plan review (https://www.douglasvillega.gov/government/city-departments/community-development-department/building-department). The City of Douglasville Building Division is focused on insuring thorough permitting and inspections, that all the codes of the City of Douglasville are followed, and that each and every building is safe the community.

Douglas County and its participating jurisdiction(s) are committed to the high standards of building provided through the respective codes, and requires that the same codes and the same enforcement procedures apply during routine permitting procedures as well as following a disaster. Douglas County and its participating jurisdiction(s), i.e., the City of Douglasville, will receive a copy of this Douglas County Multi-Jurisdictional Hazard Mitigation Plan update to use as a resource when updating plans and identifying new projects. Additionally, each jurisdiction(s)' Floodplain Manager, Public Works Director, Planning and Zoning Director, Fire/HazMat/Wildfire Department, and Office of Economic Development will continue to play an active role on the Mitigation Planning Committee and provide guidance for their respective jurisdiction(s). The County also includes a copy of the plan in each of the County's local libraries for public use.

Land Use Planning

Through land use regulatory powers granted by the state, local governments can control the location, density, type and timing of land use and development in the community. Provisions of the land use plans are implemented through regulatory tools that include zoning and subdivision ordinances, and taxation. All

participating municipal governments have direct land use planning programs through ordinances, codes, and zoning policies.

Taxation

Taxation can be a powerful mitigation tool by providing local governments with a way to guide development. Tax abatements may be used to encourage landowners and developers to integrate mitigation measures into the process of building new developments and retrofitting existing properties in the floodplain. These tools can be especially effective in encouraging the mitigation of existing structures.

5.1.2 – Floodplain Programs

Douglas County and the City of Douglasville, GA, are participants in the National Flood Insurance Program (NFIP). Likewise, both Douglas County and the City of Douglasville are participants of the Community Rating System (CRS) program. The table on the following page contains a list of each community and their NFIP or Community Rating System (CRS) status.

Floodplain management is the operation of a community program of measures for reducing flood damage. These measures take a variety of forms; and generally, include zoning, subdivision, or building requirements, and special-purpose floodplain ordinances. Each participating jurisdiction has codified floodplain development regulations in place.

Each NFIP participating community's floodplain program is administered by a county's floodplain administrator. NFIP Coordinators/Floodplain Administrators utilize by adoption federally created flood hazard maps to administer their programs and to actuarially rate new construction for flood insurance or development restrictions.

In Douglas County, new residential construction is prohibited within the floodplain and any other construction is restricted. This restriction is enforced through the building permit application process. When an individual or business applies for a construction permit, its location within or outside of an identified floodplain is noted and reviewed by Douglas County's NFIP Coordinator/Floodplain Administrator.

Under a Memorandum of Understanding (MOU) with Douglas County and the City of Douglasville, the Douglasville-Douglas County Water and Sewer Authority reviews all plans for requiring a land disturbance permit for compliance with NFIP and local floodplain regulations. This includes construction adjacent to and within the floodplain. This process meets the minimum federal regulations set forth by the NFIP. In the event a property already exists within an identified floodplain, the local NFIP Coordinator/Floodplain Administrator facilitates the purchase of insurance against flood losses through the federal government.

The following table reflects the NFIP and CRS Community Status as of August 21, 2020.

Table 37: NFIP & CRS Community Status

NFIP & CRS Community Status						
FEMA Community Status Book Report, Georgia – Communities Participating in the National Flood Program (08/21/2020)						
Jurisdiction	**CID**	**CRS Rating**	**Initial FHBM Identified**	**Initial FIRM Identified**	**Current Effective Map Date**	**Registration/ Emer Date**
Douglas County	130306#	C	03/05/76	01/02/80	03/04/13	01/02/80
The City of Douglasville	130305#	C	04/25/75	06/25/82	03/04/13	06/25/82

Data Source: Federal Emergency Management Agency (FEMA), Community Status Book: https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book

National Flood Insurance Program (NFIP) Considerations:

Douglas County and the City of Douglasville have been with NFIP since 1980 and 1982, respectively. The following table reflects the number of insurance policies in force at the time of this MJHMP update.

Table 38: NFIP Considerations, Policies in Force

City/County Name	Number of Policies in Force
Douglas County	180
City of Douglasville	73
Total	**253**

Data Source: Douglas County and https://www.betterflood.com/how-to-get-flood-insurance-in-georgia_georgia-flood-map/ (for the City of Douglasville)

5.2 – Mitigation Goals

Goals for Douglas County and its participating jurisdiction(s) were established based upon results from the local and state risk assessments, stakeholder meetings, and input from non-planning team local jurisdiction and state officials. These goals represent Douglas County and its participating jurisdiction(s)' long-term vision for the continued reduction of hazard risks and the enhancement of mitigation capabilities.

Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.

Goal 2: Pursue additional, complete, and accurate data in support of mitigation planning, disaster preparedness, disaster response, and disaster recovery operations.

Goal 3: Integrate the pre-disaster mitigation plan's findings into the planning, and decision- making processes for all current and future emergency management and preparedness related activities.

Goal 4: Minimize the risk to property from droughts.

Goal 5: Minimize the risk to like and property from flood (inland).

Goal 6: Minimize the risk to life and property from severe weather.

Goal 7: Minimize the risk to life and property from severe winter weather.

Goal 8: Minimize the risk to life and property from tornadoes.

Goal 9: Minimize the risk to life and property from wildfires.

Goal 10: Minimize the risk to property from wind events.

Goal 11: Minimize the risk to life and property from dam failures.

Goal 12: Minimize the risk to life and property hazardous materials (incidents).

5.3 – Mitigation Projects

To support its mitigation goals, the Douglas County MPC identified a comprehensive range of 40 possible and unique mitigation projects and activities. The selected set carefully takes an all-hazards approach to mitigation while simultaneously addressing each of the plan's profiled hazards.

This plan update's list of projects and actions were selected based upon their potential to reduce the risk to life and property with an emphasis on new and existing infrastructure, ease of implementation, community and agency support, consistency with local jurisdictions' plans and capabilities, available funding, vulnerability, and total risk. The plan update also includes 39 "carryover" projects (Table 41) from Douglas County's previous MJHMP, as they are still relevant, in progress, or ongoing. Also, the hazards, the mitigation goals, objectives, and measures that were developed jointly between Douglas County and the City of Douglasville (in the previous plan) have been carried over to this plan update due to being deferred because of a lack of funding and resources available to complete the mitigation projects/actions during the last 5-year cycle. The only exception to this is carryover mitigation action, Douglas 14, aimed at portion of Villa Rica within Douglas County.

Douglas County has completed three mitigation projects since the last plan was approved in April 2016. One project, conducted flood studies, as needed to identify flood-prone areas throughout Douglas County and submit to FEMA for inclusion on the flood insurance rate maps. This mitigation project allowed for all five basins to be studied and identified the properties to purchase in the repetitive loss within Douglas County and its participating jurisdiction(s). The second project completed was the installation of a Countywide Hi-Band Radio Trunked System. The radio was installed and became active and functioning in February 2020. The final cost to complete this mitigation project was $14.9 Million. The purchase of emergency generators for all water pumping stations and lift stations was the third mitigation project to be completed since the last mitigation plan was approved. Douglasville-Douglas County Water and Sewer Authority (DDCWSA) is responsible for the continual maintenance of this equipment.

For further information on evaluation criteria, please see Section 5.4 – Mitigation Project Evaluations & Prioritization. The full list of mitigation projects, their descriptions, and prioritization per jurisdiction and stakeholder can be found in Appendix E – Mitigation Project Prioritization.

The table on the following page summarizes the hazards addressed by each mitigation project and activity, and the corresponding participating jurisdiction(s) suggested to undertake the project or activity.

***Note**: Some projects and actions mitigate risk and vulnerability to multiple hazards. Some of these projects and actions list participating jurisdictions that are only at risk from one or a few of the mitigated hazards. For instance, the project: ''Ensure That Future Land Use Planning Takes into Consideration the Possible Effects of All-Hazards mitigate against multiple hazards, including drought, hazardous materials, flooding (inland), severe weather, tornadoes, winds, severe winter weather, wildfire, and dam failure.*

Table 39: Mitigation Projects/Activities Summary

Mitigation Projects/Activities Summary		
Mitigation Project or Activity	**Hazard(s) Addressed**	**Jurisdiction(s)**
Install Uninterruptible Power Supplies on Critical Electronic Equipment in County and City Facilities	Severe Weather	Douglas County
Equip all County and Public Gathering Places with Lightning Detectors	Severe Weather	Douglas County
Install Surge Protectors on Electronic Equipment in County and City Facilities	Severe Weather	Douglas County; City of Douglasville
Review Existing Building Codes and Seek Areas for Improvement	Severe Weather	City of Douglasville
Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Roadways, Emergency	Severe Weather	Douglas County; City of Douglasville
Continue to Acquire Structures in Identified Repetitive Loss Areas Throughout Douglas County	Inland Flooding	Douglas County; City of Douglasville
Continue the Inspection and Maintenance of the Public Storm Water Drainage System	Inland Flooding	Douglas County; City of Douglasville
Apply Local Ordinance and Design Standards to New Development to Prevent New	Inland Flooding	Douglas County; City of Douglasville
Acquire Flood Prone Structures throughout Douglas County	Inland Flooding	Douglas County
Ensure that NFIP Requirements are being met concerning Repairs, Renovations, and Remodeling of Structures located in the Regulatory Floodplain	Inland Flooding	Douglas County; City of Douglasville
Identify Structures within the 100-Year Floodplain and Maintain a Database of Flood-Prone Properties	Inland Flooding	Douglas County; City of Douglasville
Notify Owners in Writing of Flood-Prone Properties and Recommend for Flood Insurance Properties	Inland Flooding	Douglas County; City of Douglasville
Installation of Bridges and Upsized Culverts in Identified Areas where Urban Flooding Repetitively Occurs	Inland Flooding	Douglas County
Promote Through Public Education the “Turn Around Don’t Drown” Campaign	Inland Flooding	Douglas County
Create a Database to house Data of Mapped Areas throughout the County where Flooding Inundates Roadways	Inland Flooding	Douglas County
Protection of Roadway Over Mirror Lake Dam Spillway	Inland Flooding	City of Villa Rica

Table 39: Mitigation Projects/Activities Summary (Cont'd)

Mitigation Projects/Activities Summary		
Mitigation Project or Activity	**Hazard(s) Addressed**	**Jurisdiction(s)**
Continue to Support and Manage the Tornado Safety Public Awareness Campaign in Douglas County	Tornadoes	Douglas County
Continue to Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Nearby Utility Lines during Severe Events	Severe Winter Weather	Douglas County; City of Douglasville
Purchase the Equipment Necessary to Efficiently Remove Snow and Ice from County Roads During Severe Winter Weather	Severe Winter Weather	Douglas County
Continue to Promote the Public Awareness Campaign and its Water Saving Techniques (Such as Low Flow Water Saving Shower Heads and Toilets)	Drought	Douglas County; City of Douglasville
Continue to Promote Fire Prevention and Public Education Programs	Wildfire	Douglas County; City of Douglasville
Continue to Promote and Require the Use of Fire-Retardant Materials in New Construction	Wildfire	Douglas County; City of Douglasville
Develop a Public Awareness Campaign to Heighten Awareness About Brush Fires And Preventative Maintenance for Homeowners	Wildfire	Douglas County; City of Douglasville
Continue to Promote and Require Smoke/Carbon Monoxide Detectors for Residential and Commercial Properties	Wildfire	Douglas County; City of Douglasville
Development of the Douglas County Community Wildfire Protection Program (CWPP)	Wildfire	Douglas County
Purchase the Equipment Necessary to Sustain Hazardous Materials Emergency Response Teams	Hazardous Materials	Douglas County
Develop Site-Specific Emergency Plans for Hazardous Materials Facilities throughout the City and County	Hazardous Materials	Douglas County
Maintain an Inventory of Hazardous Waste Generators and Storage Facilities and Mail Facility Owner(s) Education and Awareness Information Radios and Community Safe Shelters	Hazardous Materials	Douglas County
Maintain an Inventory of Category 1 and 2 Dams in GIS Format	Dam or Levee Failure	Douglas County; City of Douglasville
Develop Land Use Strategies to Promote the Safe Use of Land Downstream from Dams	Dam or Levee Failure	Douglas County; City of Douglasville

Table 39: Mitigation Projects/Activities Summary (Cont'd)

Mitigation Projects/Activities Summary		
Mitigation Project or Activity	**Hazard(s) Addressed**	**Jurisdiction(s)**
Integrate All Public Safety Records Management Systems with the 911 Dispatch System and the County and City GIS Departments	All Hazards	Douglas County
Update Site-Specific Emergency Plans for Schools and Other High-Hazard Facilities within Douglas County	All Hazards	Douglas County
Encourage Local Businesses to Develop COOPs	All Hazards	Douglas County; City of Douglasville
Investigate the Need for Heating and Cooling Centers for Vulnerable Population	All Hazards	Douglas County; City of Douglasville
Promote A Public Awareness Campaign to Educate Citizens about Evacuation Procedures, Sheltering in Place, and Public Shelter Locations	All Hazards	Douglas County; City of Douglasville
Develop and Implement a Public Awareness Campaign Encouraging Residents to Develop Family Disaster Plans	All Hazards	Douglas County; City of Douglasville
Promote Fireplace and Chimney Maintenance Public Safety	All Hazards	Douglas County; City of Douglasville
Conduct Public Education Reminding Residents about the Dig Safe Program	All Hazards	Douglas County; City of Douglasville
Develop a Public Education Campaign to Encourage Homeowners to Buy Hazard Insurance to Protect Belongings	All Hazards	Douglas County; City of Douglasville
Ensure that Future Land Use Planning takes into Consideration the Possible Effects of All Hazards	All Hazards	Douglas County; City of Douglasville
Installation of a Tornado Storm Shelter	Severe Weather, Wind, Tornadoes	Douglas County
Provide NOAA Weather Radios to low-income, high-risk citizens of Douglas County	Severe Weather, Wind, Tornadoes	Douglas County

5.4 – Mitigation Project Evaluations & Prioritization

5.4.1 – STAPLE+E

Douglas County and its participating jurisdiction(s)' primary hazard risks, and thus priorities are droughts, flood (inland), severe weather, severe winter weather, tornado, wildfire, wind, hazardous materials, and dam failure.

A composite evaluation matrix was used to prioritize Douglas County and its participating jurisdiction(s)' mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each participating jurisdiction. The composite evaluation matrix is comprised of the three factors detailed below.

The first factor is the STAPLE+E evaluation which is best for measuring feasibility and ease of implementation. The tables in Section 5.4.1 provide the STAPLE+E evaluation criteria and the evaluation itself.

The second factor is the effectiveness of the mitigation project. How well does it mitigate the impact of a particular hazard? This is determined by its ability to protect citizens, property, and systems. For instance, wires installed to pin down trees and other objects will reduce their ability to become uprooted or take flight during hazards of high wind but are not as effective at reducing impacts from tornadoes or strong winds as are properly constructed and reinforced buildings. This factor is rated as: Low = 0.5, Medium = 1, and High = 1.5.

The third factor is a hazard risk-based evaluation. It draws on the hazard risk summary found in Section 4.3 of this plan. Each risk rating is assigned a value based on the assessment (None = 0, Low = 5, Medium = 10, and High = 15). A summary of these results is displayed in this section, while the full, per jurisdiction per hazard tables are located in Appendix E.

$$(HRT) = (HR_1 + HR_2 + HR_n)$$

The total evaluation score is based on the hazard risk total multiplied by the effectiveness factor, added to the STAPLE+E score.

Hazard Risk Total (HRT): The sum of values (low through high) of each hazard the project is designed to mitigate.

Mitigation Project Effectiveness (MPE): A multiplier based on the project's effectiveness to mitigate against a chosen hazard.

STAPLE+E Evaluation: A raw score comprised of positive and negative feasibility.

$$(Priority) = (STAPLE+E) + (MPE * HRT)$$

Upon completing the evaluations, a composite score is calculated and prioritized based on their total score (Low = 0 – 25, Medium = 26 – 50, High = > 50).

Table 40: STAPLE+E Criteria

STAPLE+E Criteria	
Evaluation Category	**Sources of Information**
Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the communities' social and cultural values.
Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Table 41: STAPLE+E Rankings

STAPLE+E Rankings																							
X = N/A - Even Impact	**X = N/A - Even Impact**											**X = N/A - Even Impact**											
STAPLE+E Criteria	**Social**		**Technical**			**Administrative**			**Political**			**Legal**			**Economic**				**Environmental**					**Total Impact**
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Install Uninterruptible Power Supplies on Critical Electronic Equipment in County and City Facilities	+	-	+	-	x	x	+	+	+	x	+	x	+	-	-	+	-	x	+	+	-	x	+	**11**
Equip all County and Public Gathering Places with Lightning Detectors	+	-	+	+	x	+	+	+	+	x	+	x	+	-	+	+	-	x	+	+	-	x	+	**14**

Install Surge Protectors on Electronic Equipment in County and City Facilities	+	-	+	-	x	+	+	-	+	x	+	x	+	-	-	-	-	x	+	+	-	x	+	**10**
Review Existing Building Codes and Seek Areas for Improvement	+	-	-	+	x	+	-	-	+	x	+	x	+	-	-	-	-	x	+	+	-	x	+	**9**
Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Roadways, Emergency Traffic and Evacuation Routes during Severe Weather Events	+	-	+	-	x	+	+	+	+	x	+	x	x	x	+	-	-	x	+	+	-	x	+	**11**
Continue to Acquire Structures in Identified Repetitive Loss Areas Throughout Douglas County	+	+	+	x	x	+	-	-	+	x	+	x	x	x	+	-	-	+	+	x	-	x	+	**10**
Continue the Inspection and Maintenance of the Public Storm Water Drainage System	+	-	+	x	x	+	+	+	+	x	+	x	x	x	+	-	-	+	+	x	-	x	+	**11**

Apply Local Ordinance and Design Standards to New Development to Prevent New Residential Structures in The Future Conditions 100 Year Floodplain	+	-	+	+	x	-	+	-	+	x	+	x	+	x	+	x	x	+	+	x	-	x	+	**11**
Acquire Flood Prone Structures Throughout Douglas County	+	-	+	+	x	-	-	+	+	x	+	X	+	x	+	x	x	+	+	x	-	x	+	**11**
Ensure That NFIP Requirements Are Being Met Concerning Repairs, Renovations, and Remodeling of Structures Located in The Regulatory Floodplain	+	-	+	+	x	+	+	-	+	x	+	x	+	x	x	x	x	+	+	x	-	x	+	**11**
Identify Structures Within The 100 Year Floodplain and Maintain A Database of Flood Prone Properties	+	+	+	+	x	-	+	-	+	x	+	x	+	x	x	x	x	+	+	x	-	x	+	**11**
Notify Owners in Writing of Flood Prone Properties and Recommend the Need for Flood Insurance	+	+	+	+	x	+	-	-	+	x	+	x	+	x	x	x	x	+	+	x	-	x	+	**11**

Installation of Bridges and Upsized Culverts in Identified Areas Where Urban Flooding Repetitively Occurs	+	-	+	+	x	-	+	+	+	x	+	x	x	x	+	-	x	+	+	x	-	x	+	**11**
Promote Through Public Education The “Turn Around Don’t Drown” Campaign	+	-	-	-	x	+	+	-	+	x	+	x	x	x	+	-	x	+	x	x	-	x	+	**8**
Create A Database to House Data of Mapped Areas Throughout the County Where Flooding Inundates Roadways	+	-	-	-	x	+	+	-	+	x	+	x	+	x	+	x	x	+	x	x	x	x	+	**9**
City of Villa Rica – Protection of Roadway Over Mirror Lake Dam Spillway	+	-	+	+	x	+	+	+	+	x	+	x	-	x	+	-	x	+	+	x	-	x	+	**12**
Continue to Support and Manage the Tornado Safety Public Awareness Campaign in Douglas County	+	-	-	-	x	+	+	-	+	x	+	x	x	x	+	x	x	+	x	x	x	x	+	**8**

Continue to Support Tree Trimming to Prevent Limb Breakage and For Safeguarding Nearby Utility Lines During Severe Events	+	-	-	-	x	+	+	+	+	x	+	x	x	x	+	+	x	+	x	x	x	x	+	**10**
Purchase the Equipment Necessary to Efficiently Remove Snow and Ice from County Roads During Severe Winter Weather	+	-	-	-	x	+	-	+	+	x	+	x	x	x	+	+	x	+	x	x	x	x	+	**9**
Continue to Promote the Public Awareness Campaign to Promote Water Saving Techniques (Such as Low Flow Water Saving Shower Heads and Toilets)	+	-	-	-	x	+	+	-	+	x	+	x	x	x	+	-	x	+	+	x	x	x	+	**9**
Continue to Promote Fire Prevention and Public Education Programs	+	-	-	-	x	+	+	-	+	x	+	x	x	x	+	x	x	+	-	x	x	x	+	**8**
Continue to Promote and Require the Use of Fire-Retardant Materials in New Construction	+	-	+	+	x	+	+	-	+	x	+	x	x	x	+	x	x	+	x	x	x	x	+	**10**

Develop A Public Awareness Campaign to Heighten Awareness About Brush Fires And Preventative Maintenance for Homeowners	+	-	-	-	x	-	+	-	+	x	+	+	x	x	+	x	x	+	x	x	x	x	+	**8**
Continue to Promote and Require Smoke/Carbon Monoxide Detectors for Residential and Commercial Properties	+	-	-	-	x	+	+	-	+	x	+	x	x	x	+	x	x	+	x	x	x	x	+	**8**
Purchase the Equipment Necessary to Sustain Hazardous Materials Emergency Response Teams	+	-	+	+	x	-	+	-	+	x	+	x	x	x	+	+	x	+	x	x	+	x	+	**11**
Develop Site Specific Emergency Plans for Hazardous Materials Facilities Throughout the City and County	+	-	x	x	x	+	+	-	+	x	+	x	x	x	+	x	x	+	x	x	+	x	+	**9**

Maintain an Inventory of Hazardous Waste Generators and Storage Facilities and Mail Facility Owner(S) Education and Awareness Information	+	x	-	-	x	+	+	-	+	x	+	x	x	x	x	x	x	+	x	x	+	x	+	**8**
Maintain an Inventory of Category 1 And 2 Dams in GIS Format	+	-	+	+	x	-	+	+	+	x	+	x	x	x	x	x	x	+	+	x	x	x	+	**10**
Develop Land Use Strategies to Promote the Safe Use of Land Downstream from Dams	+	-	x	x	x	+	+	-	+	x	+	x	+	x	x	x	x	+	+	x	x	x	+	**9**
Integrate All Public Safety Records Management Systems with the 911 Dispatch System and The County and City GIS Departments	+	-	x	x	x	+	+	-	+	x	+	x	+	x	x	x	x	+	+	x	x	x	+	**9**
Update Site Specific Emergency Plans for Schools and Other High Hazard Facilities Within Douglas County	+	-	-	-	x	+	+	+	+	x	+	x	x	x	x	x	x	+	x	x	x	x	+	**8**

Encourage Local Businesses to Develop COOP's	+	-	-	-	x	-	+	x	+	x	+	x	x	x	+	x	x	+	x	x	x	x	+	**7**
Investigate the Need for Heating and Cooling Centers for Vulnerable Population	+	-	+	+	x	+	+	-	+	x	+	x	x	x	+	+	x	+	+	x	x	x	+	**12**
Promote A Public Awareness Campaign to Educate Citizens About Evacuation Procedures, Sheltering in Place, And Public Shelter Locations	+	-	-	-	x	+	+	-	+	x	+	x	+	x	+	x	x	+	x	x	x	x	+	**9**
Develop and Implement A Public Awareness Campaign Encouraging Residents to Develop Family Disaster Plans	+	-	-	-	x	+	+	-	+	+	+	x	+	x	+	x	x	+	x	x	x	x	+	**10**
Promote Fireplace and Chimney Maintenance Public Safety	+	-	-	-	-	+	+	+	+	+	+	x	x	x	x	x	x	+	x	x	x	x	+	**9**
Conduct Public Education Reminding Residents About the Dig Safe Program	+	-	-	-	x	+	+	x	+	+	+	x	x	x	x	x	x	+	x	x	x	x	+	**8**

Develop A Public Education Campaign to Encourage Homeowners to Buy Hazard Insurance to Protect Belongings	+	-	-	-	x	+	+	x	+	x	+	x	x	x	x	x	x	+	x	x	x	x	+	**7**
Ensure That Future Land Use Planning Takes into Consideration the Possible Effects of All Hazards	+	-	-	-	x	+	+	-	+	+	+	x	x	x	x	x	x	+	x	x	x	x	+	**8**
Installation of a Tornado Storm Shelter	+	-	+	+	x	+	x	+	+	+	x	-	+	-	+	+	+	x	+	-	-	+	+	**14**
Provide NOAA Weather Radios to low-income, high-risk citizens of Douglas County	+	+	+	-	x	+	+	+	+	+	x	-	+	-	+	+	+	x	+	-	-	+	+	**15**
Development of the Douglas County Community Wildfire Protection Plan (CWPP)	+	-	+	+	x	+	x	-	+	+	x	-	+	-	+	+	+	x	+	-	-	+	+	**13**

The following tables identify mitigation action items for Douglas County and each participating jurisdiction, along with the following information: Hazard Addressed, Responsible Party, Overall Priority (STAPLE+E), Goal(s) Addressed, Cost Estimate, Potential Funding Source, and Current Status.

Table 42: Mitigation Action Project Prioritization, Douglas County

Action Identification Number	Project Name	Project Description/Project Update	Hazard(s) Addressed	Responsible Department	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Potential Funding Source	Comment
Douglas 1	Installation of a Tornado Storm Shelter	The installation of a storm shelter is necessary for Douglas County because there are currently zero (0) public storm shelters within Douglas County and the City of Douglasville. Also, Douglas County is located in the "Dixie tornado alley" There are request for shelter locations during high risk weather events. The locations for these shelters would have to be on government property unless private property owner like a mobile home park owner wanted to pay the matching funds.	Severe Weather, Wind, Tornadoes	Douglas County EMA	Medium (29)	Proposed	$38,000 for shelter and site work	Hazard Mitigation Grant Program; Pre-Disaster Mitigation Grant Program	Proposed Project for 2020 Plan
Douglas 2	Equip all County and Public Gathering Places with Lightning Detectors	This project was deferred in the 2015 plan. For the 2019, the county has applied from the grant through GEMA and the needs assessment has been completed. Currently awaiting on funding to begin the project.	Severe Weather	Douglas County EMA; Douglas County Parks and Rec	Medium (29)	Existing	$500-$1000 For Each Park	General Fund	Carryover from 2015 Plan

Douglas 3	Provide NOAA Weather Radios to low-income high-risk citizens of Douglas County.	Many citizens in Douglas County do not have a NOAA Weather Radio even though it is one of the most reliable methods to receive severe weather warnings. One of the reasons they do not have weather radios is the cost. Low income residents are more vulnerable to emergencies and disasters and may not have the disposable income to purchase a weather radio.	Severe Weather, Wind, Tornadoes	Douglas County EMA	Medium (27.49)	Proposed	$210,000.00 based on $35.00 per radio for $6,000.00 The number of radios provided could be scaled based on available funding.	Unknown	Proposed Project for 2020 Plan
Douglas 4	Promote a Public Awareness Campaign to Educate Citizens About Evacuation Procedures, Sheltering in Place, And Public Shelter Locations	This project was deferred in the 2015 plan. Currently, the public awareness campaigns to educate citizens is promoted each year during the severe weather awareness week. This information is sent out by the Douglas County PIO.	All Hazards	Douglas County EMA	Medium (26.16)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 5	Investigate the Need for Heating and Cooling Centers for Vulnerable Population	This project was deferred in the 2015 plan. Currently, there is ongoing support for the warming center within Douglas County. There has not been much work done with the operation of cooling centers within the county.	All Hazards	Douglas County EMA	Medium (26.16)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 6	Installation of Bridges and Upsized Culverts in Identified Areas where Urban Flooding Repetitively Occurs	This project was deferred in the 2015 plan. DDCWSA are always updating the Culverts and work with WSA to ensure the standards are met	Inland Flooding	City of Douglasville, Douglas County, DDCWSA	Medium (26)	Existing	TBD by Scope	Other Local Funding; Other Funding Source	Carryover from 2015 Plan

Douglas 7	Continue the Inspection and Maintenance of the Public Storm Water Drainage System	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan. This project and is ongoing and works through a list of projects to complete	Inland Flooding	DDCWSA; Douglas County DOT	Medium (26)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 8	Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Roadways, Emergency Traffic and Evacuation Routes during Severe Weather Events	Greystone completes this process. Both Greystone and Georgia Power will complete this for residence of the county.	Severe Weather	Douglas County DOT; Douglasville Public Works Department	Medium (26)	Existing	Depending on the need	General Fund; Other Local Funding Source	Carryover from 2015 Plan
Douglas 9	Install Uninterruptible Power Supplies on Critical Electronic Equipment in County and City Facilities	This project was deferred in the 2015 plan. The goal of the project was to support Douglas County government as well as the water and sewer plant.	Severe Weather	Douglas County EMA/ Douglas County IT	Medium (26)	Existing	Staff Time and Resources	General Fund	Carryover from 2015 Plan
Douglas 10	Purchase the Equipment Necessary to Sustain Hazardous Materials Emergency Response Teams	This project was deferred in the 2015 plan - Using Eplan and continue training of staff within the county.	Hazardous Materials	Douglas County EMA, Douglas County Fire	Medium (26)	Existing	TBD by Scope and Amount of Equipment	Other Local Funding Source	Carryover from 2015 Plan

Douglas 11	Install Surge Protectors on Electronic Equipment in County and City Facilities	This project was deferred in the 2015 plan. The goal of the project was to support Douglas County government as well as the water and sewer plant.	Severe Weather	Douglas County EMA/ Douglas County IT	Low (25)	Existing	$300-$1000 For Each Building	General Fund	Carryover from 2015 Plan
Douglas 12	Develop Site Specific Emergency Plans for Hazardous Materials Facilities Throughout the City and County	This project was deferred in the 2015 plan - completed pre-plans and using company and plan data	Hazardous Materials	Douglas County EMA, Douglas County Fire	Low (24)	Existing	Staff Time and Resources	Unknown	Carryover from 2015 Plan
Douglas 13	Maintain an Inventory of Hazardous Waste Generators and Storage Facilities and Mail Facility Owner(S) Education and Awareness Information	This project was deferred in the 2015 plan - This is an ongoing project using ePlan	Hazardous Materials	Douglas County EMA, Douglas County Fire, DDCWSA	Low (23)	Existing	Staff Time and Resources	Other Funding Source	Carryover from 2015 Plan
Douglas 14	City of Villa Rica – Protection of Roadway Over Mirror Lake Dam Spillway		Inland Flooding	City of Villa Rica	Low (22)	Existing	TBD by Scope	Other Local Funding; Other Funding Source	Carryover from 2015 Plan
Douglas 15	Encourage Local Businesses to Develop COOP's	This project was deferred in the 2015 plan. Currently, the county needs to reach out to support the community especially with health care facilities due to the CMS rule.	All Hazards	Douglas County EMA	Low (21.16)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan

Douglas 16	Ensure that NFIP Requirements are being met concerning Repairs, Renovations, and Remodeling of Structures Located in the Regulatory Floodplain	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan. Currently being conducted throughout the county with the with NFIP studies.	Inland Flooding	Douglas County; City of Douglasville	Low (21)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 17	Acquire Flood Prone Structures throughout Douglas County	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan. Currently no respective loss properties in the county, but currently seeking funding and will provide additional. Since the last grant, 40 repetitive loss properties were purchased.	Inland Flooding	DDCWSA; Douglas County	Low (21)	Existing	TBD by Project Scope and Size	Other Local Funding; Other Funding Source	Carryover from 2015 Plan
Douglas 18	Continue to Acquire Structures in Identified Repetitive Loss Areas Throughout Douglas County	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan. Currently no respective loss properties in the county, but currently seeking funding and will provide additional.	Inland Flooding	Douglas County EMA; DDCWSA	Low (20)	Existing	TBD	Other Local Funding Source; Hazard Mitigation Grant Program	Carryover from 2015 Plan
Douglas 19	Integrate all Public Safety Records Management Systems with the 911 Dispatch System and the County and City GIS Departments	This project was deferred in the 2015 plan. The integration of the public safety record management system within the 911 dispatch system has been integrated. Douglas County still works to maintains to keep the database for the system updated.	All Hazards	Douglas County EMA, 911, County/City GIS Departments	Low (18.44)	Existing	Staff Time and Resources	Other Funding Source	Carryover from 2015 Plan

Douglas 20	Development of the Douglas County Community Wildfire Protection Plan (CWPP)	The current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances, to be severe. This is due to 1) the probability of many more wildfires that are relatively minor and extinguished quickly or otherwise burn out themselves, and 2) the fact that the CWPP remained in an indeterminate period during this MJHMP update.	Wildfire	Douglas County EMA, Douglas County Fire	Low (18)	Proposed	Staff Time and Resources	Other Local Funding	Proposed Project for 2020 Plan
Douglas 21	Ensure that Future Land Use Planning takes into Consideration the Possible Effects of all Hazards	This project was deferred in the 2015 plan. Currently, Douglas County continues to promote community outreach efforts to ensure that future land use planning take into consideration the possible effects on all hazards.	All Hazards	Douglas County EMA, Douglas County Planning/Dev. & City of Douglasville Planning and Zoning	Low (17.44)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 22	Update Site Specific Emergency Plans for Schools and Other High Hazard Facilities within Douglas County	This project was deferred in the 2015 plan. Currently, for the plan update, the Douglas County School System has plans to address the threats and inform the county of the necessary procedures if an event of emergency.	All Hazards	Douglas County EMA	Low (17.44)	Existing	Staff Time and Resources	Other Local Funding Source; Other Funding Source	Carryover from 2015 Plan
Douglas 23	Continue to Promote the Public Awareness Campaign to Promote Water Saving Techniques (Such as Low Flow Water Saving Shower Heads and Toilets)	This project began during the 2010 HMP plan development. The goal of the program is to help promote low flow toilets to residents. The initial update of these toilets began with Douglas County residence. The 2015 plan update which was the second time the program was re-started within the county.	Drought	Douglas County EMA, DDCWSA	Low (16.5)	Existing	Staff Time and Resources	Other Local Funding; Other Funding Source	Carryover from 2015 Plan

Douglas 24	Review Existing Building Codes and Seek Areas for Improvement	This project was deferred in the 2015 plan. Douglas County continues to use the same internal building codes to review standards.	Severe Weather	City of Douglasville	Low (16.5)	Existing	Staff Time and Resources	General Fund	Carryover from 2015 Plan
Douglas 25	Notify Owners in Writing of Flood Prone Properties and Recommend the Need for Flood Insurance	This project was deferred in the 2015 plan. Douglas County has sent out letters consistently in the last five years, and will continue to send out throughout the last five years to homeowners throughout the county.	Inland Flooding	County and City Floodplain Administrators	Low (16)	Existing	Staff Time and Resources	Other Local Funding; Other Funding Source	Carryover from 2015 Plan
Douglas 26	Identify Structures within the 100-Year Floodplain and Maintain a Database of Flood Prone Properties	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan	Inland Flooding	Douglas County EMA; DDCWSA	Low (16)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 27	Apply Local Ordinance and Design Standards to New Development to Prevent New Residential Structures in the Future Conditions 100-Year Floodplain	*Project has continued compliance with NFIP. This project was deferred in the 2015 plan. Ordinances being used to assist local government in the building of new sites.	Inland Flooding	Douglas County; City of Douglasville	Low (16)	Existing	TBD by Scope	Other Local Funding; Other Funding Source	Carryover from 2015 Plan

Douglas 28	Continue to Promote and Require the use of Fire-Retardant Materials in New Construction	This project was deferred in the 2015 plan - three building codes are used if necessary	Wildfire	Douglas County EMA, Douglas County Fire, City of Douglasville	Low (15)	Existing	Staff Time and Resources	Other Funding Source	Carryover from 2015 Plan
Douglas 29	Continue to Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Nearby Utility Lines During Severe Events	This project was deferred in the 2015 plan.	Severe Winter Weather	Douglas County EMA	Low (15)	Existing	$50,000	Other Local Funding Source	Carryover from 2015 Plan
Douglas 30	Develop and Implement a Public Awareness Campaign Encouraging Residents to Develop Family Disaster Plans	This project was deferred in the 2015 plan. The information is distributed by the Douglas County PIO. The public awareness seminars are conducted by EMA within the county for businesses and residents.	All Hazards	Douglas County EMA	Low (14.72)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 31	Develop Land Use Strategies to Promote the Safe Use of Land Downstream from Dams	This project was deferred in the 2015 plan. Currently, DDCWSA controls this information related to land use strategies for private dams within Douglas County. Also, DDCWSA has all information for all of the dams that they own within the County.	Dam or Levee Failure	Douglas County EMA, DDCWSA, City of Douglasville	Low (14)	Existing	Staff Time and Resources	Other Local Funding; Other Funding Source	Carryover from 2015 Plan

Douglas 32	Purchase the Equipment Necessary to Efficiently Remove Snow and Ice from County Roads During Severe Winter Weather	This project was deferred in the 2015 plan. Purchase when necessary when and when funding is available.	Severe Winter Weather	Douglas County EMA, Douglas County Roads DOT	Low (14)	Existing	TBD by Scope of Affected Area	Other Local Funding Source	Carryover from 2015 Plan
Douglas 33	Create a Database to House Data of Mapped Areas throughout the County where Flooding Inundates Roadways	This project was deferred in the 2015 plan	Inland Flooding	Douglas County	Low (14)	Existing	TBD by Scope	General Fund	Carryover from 2015 Plan
Douglas 34	Promote Fireplace and Chimney Maintenance Public Safety	This project was deferred in the 2015 plan.	All Hazards	Douglas County EMA	Low (13.72)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 35	Promote through Public Education the “Turn Around Don’t Drown” Campaign	This project was deferred in the 2015 plan. Still promoting during severe weather awareness week along with working with GEMA to send information out to the public.	Inland Flooding	Douglas County	Low (13)	Existing	$2,000 per Street Sign	General Fund	Carryover from 2015 Plan

Douglas 36	Conduct Public Education Reminding Residents about the Dig Safe Program	This project was deferred in the 2015 plan. At the time of this update, Douglas County EMA works with on the call before you dig program. This is an active program within Douglas County EMA. Also, DDCWSA provides reminders to residents about the call before you dig program as well	All Hazards	Douglas County EMA	Low (12.72)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 37	Maintain an Inventory of Category 1 And 2 Dams in GIS Format	This project was deferred in the 2015 plan. Currently, the State of Georgia Emergency Management Agency (GEMA) keeps inventory of Level 1 or 2 Dams within Douglas County. GEMA has information readily available for the county and DDCWSA inspects the Level 1 and 2 dams every year.	Dam or Levee Failure	Douglas County EMA, DDCWSA, City of Douglasville	Low (12.5)	Existing	Staff Time and Resources	Other Local Funding Source; Other Funding Source	Carryover from 2015 Plan
Douglas 38	Develop a Public Education Campaign to Encourage Homeowners to Buy Hazard Insurance to Protect Belongings	This project was deferred in the 2015 plan. Currently, the education program to encourage homeowners to buy hazard insurance to protect belonging is promoted through Douglas County through presentations to the public.	All Hazards	Douglas County EMA	Low (11.72)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan
Douglas 39	Continue to Promote and Require Smoke/Carbon Monoxide Detectors for Residential and Commercial Properties	This project was deferred in the 2015 plan. Since the last plan, Douglas County continues to hand out smoke detectors on a weekly basis during presentation within the community.	Wildfire	Douglas County EMA, Douglas County Fire, City of Douglasville	Low (10.5)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan

Douglas 40	Develop a Public Awareness Campaign to Heighten Awareness About Brush Fires and Preventative Maintenance for Homeowners	This project was deferred in the 2015 plan.	Wildfire	Douglas County EMA, Douglas County Fire, City of Douglasville	Low (10.5)	Existing	Staff Time and Resources	Other Local Funding; Other Funding Source	Carryover from 2015 Plan
Douglas 41	Continue to Promote Fire Prevention and Public Education Programs	This project was deferred in the 2015 plan. Douglas County continues to work in the community about fire prevention through its public outreach programs to spread awareness and information through the public outreach division at the fire department.	Wildfire	Douglas County EMA, Douglas County Fire, City of Douglasville	Low (10.5)	Existing	Staff Time and Resources	Other Funding Source	Carryover from 2015 Plan
Douglas 42	Continue to Support and Manage the Tornado Safety Public Awareness Campaign in Douglas County	This project was deferred in the 2015 plan.	Tornadoes	Douglas County EMA	Low (10.5)	Existing	Staff Time and Resources	Other Local Funding Source	Carryover from 2015 Plan

5.5 – Planning Integration

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Douglas County intends to incorporate this Douglas County Multi-Jurisdictional Mitigation Plan (update) into other planning documents the County and participating jurisdiction(s) utilizes. Where applicable, portions of the previous MJHMP were considered for incorporation into other local plans and programs. This includes some form of incorporation into the Douglas County, GA Comprehensive Plan Update (November 2018). The Douglas County, GA Comprehensive Plan, which focuses on land use and community development, is required of all local governments by the Georgia Department of Community Affairs (DCA).

Portions of this MJHMP (update) may also be integrated into the Douglas County Local Emergency Operations Plan (LEOP), emergency plans for the City of Douglasville, and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation, and discussion, and voting to solidify their decision-making. This type of decision-making makes up the majority of Douglas County's participating jurisdiction(s)' and stakeholders.

This plan should be integrated into agenda proposal's designs and cross-referenced during deliberation and discussion of the proposed activity. By using this plan's risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

This Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update) will be incorporated into existing planning mechanisms in varying processes. These processes will be tailored to the unique characteristics of the planning mechanism and the governing structure of Douglas County and its participating jurisdiction(s).

Budget Reviews

Douglas County's budget cycle begins January 1 and runs through December 31, while the City of Douglasville's budget cycle begins July 1 and runs through June 30. The annual budget review period for the County begins in the summer months, usually August, for the upcoming year. During this period, each adopting jurisdiction will review this and future multi-jurisdictional mitigation plans, and conduct a feasibility and resiliency review of the suggested mitigation actions and projects.

DCEMA will assist in the process as needed or requested by the jurisdiction(s), providing grant or other funding opportunities, technical assistance, and other relevant support.

Emergency Management Planning

Douglas County and the City of Douglasville work together as a team during all four phases (Mitigation, Planning, Response and Recovery) of emergency management. Other governing bodies and partners such as the Douglasville-Douglas County Water and Sewer Authority, Greystone Power, Austell Gas, and Georgia Power are also included in emergency planning and response. Public input is always accepted and appreciated.

Emergency Operations Plans (EOPs) – The Douglas County EOP's next update will reflect the most probable and dangerous hazard event scenarios from this MJHMP's risk assessment. Additionally, the mitigation plan will be added in its entirety as an Appendix to the EOP. This revision is the responsibility of DCEMA for all the jurisdictions participating in this plan update. Upon revision completion, all participating jurisdiction(s) and appropriate emergency services will be notified of the revisions and provided new copies of the EOP. The jurisdictions can add an annex to the County's EOP if applicable.

State of Georgia Multi-Hazard Mitigation Plan – The State's Multi-Hazard Mitigation Plan is required by FEMA regulations to include assessments and integration of local and tribal Pre-Disaster Mitigation (PDM). The process of integrating the Douglas County Hazard Mitigation Plan (update) into the State's MHMP is already an established process and is managed by GEMA.

Mitigation Projects & Actions Implementation

Upon adoption of an HMP plan or other emergency management-related plans, DCEMA will notify all participating jurisdictions when the next mitigation planning committee (MPC) meeting topic will be reviewing mitigation project and action selections. Each jurisdiction then approves a list of mitigation actions and projects they want to pursue according to the mechanism listed in the table on the following page. During the MPC meeting, DCEMA will assist the jurisdictions in determining which grant program and path will be appropriate for the project. After selection, the jurisdictions return to DCEMA for assistance on funding and managing the project. If additional funding is necessary, the jurisdictions will have to return to their community and pass a resolution to secure the funding. The resolution is subject to the process listed in table on the following page.

DCEMA may provide technical assistance in every facet from project inception to completion as well as working with other external organizations for tasks such as grant writing, project monitoring, and project management where appropriate.

Capital Improvement & Economic Development Planning

Douglas County has an Economic Development Authority (https://www.developdouglas.com/the-community/strategic-plan/. The philosophy of the Authority is "*Our strategy will create an environment where individuals and businesses are willing to risk their capital. We do this by creating economic opportunities for our citizens, enhancing household income to stimulate economic vitality, which increases revenues that afford us a better quality of life and thus attract the highest and best talent*".

Upon project conception, the County's commissioners, mayors, and council members, may contact DCEMA for information regarding possible grants being offered by GEMA and FEMA. In Douglas County and its participating jurisdiction(s), improvement and development projects rely on grant funding. DCEMA may advise the project-proposing jurisdiction on which grant program is appropriate.

As projects listed in the plan are undertaken jurisdictions and participating agencies will keep Douglas County EMA updated about the projects' progress.

Appendix A – Reference Documents

Federal Meteorological Handbook No. 1, Surface Weather Observations and Reports, *U.S. Department of Commerce / NOAA, 2005*

Guidelines and Specifications for Flood Hazard Mapping Partners, *FEMA, 2002*

Local Mitigation Plan Review Guide, *FEMA, 2011*

Local Mitigation Planning Handbook, *FEMA, 2013*

Mitigation Ideas A Resource for Reducing Risk to Natural Hazards, *FEMA, 2013*

Multi-hazard Loss Estimation Methodology – Flood Model – HAZUS®-MH – User Manual, *FEMA, 2012*

Multi-hazard Loss Estimation Methodology – Flood Model – HAZUS®-MH – Technical Manual, *FEMA, 2012*

Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, *FEMA, 2008*

National Mitigation Framework, *Department of Homeland Security, 2013*

Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2), *FEMA, 2001*

Appendix B – Data Sources

Quantitative Data Sources

American Society of Civil Engineers (ASCE®)

The Atlanta Journal – Constitution (AJC.com)

Climate.gov

Douglasville-Douglas County Water and Sewer Authority (DDCWSA)

Drought.gov

2015 Douglas County, GA Multi-Jurisdictional Hazard Mitigation Plan

FEMA

FEMA HAZUS® Database

Firewise USA™

GEMA/ University of Georgia Carl Vinson Institute of Government

Georgia Environmental Protection Division, Public Complaint Search (https://cts.gaepd.org/Public)

Georgia Safe Dams Program

Metropolitan North Georgia Water Planning District (https://northgeorgiawater.org/)

NOAA/NCEI (formerly NCDC)

National Interagency Coordination Center (NICC)

National Inventory of Dams

U.S. Census Bureau, Quick Facts, 2018 Population Estimates and Housing Units

United States Environmental Protection Agency TRI Explorer

Weather.gov

Geographic Data Sources

FEMA HAZUS®-MH (2.2 SP1)

NOAA/NWS Storm Prediction Center

Douglas County, GA, GIS Department

Douglas County, GA Planning and Zoning Department

Douglas County, GA Public School System (https://www.dcssga.org/about/who_we_are/district_maps)

City of Douglasville, GA Community Development Department

City of Douglasville, GA Planning and Zoning Department

Douglasville-Douglas County Water and Sewer Authority (DDCWSA)

FEMA FIRM Maps

Georgia Department of Transportation

Georgia Mitigation Information System (GMIS) - GEMA/ University of Georgia Carl Vinson Institute of Government (https://apps.itos.uga.edu/GEMA.GMIS/Home/Index)

U.S. Census Bureau

United States Environmental Protection Agency TRI Explorer

U.S Drought Monitor

DOUGLAS COUNTY SENTINEL, Tuesday, July 30, 2019 A3

Hazard Mitigation Plan update to commence Aug. 13

BY RICHARD GRANT
FOR THE SENTINEL

The Douglas County Emergency Management Agency (EMA) is renewing its Hazard Mitigation Plan. The cities of Douglasville and Villa Rica will also be part of the Hazard Mitigation Update.


Jason Milhollin

The plan includes a hazard vulnerability analysis for which the agency looks at what types of events are likely to happen, the impact they could have on Douglas County and from there they try to balance where to focus funds and other resources.

Hazard Mitigation describes actions taken to help reduce or eliminate long-term risks caused by hazards or disasters such as flooding, earthquakes, wildfires, land fires or dam failure.

Local governments are required to prepare and update hazard mitigation plans every five years in order to be eligible for FEMA disaster relief assistance in the event a hazard or disaster occurs.

There will be a kick-off event to explain the process on Aug. 13 from 2 to 4 p.m. at the Douglas County 911/Emergency Operations Center. The center is located at 8480 Earl D. Lee Boulevard in Douglasville. Parking will be available behind the building.

Citizens and interested parties are encouraged to attend and take part in the planning efforts.

"It's important for local governments and citizens to put plans in place to ensure the safety of Douglas County citizens and existing infrastructure," said Douglas County Communications and Community Relations Director Rick Martin in a press release issued by the county.

According to Jason Milhollin, Douglas County's EMA director, who spoke by phone, the update process actually starts about three or four years before the new plan is actually approved.

"You sit down with all the partners and get their input on those projects and see what's important to us," he said.

Milhollin said the kick-off next month allows city and county officials the opportunity to calibrate the updated plan.

"We're going to see if our priorities are the same ... it gets everybody at the table to get their thoughts and ideas out there so we can prioritize what's going on and what we need to do," he said.

Specifically, the following key topics and questions were addressed by the Hazard Mitigation Plan (HMP) committee at the initial meeting in 2015, according to the plan document.

Changes to hazard profiles either for the county or the city of Douglasville, availability of any new hazard or vulnerability studies, including maps, availability of new loss estimation (risk) studies or information, changes in development patterns or rates, especially development in proximity to hazard areas, presence of any new special high-risk populations, or significant changes to existing ones, status of actions listed in this plan, and any new actions being contemplated.

And according to information provided in the 2015 plan document, Douglas County's initial HMP was developed in September of 2005, which provided momentum for making homes, businesses, and communities as safe as possible against the impacts of floods, tornadoes, wildfires, and other natural hazards. The initial plan assessed the effectiveness of prior and current programs and activities in the community and identified shortfalls; mitigation measures were further developed to help reduce Douglas County's exposure to these natural hazards.

The first update of the plan was completed in 2010, to update the original HMP and to bring it in line with 2008 State of Georgia Hazard Mitigation Strategy (State Plan). The second update of the plan was done in 2015.

The plan is updated and maintained to continually address those natural and technological hazards determined to be of high and moderate risk as defined by the updated results of the local hazard, risk, and vulnerability summary.

For more information, contact the Communications and Community Relations Department at 770-920-7303.

BOLD planning

SIGN IN SHEET

EVENT: Douglas County, GA HMP Kick off Meeting DATE / TIME: 8/13/19 - 2:00-4:00 PM

Name	Organization / Department	ESF ~~Assignment~~	Office Phone #	Office Phone #	E-Mail
SCOTT ZACHMEYER	FIRE Dept		7 9478626		SZACHMEYER@CO.Douglas.GA
Jason Mihollin	Douglas Co EMA		770 949 8424		Jmihollin@co.douglas.ga.us
LUCY HERRING	GEMA		404-635-7245		lucyherring@gema.ga.gov
Melissa Dickinson	Douglasville		7-920-3005		dickinsonm@douglasvillega.gov
GREG ROBERTS	CITY OF DOUGLASVILLE		7-920-3005		robertsg@douglasvillega.gov
Eve Coogsdell	Paulding GA EMA		678-576-2417		ecoogsdell@paulding.gov
Greg Thumley	Austell Gas System		7) 948-1841 ext. 341		gthumley@austellgas.com
Bill Everett	Austell Gas System		7) 948-1841 EXT 3275		BEVERETT@Austellgas.com
James Worthington	Development Services		770-920-7243		jworthington@co.douglas.ga.us
Lyndsey Sargent	DDCWSA		7) 920-3850		LSargent@ddcwsa.com
Sidney Miller	DDCWSA				SMiller@DDCWSA.com
CORY SHELTON	DOUGLAS CO. FIRE		7.920.7134		cshelton@co.douglas.ga.us
KATHY MACIAS	DDCWSA		770.920.3855		kmacias@ddcwsa.com

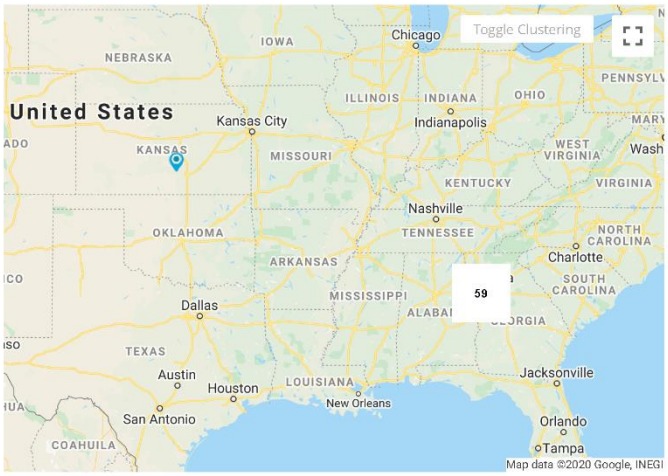
____ of ____

Douglas County, GA Hazard Mitigation Plan - Survey

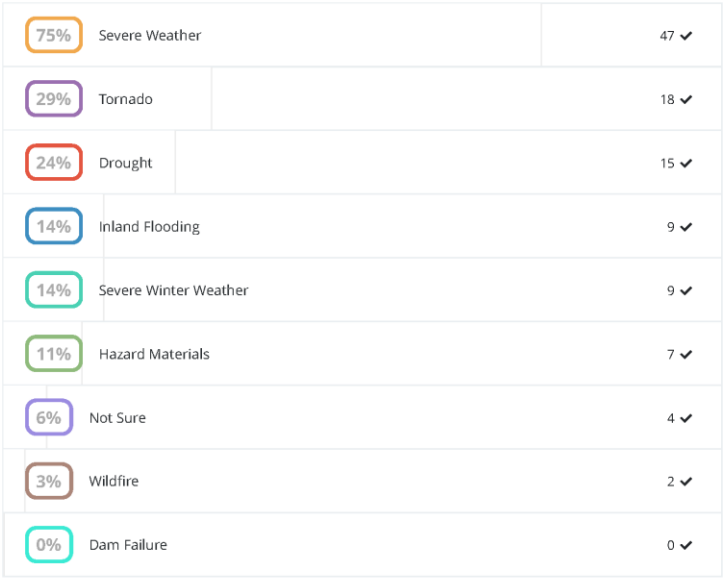
Project Engagement

VIEWS	PARTICIPANTS	RESPONSES	COMMENTS	SUBSCRIBERS
165	76	633	150	52

Where do you live?



Which Hazard is your area MOST at risk for?



63 Respondents

These conditions we have faced through the years in my experience

11 months ago

We've actually experienced these weather conditions in the time that I have been employed at the Sheriffs Office

one year ago

All the above hazards are of concern but five of the eight are all forms of severe weather. I am not sure how many people are aware of the potential danger of hazardous material transported through our county.

one year ago

High winds that are bringing down older diseased/stressed trees. Creeks overflowing.

one year ago

Snapping trees. Subdivision not allowing removal of trees growing to close to a house. Flooding

one year ago

We are in GA. The weather changes at the drop of a hat.

one year ago

High Winds- snapping/falling trees

one year ago

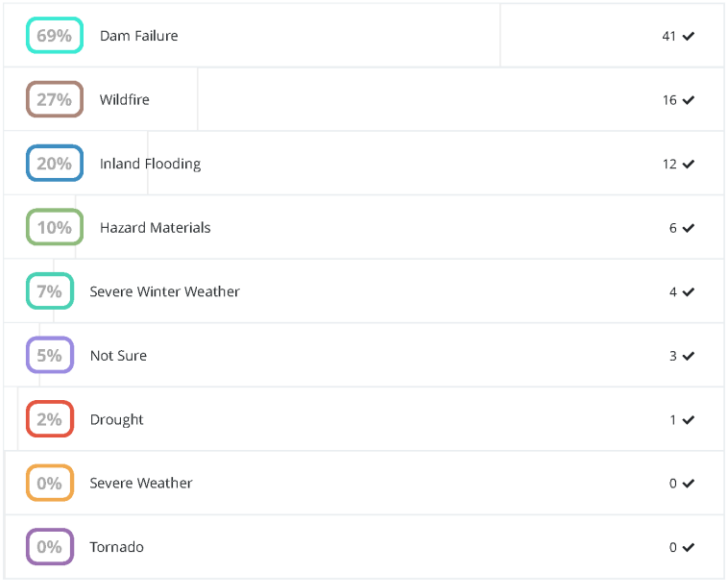
Tornadoes a pleanty

one year ago

Particularly, high winds and electrical storms

one year ago

What hazard is your area LEAST at risk for?



59 Respondents

I have not dealt with these yet
11 months ago

We have not experienced any of these in my 11 years of working here at the Sheriffs Office
one year ago

We do have dams in Douglas County but a failure would only be a risk to a relatively few
one year ago

No Dams.
one year ago

No Dams.
one year ago

No Dams in this area to worry about
one year ago

No Chance of a Dam in our area
one year ago

Tell us about your concerns about the following hazards

	No Concern	Some Concern	Moderate Concern	Significant Concern
Severe Weather	- No Concern	16% Some Concern	47% Moderate Concern	37% Significant Concern
Drought	5% No Concern	45% Some Concern	39% Moderate Concern	11% Significant Concern
Wildfire	33% No Concern	57% Some Concern	8% Moderate Concern	2% Significant Concern
Hazard Materials	11% No Concern	54% Some Concern	26% Moderate Concern	9% Significant Concern
Inland Flooding	25% No Concern	48% Some Concern	25% Moderate Concern	2% Significant Concern
Tornado	2% No Concern	25% Some Concern	50% Moderate Concern	23% Significant Concern
Severe Winter Weather	2% No Concern	40% Some Concern	46% Moderate Concern	12% Significant Concern
Dam Failure	81% No Concern	15% Some Concern	4% Moderate Concern	- Significant Concern

49 respondents

What is your occupation?

Firefighter
11 months ago

Educator
11 months ago

Educator
11 months ago

Law Enforcement
11 months ago

Captain
one year ago

Lieutenant wiyh the Douglas County Sheriff's Office
one year ago

Retired
one year ago

Substitute teacher/ retired CAD manager and database application designer
one year ago

Deputy Sheriff
one year ago

Investigator
one year ago

Law Enforcement
one year ago

Emergency Dispatcher
one year ago

Property Manager
one year ago

I work at a chemical factory
one year ago

Csa for mister
one year ago

Teacher
one year ago

Law Enforcement
one year ago

Retired
one year ago

don't have one
one year ago

Retired
one year ago

I-20 and railroad moving haz mat

one year ago

Retired

one year ago

Waste hauler

one year ago

Associate Pastor

one year ago

Inbound planner.

one year ago

CFO

one year ago

Telecom Annalist

one year ago

IT Professional

one year ago

Associate Pastor

one year ago

TERMINAL AGENCY COORDINATOR

one year ago

Retired

one year ago

Information Technology Professional

one year ago

Public Works Official

one year ago

Natural Gas Distribution

one year ago

Fire Chief

one year ago

List historical instances when a weather event caused a disruption to your area. List Date, event, and short description.

Flood of Sept 2009

one year ago ⊕1 Agree

September 2009 Floods
Winter storm 2017

one year ago ⊕1 Agree

flood of Sept2009

11 months ago

Winter Weather, Flooding in 2009

11 months ago

Snow and Ice

11 months ago

Flood 2009

11 months ago

Snowpocalypse, Flood of 2009

11 months ago

2009 Flood
Winter Storm 2017

one year ago

Floods of 2009, Winter Storms

one year ago

Flood 2009

one year ago

Flood of Sept 2009

one year ago

Blizzard in the 90's, Couple of ice storms, flood 2009

one year ago

2009 flood

one year ago

Flood 2009

one year ago

Winter storms involving ice.

one year ago

We had the floods that hit the entire county on September 20, 2009. We have also had winter storms over the last several years as well.

one year ago

2009 floods

one year ago

Winter Storms 2017

one year ago

Of coarse the floods of September 2009, but we have had three major shut downs due to Ice and snow in the 30+ years we have lived here. The year I bought this house, 1990 0r 1991, we drove from Snellville to Douglas County to see if tornadoes had damaged our newly purchased home. We have also had several droughts that cause water restrictions; we may be at the start of another one.

one year ago

Flood 2009

one year ago

The floods of 2009

one year ago

Flood of 2009

one year ago

Flood of 09/2009

one year ago

power failure

one year ago

Strong winds, falling trees hitting structures, flooding

one year ago

sept. 2009

one year ago

2009 Flood, 2013 or 2014 Winter Weather (when we were trapped at school, Mothers Day Tornadoes, Hurricane Opal, Blizzard 1993, Surprise December Snow 2017

one year ago

The flood of 2009. 2014 heavy snows & people stranded. Hurricane Katrina 2005. Every time it rains, even moderately, I and my neighbors below me experience rushing waters as though a dam broke loose from the runoff above us. The subdivision will not allow walls or other means to be built to detour water away from homes.

one year ago

Sept 21 2009 flood.road closures made it hard to get around to other parts af county

one year ago

WInter 2017-ten inches of snow, weatherman called for flurries and no accumulation
Snowpocolypse and Snowmageddon- several inches of ice accumulated in a matter of an hour. Motorists and schoolchildren were stranded for days.
Flood '09-a flood of Biblical proportions came through here. 7 people died in this county. The county was completely landlocked, with no power or phones.
Ten years is long enough to talk about

one year ago

Winter 2017 10 inches of snow...weather man called for flurries with no accumulation
Snowpocolypse and Snowmageddon 2014/2016 Several inches of ice fell in a matter of less than an hour...motorists stranded...schoolchildren stranded...power outages..trees down...etc
Flood of '09.....Flood of biblical proportions....7 people died in this county. The county was completely landlocked.
Hurricane Irma came through here a few years ago...lots of rain, high winds etc
More tornadoes than I can count have come through Douglas County Over the years.
Hurricane Opal 1995...trees down, high winds, power lines down...etc

one year ago

2003; high winds snapped trees, which destroyed my dog kennel. I heard the winds first, the county's sirens sounded After the event was over.
2009; Flood; water supplies were effected and travel was restricted. Mason Creek bridge over Mobley Creek was out for four years.
Various Winter Storms and ice.

one year ago

September 2009 Floods
Winter storm 2017

one year ago

Flood of 2009
Winter Storms

one year ago

the floods of 09

one year ago

April 2006; High Winds snapped treetops which destroyed my dog kennel.
2009; Flood: Water supply effected, travel was restricted and Mason Creek bridge, over Mobley Creek, took four years to repair.
Various Winter storms- snow and ice.

one year ago

Floods 2009, tornadoes 2009, Winter storm - 1993/2017

one year ago

BLIZZARD - 1993, HURRICANE OPAL - 1995, FLOODS - 2009, SEVERE ICE - 2010, SEVERE SNOWING AND ICE 2014

one year ago

September 2009. Heavy rain and flooding. We were without water for a couple of days.

one year ago

Numerous winter weather events over the years; Douglas County, Georgia has had several tornado events over the past 3+ decades; the Flood of 2009 was the most significant weather disaster of record; Interstate 20 and Norfolk Southern Railway runs through the middle of Douglas County so the threat of chemical spills or hazardous incidents is a concern for our area

one year ago

500 yr Flood of 2009 and Drought of 2004

one year ago

Do you have suggestions for projects that can be done in you area so that weather related disruptions do not happen? (Example: culverts or safe rooms)

No

one year ago

Strengthen bridges

one year ago

Better preparations such as warming areas / or safe areas for stranded people to go to when we experience inclement weather.

one year ago

Open to suggestion

one year ago

More equipment to handle winter weather.

one year ago

Retaining wall's or other means to detour waters from flooding homes to be allowed in subdivisions that currently will not allow. Before damage to homes from falling trees occurs or fall into the street, people be allowed to have the dangers removed when subdivisions speak otherwise without submitting formal paperwork requesting permission.

one year ago

Nope its not the governments place to babysit everybody

one year ago

no

one year ago

Power and phone lines underground. A weatherman who can actually give an accurate prediction so people can prepare properly. ALso proper assessments afterwards. A section of trees down in a circle is almost always listed as "straight line winds"....so apparently the trees in the middle of the woods in one specific spot were hit by winds from multiple directions at once, spinning trees down in a circle...but no tornado?

one year ago

Not at this time.

one year ago

The night the high winds snapped trees (2009) what woke me was the sound of the wind, like a train in my back yard. The county's warning sirens did not go off until it was all over.

one year ago

Continue with infrastructure improvements such as replacing old or dilapidated storm culverts and setting aside more areas for storm water run-off and related greenspace.

one year ago

tornado safe rooms

one year ago

List areas in your community you are aware of that constantly face issues with bad weather. (Example: flooding, power outages, closed roads, etc).

Lithia Springs/Austell flooding

one year ago 1 Agree

Austell Flooding

11 months ago

Sweetwater creek drainage through Douglas county

11 months ago

Austell Flooding

one year ago

Post road

one year ago

Winter storms involving ice shuts down most main artery roads due to not being treated.

one year ago

Woodrow Wilson Park on Mt Vernon Rd is known to flood really bad, Sweetwater Creek, Lithia Springs girls park are the top contenders that I can think of

one year ago

Lithia springs tends to get hit more with severe weather

one year ago

Lithia Springs seems to have more than it's share of power outages from ice wind and storms.

one year ago

Sweetwater Creek basin

one year ago

Sweetwater Creek area

one year ago

Fairburn rd

one year ago

Lithuania Springs/ Woodrow Wilson Park Area

one year ago

Power outages

one year ago

Sweet water Creek area, Gothards Creek,

one year ago

Where I live, if there is a moderate rainfall, it is as though a dam has broken. Roll-off of water from neighbors above keeps rolling down, and against houses, often the ground remains soaked for quite a few days afterward/sometimes standing water. The subdivision will not allow a retaining wall, etc. built to detour water because it is to close to the front of houses. People park their vehicles in the yards, and in this neighborhood, it was found the water lines are not buried the required depth. When it rains, vehicles try to move from the yards, then there have been issues with water lines bursting and flooding areas. Trees in the subdivision should be topped that are near streets and street lights. Trees should be allowed to be removed from subdivisions before they pose a problem to other homeowners.

one year ago

Woodrow wilson park area flooding

one year ago

none

one year ago

We have lots of low lying areas, andthe Chattahoochee borders one entire side of the county. When heavy rains hit, Sweetwater Creek to the North and the Chattahoochee flood. Dog river runs through the county also, which dumps into the Reservoir. Any time these waters flood, all connected bridges and roads run the risk of closing down. Also many of hte bridges have only dirt beneath them, which washes away during heavy rains and flood compromising the bridge.

one year ago

The ridge I live on gets pretty strong/gusty winds from the North West at times.

one year ago

Villa Rica / Temple power outages

one year ago

Our Ridge gets some pretty strong winds from the North West at times.

one year ago

Our community, situated on a ridge, can get very strong winds from the North West at times.

one year ago

Lithia Springs, areas around Dog River basin

one year ago

THE WEST SIDE OF THE COUNTY ENDS UP WITH TREES DOWN AFTER MOST STORMS DUE TO IT BEING IN A MORE RURAL AREA

one year ago

N/A

one year ago

Are there any hazards that were not listed, that you think should be included in the plan?

We need to be better prepared in winter for Ice storms. We have so many state roads, but the state will not respond in a timely fashion to sand down the bridges and shaded areas of the state roads, which leave drivers unable to travel and clogs up the roadways because they can't navigate up the icy hills

one year ago 1 Agree

No

11 months ago

No

one year ago

No

one year ago

unsure.

one year ago

No.

one year ago

Industrial fires and accidents, train derailments, and air craft crashes are all hazards that have a potential to impact our county.

one year ago

no

one year ago

No

one year ago

No

one year ago

No

one year ago

No

one year ago

Especially during storm issues, no parking in the streets. Vehicles in the streets during storm issues cause danger to others by having to dodge the vehicle parked and the vehicle in on the coming traffic at the same time.

one year ago

No

one year ago

no

one year ago

I have personally witnessed several instances of strong, cyclic winds; probably spinning off of tornadoes, doing considerable damage in Douglas County. It has caused me to wonder if the warning sirens should be activated earlier.

one year ago

N/A

one year ago

N/A

one year ago

N/A

one year ago

For updates on specific concerns in your area, and the opportunity to continue assisting with the planning process, please enter your email below. We will not share this information, but it will ensure that the County can contact you.

No data to display...

State of Georgia Public Health Orders Related to COVID-19 Pandemic

Updated August 31, 2020

THE STATE OF GEORGIA

EXECUTIVE ORDER

BY THE GOVERNOR:

RENEWAL OF PUBLIC HEALTH STATE OF EMERGENCY

WHEREAS: On March 14, 2020, due to the impact of COVID-19 on the State of Georgia, I issued Executive Order No. 03.14.20.01, declaring a Public Health State of Emergency in Georgia; and

WHEREAS: The Georgia General Assembly concurred with Executive Order 03.14.20.01 by joint resolution on March 16, 2020; and

WHEREAS: On April 8, 2020, I renewed the Public Health State of Emergency until May 13, 2020 by issuing Executive Order 04.08.20.02; and

WHEREAS: On April 30, 2020, I renewed the Public Health State of Emergency until June 12, 2020 by issuing Executive Order 04.30.20.01; and

WHEREAS: On May 28, 2020, I renewed the Public Health State of Emergency until July 12, 2020 by issuing Executive Order 05.28.20.01; and

WHEREAS: On June 29, 2020, I renewed the Public Health State of Emergency until August 11, 2020 by issuing Executive Order 06.29.20.01; and

WHEREAS: On July 31, 2020, I renewed the Public Health State of Emergency until September 10, 2020 by issuing Executive Order 07.31.20.01; and

WHEREAS: Code Section 38-3-51 vests the Governor with the power to renew any State of Emergency for a period not to exceed thirty (30) days; and

WHEREAS: There exists a continued need for protecting vulnerable populations, providing comprehensive testing, permitting economic flexibility with reduced regulations, providing increased hospital capacity, and allowing the state expanded flexibility for procurement; and

WHEREAS: In consultation with the Commissioner of Public Health, the Director of the Georgia Emergency Management and Homeland Security Agency, the Adjutant General of the Georgia National Guard, and

other state health and emergency preparedness officials, I have determined the public health emergency created by the spread of COVID-19 persists in the State, and that it is necessary and appropriate to renew the Public Health State of Emergency for thirty (30) days.

NOW, THEREFORE, PURSUANT TO CODE SECTION 38-3-51, AND THE AUTHORITY VESTED IN ME AS GOVERNOR OF THE STATE OF GEORGIA, IT IS HEREBY

ORDERED: That the Public Health State of Emergency declared by Executive Order 03.14.20.01 and renewed by Executive Orders 04.08.20.02, 04.30.20.01, 05.28.20.01, 06.29.20.01, and 07.31.20.01 which is set to expire on Thursday, September 10, 2020 at 11:59 P.M., shall be renewed for thirty (30) days.

IT IS FURTHER

ORDERED: That the Public Health State of Emergency shall terminate on Saturday, October 10, 2020, at 11:59 P.M., unless it is renewed by the Governor.

IT IS FURTHER

ORDERED: That the terms of Executive Orders 03.14.20.01, 04.08.20.02, 04.30.20.01, 05.28.20.01, 06.29.20.01, and 07.31.20.01 are hereby adopted by reference.

IT IS FURTHER

ORDERED: That Executive Orders 04.08.20.03 and 04.08.20.05 are hereby extended for a period of thirty (30) days, and shall expire on Saturday, October 10, 2020, at 11:59 P.M.

IT IS FURTHER

ORDERED: That if one or more of the provisions contained in this Order shall conflict with the provisions of any previous Executive Order or Agency Administrative Order, the provisions of this Order shall control. Further, in the event of any conflict, the provisions of any Quarantine or Isolation Order issued to a specific person by the Department of Public Health shall control.

IT IS FURTHER

ORDERED: That nothing in this Order shall be construed to suspend or limit the sale, dispensing, or transportation of firearms or ammunition, or any component thereof.

IT IS FURTHER

ORDERED: That if one or more of the provisions contained in this Order shall be held to be invalid, in violation of the Georgia Constitution, in violation of Georgia law, or unenforceable in any respect, such invalidity, violation, or unenforceability shall not affect any other provisions of this Order, but, in such case, this Order shall be construed as if such invalid, illegal, or unenforceable provision had never been contained within the Order.

IT IS FURTHER

ORDERED: That no provision of this Order shall limit, infringe, suspend, or supplant any rights conferred by or any judicial order, judgment, or decree issued pursuant to the laws or constitution of this State or the laws or constitution of the United States, nor shall any person use any provision this Order as a defense to an action in violation of a judicial order, judgment, or decree by any court created pursuant to the laws or constitution of this State or the laws or constitution of the United States.

IT IS FURTHER

ORDERED: The Office of the Governor may continue to issue guidance on the scope of this Order as needed through communication media, including social media, without need for further Executive Orders.

IT IS FURTHER

ORDERED: All provisions of this Order shall become effective upon signature.

This 31st day of August, 2020.

GOVERNOR

(INSERT DCEMA PRESS RELEASE FOR OPEN COMMENT PERIOD)

(INSERT DCEMA PRESS RELEASE FOR OPEN COMMENT PERIOD – Screenshot of DCEMA Website and screenshot of Public Input following closing of Open Comment Survey)

Douglas County, GA Hazard Mitigation Plan - Open Comment Survey

Translate

Douglas County, Georgia Emergency Management Agency (DCEMA), in partnership with Tennessee-based BOLDplanning, Inc, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan. Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment. As part of the activity, the County, including the City of Douglasville, GA, seeks feedback from residents and businesses to incorporate into the plan. Please use this survey to submit your plan review comments to the County. Your comments, along with additional feedback and input, will be included in the Multi-Jurisidcitonal Hazard Mitigation Plan update before submission to the Georgia Emergency Management Agency (GEMA) and FEMA.

Providing your name and other contact information is optional and does not obligate the County to reply to your comments directly.

If you have any questions about the survey or issues using the survey, please contact Emily Long at (615) 469-5558 or email HELP@boldplanning.com. Thank you so much for your participation; BOLDplanning and Douglas County EMA greatly appreciate it!

What is your Name (First and Last Name)?

Share your thoughts and ideas...

Your name (optional)

Name

Comment

What is your email address?

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

What is your zip code?

Zip Code Save

What do you do for work and what is your job title?

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Section 1: Planning Area

Use the space below to provide your feedback and comments related to this section of the Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update).

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Section 2: Local Resources & Procedures

Use the space below to provide your feedback and comments related to this section of the Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update).

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Section 4: Hazard Risk Assessment

Use the space below to provide your feedback and comments related to this section of the Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update).

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Section 5: Mitigation Strategies

Use the space below to provide your feedback and comments related to this section of the Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update).

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Provide any additional feedback or comments related to the Douglas County Multi-Jurisdictional Hazard Mitigation Plan (update).

Share your thoughts and ideas...

Your name (optional)

Name

Comment

Post Publicly

Finish Survey

Spread the word

Appendix D – Critical Facilities & Infrastructure

Table 43: Critical Facilities, Douglas County, GA and the City of Douglasville, GA

Critical Facilities for Douglas County, GA, and the City of Douglasville, GA	
Name	**Facility Type**
American Red Cross	Clinics
Kings Hwy Pump Station	Water/Sewer
Alexander High	K-12
Anneewakee Retreat Pump Station	Water/Sewer
Annette Winn Elementary	K-12
Arbor Station Elementary	K-12
Arbor Station Substation	Private
Atlanta Gas Light	Private
Bear Creek Intake	Water/Sewer
Bear Creek Water Treatment Plant	Water/Sewer
Beulah Elementary	K-12
Bill Arp Elementary	K-12
Bill Arp Park	Government Offices
Blairs Bridge Pump Station	Water/Sewer
Boundary Waters Rec/Aquatic Center	Government Offices
Bright Start Elementary	K-12
Bright Star Methodist Church	Non-Profit
Brighten Academy	K-12
Burnett Elementary	K-12
Campbellton St. Post Office	Government Offices
Cedar Mountin Substation	Water/Sewer
Chapel Hill Elementary	K-12
Chapel Hill Farms Pump Station	Water/Sewer
Chapel Hill High	K-12
Chapel Hill Middle	K-12
Chapel Hill Substation	Water/Sewer
Chestnut Log Middle	K-12
Chestnut Log Soccer Complex	Government Offices
City of Douglasville City Hall	Government Offices
Clinton Nature Preserve	Government Offices
DC Emergency Operations Center	EMS
Deer Lick Park	Government Offices
Dog River Intake #1	Water/Sewer
Dog River Intake #2	Water/Sewer
Dog River Public Library	Library
Dorsett Shoals Elementary	K-12
Douglas County Animal Control & Shelter	Government Offices
Douglas County Courthouse	Court House
Douglas County DOT	Transportation
Douglas County E911	Police
Douglas County Fire Training Complex	Fire Fighters

***Note:** The facility type was taken from the Georgia Emergency Management (GEMA)GMIS system used to create the HAZUS® report for this project.*

Table 43: Critical Facilities (Cont'd)

Critical Facilities for Douglas County, GA, and the City of Douglasville, GA	
Name	**Facility Type**
Douglas County Fire/EMS Headquarters	EMS
Douglas County Fleet Management	Government Offices
Douglas County Health Center	Medical Offices
Douglas County Health Department	Government Offices
Douglas County High	K-12
Douglas County Jail	Jails
Douglas County Landfill & Recycling Center	Landfill
Douglas County Property Maintenance Bldg	Government Offices
Douglas County Senior Center	Government Offices
Douglas County Sheriff's Office	Sheriff
Douglas County Transportation Center	Transportation
Douglasville Police Department	Police
Douglasville Post Office	Government Offices
Eastside Elementary	K-12
Factory Shoals Elementary	K-12
Factory Shoals Elementary	K-12
Fairplay Middle	K-12
Fairplay Park	Government Offices
Fire Station #1	EMS/Fire Fighters
Fire Station #10	EMS/Fire Fighters
Fire Station #11	EMS/Fire Fighters
Fire Station #2	EMS/Fire Fighters
Fire Station #3	EMS/Fire Fighters
Fire Station #4	EMS/Fire Fighters
Fire Station #5	EMS/Fire Fighters
Fire Station #6	EMS/Fire Fighters
Fire Station #7	EMS/Fire Fighters
Fire Station #8	EMS/Fire Fighters
First Baptist Church of Lithia Springs	Non-Profit
First Methodist Church	Non-Profit
Georgia National Guard Armory	Government Offices
Google Data Center	Private
Gresham Creek Pump Station	Water/Sewer
GSO House	Government Offices
Hannah Rd Booster Pumping Station	Water/Sewer
Holly Springs Elementary	K-12
Hunter Park	Government Offices
Hwy 78 Booster Pumping Station	Water/Sewer
Inner Harbour	Medical Offices
Jessie Davis Park	Government Offices
Lee Rd Pump Station	Water/Sewer

***Note:** The facility type was taken from the Georgia Emergency Management (GEMA)GMIS system used to create the HAZUS® report for this project.*

Table 43: Critical Facilities (Cont'd)

Critical Facilities for Douglas County, GA, and the City of Douglasville, GA	
Name	**Facility Type**
Lithia Springs Elementary	K-12
Lithia Springs High	K-12
Lithia Springs Park	Government Offices
Lithia Springs Post Office	Government Offices
Malone Rd Lift Station	Water/Sewer
Mason Creek Elementary	K-12
Mason Creek Middle	K-12
Mirror Lake Elementary	K-12
Mount Carmel Elementary	K-12
New Manchester Elementary	K-12
New Manchester High	K-12
North Douglas Elementary	K-12
Northside WPCP & Mill Creek Pump Station	Water/Sewer
Post Road Park	Government Offices
Rebel Trails WPCP	Water/Sewer
Seventh-Day Adventist School of Douglasville	K-12
South Central WPCP-Influent Pump	Water/Sewer
South Douglas Elementary	K-12
Southern Natural Gas Company	Private
Southside Complex & Lift Station	Water/Sewer
St Andrews Main Pump Station	Water/Sewer
Stewart Middle	K-12
Stockmar Airport	Non-Profit
Sweetwater Creek WPCP & Influent Pump Station	Water/Sewer
Sweetwater Elementary	K-12
Tallatoona Human Resource Development Center	Government Offices
Terrace Mill Pump Station	Water/Sewer
Turner Middle	K-12
United Way	Non-Profit
Wellstar Douglas Hospital	Hospital
Winston Elementary	K-12
Winston Park	Government Offices
Winston Post Office	Government Offices
Woodie Fite Senior Center	Government Offices
Yeager Middle	K-12

***Note:** The facility type was taken from the Georgia Emergency Management (GEMA)GMIS system used to create the HAZUS® report for this project.*

Appendix E – Mitigation Project Prioritization

Table 44: Mitigation Project Prioritization, Douglas County

Mitigation Project or Activity	STAPLE+E	Effectiveness Multiplier	Hazards									Hazard Total	Risk Assessment Number (HRT Value)	Priority
			Drought	Hazardous Materials	Severe Weather	Inland Flooding	Tornado	Wind	Severe Winter Weather	Wildfire	Dam Failure			
Equip all County and Public Gathering Places with Lightning Detectors	29	Medium (1)	-	-	15	-	-	-	-	-	-	15	15	**Medium**
Installation of a Tornado Storm Shelter	29	High (1.5)	15	-	10	-	5	10	-	-	-	40	10	**Medium**
Provide NOAA Weather Radios to low-income high-risk citizens of Douglas County.	27.49	High (1.5)	-	-	10	-	5	10	-	-	-	25	8.33	**Medium**

Investigate the Need for Heating and Cooling Centers for Vulnerable Population	26.16	High (1.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Medium**
Promote a Public Awareness Campaign to Educate Citizens About Evacuation Procedures, Sheltering in Place, And Public Shelter Locations	26.16	Low (0.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Medium**
Install Uninterruptible Power Supplies on Critical Electronic Equipment in County and City Facilities	26	Medium (1)	-	-	15	-	-	-	-	-	-	15	15	**Medium**

Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Roadways, Emergency Traffic and Evacuation Routes during Severe Weather Events	26	Medium (1)	-	-	15	-	-	-	-	-	-	-	15	**Medium**
Continue the Inspection and Maintenance of the Public Storm Water Drainage System	26	High (1.5)	-	-	-	10	-	-	-	-	-	10	10	**Medium**
Installation of Bridges and Upsized Culverts in Identified Areas Where Urban Flooding Repetitively Occurs	26	High (1.5)	-	-	-	10	-	-	-	-	-	10	10	**Medium**

Purchase the Equipment Necessary to Sustain Hazardous Materials Emergency Response Teams	26	Medium (1)	-	15	-	-	-	-	-	-	-	15	15	**Medium**
Install Surge Protectors on Electronic Equipment in County and City Facilities	25	Medium (1)	-	-	15	-	-	-	-	-	-	15	15	**Low**
Develop Site Specific Emergency Plans for Hazardous Materials Facilities Throughout the City and County	24	Medium (1)	-	15	-	-	-	-	-	-	-	15	15	**Low**

Maintain an Inventory of Hazardous Waste Generators and Storage Facilities and Mail Facility Owner(S) Education and Awareness Information	23	Medium (1)	-	15	-	-	-	-	-	-	-	15	15	**Low**
City of Villa Rica – Protection of Roadway Over Mirror Lake Dam Spillway	22	Medium (1)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Encourage Local Businesses to Develop COOP's	21.16	High (1.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**
Acquire Flood Prone Structures Throughout Douglas County	21	Medium (1)	-	-	-	10	-	-	-	-	-	10	10	**Low**

Ensure that NFIP Requirements are Being Met Concerning Repairs, Renovations, and Remodeling of Structures Located in The Regulatory Floodplain	21	Medium (1)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Continue to Acquire Structures in Identified Repetitive Loss Areas Throughout Douglas County	20	Medium (1)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Integrate All Public Safety Records Management Systems with the 911 Dispatch System and The County and City GIS Departments	18.44	Medium (1)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**

Development of the Douglas County Community Wildfire Protection Plan (CWPP)	18	Medium (1)	-	-	-	-	-	-	-	5	-	5	5	**Low**
Update Site Specific Emergency Plans for Schools and Other High Hazard Facilities Within Douglas County	17.44	Medium (1)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**
Ensure That Future Land Use Planning Takes into Consideration the Possible Effects of All Hazards	17.44	Medium (1)	5	15	10	5	5	10	10	5	10	85	9.44	**Low**
Review Existing Building Codes and Seek Areas for Improvement	16.5	Low (0.5)	-	-	15	-	-	-	-	-	-	-	15	**Low**

Apply Local Ordinance and Design Standards to New Development to Prevent New Residential Structures in The Future Conditions 100 Year Floodplain	16	Low (0.5)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Identify Structures Within The 100 Year Floodplain and Maintain a Database of Flood Prone Properties	16	Low (0.5)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Notify Owners in Writing of Flood Prone Properties and Recommend the Need for Flood Insurance	16	Low (0.5)	-	-	-	10	-	-	-	-	-	10	10	**Low**

Continue to Support Tree Trimming to Prevent Limb Breakage and for Safeguarding Nearby Utility Lines During Severe Events	15	Medium (1)	-	-	-	-	5	-	-	-	-	5	5	**Low**
Continue to Promote and Require the Use of Fire-Retardant Materials in New Construction	15	Medium (1)	-	-	-	-	-	-	-	5	-	5	5	**Low**
Develop and Implement A Public Awareness Campaign Encouraging Residents to Develop Family Disaster Plans	14.72	Low (0.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**

Create A Database to House Data of Mapped Areas Throughout the County Where Flooding Inundates Roadways	14	Low (0.5)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Purchase the Equipment Necessary to Efficiently Remove Snow and Ice from County Roads During Severe Winter Weather	14	Medium (1)	-	-	-	-	-	-	5	-	-	5	5	**Low**
Develop Land Use Strategies to Promote the Safe Use of Land Downstream from Dams	14	Medium (1)	-	-	-	-	-	-	-	-	5	5	5	**Low**
Promote Fireplace and Chimney Maintenance Public Safety	13.72	Low (0.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**

Promote Through Public Education the “Turn Around Don’t Drown” Campaign	13	Low (0.5)	-	-	-	10	-	-	-	-	-	10	10	**Low**
Conduct Public Education Reminding Residents about the Dig Safe Program	12.72	Low (0.5)	15	15	10	5	5	10	10	5	10	85	9.44	**Low**
Maintain an Inventory of Category 1 And 2 Dams in GIS Format	12.5	Low (0.5)	-	-	-	-	-	-	-	-	5	5	5	**Low**
Develop a Public Education Campaign to Encourage Homeowners to Buy Hazard Insurance to Protect Belongings	11.72	Low (0.5)	5	15	10	5	5	10	10	5	10	85	9.44	**Low**

Continue to Support and Manage the Tornado Safety Public Awareness Campaign in Douglas County	10.5	Low (0.5)	-	-	-	-	5	-	-	-	-	5	5	**Low**
Continue to Promote Fire Prevention and Public Education Programs	10.5	Low (0.5)	-	-	-	-	-	-	-	5	-	5	5	**Low**
Develop a Public Awareness Campaign to Heighten Awareness about Brush Fires and Preventative Maintenance for Homeowners	10.5	Low (0.5)	-	-	-	-	-	-	-	5	-	5	5	**Low**

Continue to Promote and Require Smoke/Carbon Monoxide Detectors for Residential and Commercial Properties	10.5	Low (0.5)	-	-	-	-	-	-	-	5	-	5	5	**Low**

Appendix F – Plan Adoption Resolutions

Awaiting Signed Resolution Letters from the following jurisdictions:

Resolution, Douglas County

Resolution, City of Douglasville

Appendix G – State of Georgia Approval Letter

Pending adoption

Appendix H – FEMA Approval Letter

Awaiting FEMA to send letter